

1970

Annual Report of the Director



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

The Pan American Sanitary Bureau
is the Secretariat of the
Pan American Health Organization;
the Bureau is also the
Regional Office of the
World Health Organization
for the Americas.

INDEXED

ANNUAL REPORT OF THE DIRECTOR

of the

PAN AMERICAN SANITARY BUREAU

REGIONAL OFFICE

of the

WORLD HEALTH ORGANIZATION

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PAN AMERICAN HEALTH ORGANIZATION
Pan American Sanitary Bureau, Regional Office of the
WORLD HEALTH ORGANIZATION
525 Twenty-third Street, N.W.
Washington, D.C. 20037

**To the
Members
of the
Pan American Health Organization**

I have the honor to transmit herewith the Report of the work of the Pan American Sanitary Bureau, Regional Office of the World Health Organization for the Americas, in the year 1970. This Report provides a description of activities at Headquarters and in the countries, together with a summary of the projects carried out by the Governments of the Americas in collaboration with the Bureau and with other international organizations. The Financial Report for the year is submitted separately.

Respectfully,

A handwritten signature in dark ink, appearing to read 'A. Horwitz', with a long horizontal flourish extending to the right.

Abraham Horwitz
Director

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XVIII Pan American Sanitary Conference, Washington, D.C., 28 September-8 October 1970.

INTRODUCTION

The year 1970 marked the close of the United Nations First Development Decade and preceded the final year of the Ten-Year Public Health Program of the Charter of Punta del Este. It is therefore memorable in connection with two events, one world-wide and the other regional, that revealed the Governments' intention of systematizing economic growth and the expansion of social well-being and setting forth specifically, in order of importance, the most prevalent problems, the resources available for their solution, and the maximum benefits to be expected from the use of those resources. This is an undertaking which is impressive for its magnitude and as an organized effort, but even more remarkable for the substantial progress it brought about and what it taught us about the gap between knowledge and its application. The extent to which a weakness in the economic and health infrastructure retards the achievement of goals has been made abundantly clear. And weakness in the quality and quantity of human resources has been recognized as one of the principal hindrances. In any event we have learned the importance of making a careful analysis of the feasibility of each project. Although no sophisticated techniques are available for this purpose, we must make the best possible use of the methods at our disposal.

Because public health work is a continuing process, it was obvious that the Governments did not regard the ten-year program as unrelated to earlier or later developments. Their purpose in adopting a program for this period of time was to concentrate on achieving specified targets and expanding the efforts to attain the ideal pursued by every society: giving each inhabitant, during his span of life, the opportunity to achieve individual well-being and to live in harmony with his neighbors. We believe that the time has come to evaluate events in the past decade—and this would be the fourth analysis made by our Organization—and to forecast those of the present decade, with due allowance for differences in the problems, goals, and costs. For all the progress made, it would hardly be possible to call a halt. Our hope is that the

Governing Bodies of the Organization will tell us along what lines they wish us to continue.

* * *

The present juncture seems to be marked by a special concern with the decision-making process in health. Attempts are made to identify its components, determine their sequence, and define their relationships in terms of specified goals. In the public sector, we believe this interest has been stimulated by the realization that the increase in resources is lagging behind the growth of population and social demands. Efforts have been directed to a systematic and reasoned determination of what we should invest in, and how and what we should invest, in order to achieve certain individual or social effects. Adapting the principles and methods of industrial production to the prevention and cure of disease is obviously a very difficult matter, since the latter involves variable factors not readily reducible to quantitative terms. Many of these factors have to do with the political structure and the machinery for resolving matters confronting it. This explains the efforts to introduce organizational theory, systems analysis, operations research, the behavioral sciences, and economics, among other disciplines, into health planning, which is the underlying foundation of the decision-making process.

In the decade now ending we have learned that the shortcomings of **statistics**—extreme underreporting of morbidity and mortality, especially in rural areas—are one of the major obstacles to viable planning. The recognition of this is a sign of progress, for it spurs us to seek a closer association with reality in order to describe it more precisely in terms of the dynamics of health and disease. In the past 20 years, the demographic data in the Americas have improved appreciably in both quantity and quality. But the Governments, having adopted the planning of economic and social development as a goal, necessarily require more complete, precise, and exact information. At the present rate at which statisticians and

statistical auxiliaries are being trained and positions established for them by the Governments or institutions, it will not be possible to provide the data required for effective planning, evaluation, and reporting. It is urgent that steps be taken to train officials for existing services and for those yet to be organized in each country, and to modernize the methods used: in short, to make statistics a dynamic discipline. The 269 professionals and intermediate-level technicians and the 1,030 auxiliaries trained in 1970 are not sufficient. It is our hope that the United Nations Fund for Population Activities will take favorable action on a proposal to supplement the resources available to the Pan American Health Organization and World Health Organization for helping the Governments to achieve this goal. This is a long-range task, but one for which the Americas have the necessary institutions and experience. Meanwhile, the figures are available for determining priorities and goals through various procedures and for mobilizing resources. Nothing, however, can take the place of complete, timely, and accurate information.

Similar observations may be made in regard to administrative practices in support of **planning**: it is still frequently the case in our countries that the budget is not directly related to the purposes of each project; that the available equipment, materials, and supplies are not assigned to those responsible for carrying out each activity; that the production or importation of drugs, vaccines, and other biologicals is not in keeping with the schedule of activities; that budgetary control does not contain the elements of cost accounting; that the ranking and description of a function is at variance with the degree of responsibility it derives from the health policy and programming; that mechanization has not been sufficiently explored with a view to its application to render performance more efficient. These are only a few of the many branches of administration in which techniques have undergone profound changes in the past 20 years. These disciplines, taken together, are an essential means of making health a viable goal and well-being a reality. Here, too, the number and caliber of persons engaged in the task are below the requirements of modern practice. Education and inservice training in this field, to which the Organization has devoted efforts over the last 12 years with the encouragement of the Governing Bodies, is an essential task and one that must be hastened, for planning is only a futile exercise without efficient administration.

If the political decision is not sustained and if it is subject to major variations not always responsive to the problems of greatest social significance, an authentic planning process cannot be developed. We regard such lack of continuity and responsiveness as a major limiting

factor for which the Governments bear complete responsibility. The role of health specialists is to supply the necessary **information** to be weighed by those who make the final decision. It is important to realize that there are factors other than those of a scientific nature and that these are inherent in every society and are part of its culture and life style. The ability to foresee how the constituent groups of society will react to a given proposition is based on mechanisms in which the intuitive component should not be underestimated. Experience demonstrates that the likelihood that a decision will achieve the desired results is in direct ratio to the specificity of the information on which it was based and the extent to which this information was the product of adequate observation. This explains the importance of evaluating a proposed activity in terms of the desired objective from the time the activity is planned. In public health we have not acquired sufficient experience for measuring completed activities in terms of the investment made and the social effects attained. Much less do we have techniques for selecting from among various alternatives that which will bring the best results at the lowest cost and in the least possible time. Substantial progress has been made in the **evaluation** of projects in which the Organization advises the Governments of the Hemisphere. The procedure in use attempts to measure results against pre-established goals. The results achieved in each project during 1970 are summarized in the final chapter of this *Report*. This is the beginning of a process of evaluation which we hope each Ministry will apply to all its health activities. We also hope that the techniques for the measurement of benefits and costs will be applied to certain problems; only then will we be able to determine whether this method, which has proven its worth in certain industries, is usefully applicable to social programs.

The interdependence of planning, evaluation, and information in a public health system is today clearly seen. The important thing is that each component, whatever its nature, be at the service of the entire system. In a function as diverse and variable as public health, conceptual and operational unity in which each component has a life of its own but is subordinate to the ultimate goal appears essential. Information, which is more than just statistics, is a basic element in creating this unity. Steps must be taken to begin organizing the flow of data on all preventive activities, whether primary, secondary, or tertiary,¹ carried out in the Hemisphere and to correlate them with those on other development sectors affecting, or influenced

¹ Leavell, Hugh Rodman, and E. Gurney Clark. *Preventive Medicine for the Doctor in His Community. An Epidemiologic Approach*. New York, McGraw-Hill Book Company, 1965.

by, the health of the population. This is a long-range task, but an inescapable one if we wish to establish an authentic health system. The difficulty of structuring such a system and making it a dynamic and useful organism undergoing continuous change and operating at the service of social well-being is understandable if the many and varied components are considered. We have quoted Ortega y Gasset to the effect that "Reality is not data, something given, a gift; it is construction that man creates from the available material."² And this construction is precisely the object of a modern information system.

* * *

When the Governments decided on planning public health, they realized that this would have to be done by stages in such a way that each stage would determine the following one. What happens in practice is that after the priorities and related goals are established and the activities are carried out and evaluated, the process begins anew. We would all wish that "process" were really synonymous of "progress" as the dictionary would have us believe. We have referred to the limiting factors, including gaps in the quality and quantity of statistics, inadequate functional and administrative infrastructure, and lack of continuity in political decisions. This explains why at the end of the decade the countries show varying degrees of progress in their health planning efforts. We believe that this was only to be expected and does not invalidate the thesis that yearly analyses of accomplishments are a useful instrument for improving the identification of problems and the formulation and execution of programs.

It is clearly evident that a national health plan should reflect what each Government expects in the way of international cooperation. And once the necessary agreement is reached, the plan should serve for coordinating this cooperation. Where no plan has yet been prepared, we have proposed a procedure for planning the activities of PAHO/WHO in four-year periods, a procedure which we have accordingly designated by the term **quadrennial projections**. The Governments approved this method³ and a substantial number of them put it into practice in 1970. It calls for a description of health conditions, identification of high-priority problems, and a determination of the hypotheses of change with the investments

required under each assumption, followed by a statement of what the Government expects from the Organization, expressed in terms of particular services; and—to complete the cycle—the corresponding evaluation. The following features of this subsystem should be stressed: it is operated as a joint activity with the health authorities of the countries; the program is prepared and adjusted annually for periods of four years; and the basic considerations are the critical areas, national and regional health policy, the volume of available resources, and the existing norms for external cooperation.

We repeat that the quadrennial projections are but a supplement of the national plan and their validity is in direct proportion to the amount of experience in the implementation of such a plan. They can operate independently, however, since every Government has a strategy in which the programs meriting its preferential attention are described.

By this means a logical continuity is established between the general and specific aims of each Government and the assistance it receives from PAHO and WHO. We are confident that as the system of information through yearly evaluations is gradually improved, this procedure will make it possible for our programs to reflect with ever-increasing clarity the proper role of international activities in bringing about the changes sought in each country.

The XVIII Pan American Sanitary Conference approved the General Program of Work of the Pan American Health Organization for 1973-1977.⁴ The nomenclature applied to the activities includes both sectoral infrastructure and services, which are interdependent. In other words, an attempt has been made to distinguish between problems relating to health conditions and activities needed to resolve those problems, on the one hand, and problems pertaining to resources and administration, on the other. The document on the subject summarizes the policy for each of the categories in these two major fields. To the extent applicable, the budget will have to be prepared according to that nomenclature, as will the quadrennial projections. In regard to the latter, for 1971, without departing in any major respect from this procedure, we shall propose the structure of the General Program of Work as the central focus of analysis. We believe that this will make for consistency in all the instruments used by the Organization to extend assistance and to report its activities.

² Quoted in *Patterns of Urban Mortality*, Scientific Publication PAHO 151 (1967), p. iii.

³ Resolution XXXVIII of the XVIII Pan American Sanitary Conference, *Official Document PAHO 104*, 94; and Annex 6, "Long-Term Planning and Evaluation," *Official Document PAHO 108*, 396-400.

⁴ Resolution XIV, *Official Document PAHO 104*, 68-69; and Annex 8, "General Program of Work of the Pan American Health Organization/World Health Organization for the Period 1973-1977," *Official Document PAHO 108*, 403-419.

As we have noted, the question of feasibility of the projects, that is, the analysis of each project in its components and stages, to provide reasonable assurances that the purposes and objectives sought will be achieved, is still pending. Although techniques are available for this, they must still be tested before they can be used more generally. Meanwhile, a number of things can be done to assure reliable information on each program. The forecast this involves requires a careful review of the principal features of the program and the possibility of participation, in the case of human resources, or application, in that of material resources. Naturally, as we have said, a systematic approach will, if effectively applied, make it possible to incorporate the concept of feasibility into planning.

* * *

The interrelationships of **health and law** were examined by the XVIII Pan American Sanitary Conference. In doing so, it had before it a comparative study of general and specific legislation in most of the countries of the Americas.⁵ This study revealed a wide disparity of precepts regarding a given question, an urgent need to modernize them, and a tendency to combine health policy provisions with provisions relating to administration and structure of the services. The principles derived from advances in sciences, technology, and other fields in recent years are conspicuous by their absence. The document on the subject is the result of a hemisphere-wide survey which we consider unique in its scope and complexity. It highlights a situation that urgently needs to be corrected in most of the countries: legislation appears to have lagged behind performance. And it shows an imperative need to distinguish between the general health law and the organic law of the ministry of health and its agencies. With this in view, the Organization must prepare a model to provide a structural basis for revising or establishing the pertinent legal provisions.

It is obvious, moreover, that courses on the relationships between health and law are either not taught in the universities or are taught in an incidental way; this also requires immediate action. There is also an urgent need to create or improve legal departments in the ministries of health to perform a function which today is of special importance.

* * *

The winds of reform that have swept through the uni-

⁵ Document CSP18/21 (22 August 1970), "Survey of Basic Health Legislation in the Americas Issued during the Last Twenty Years (1948-1968)." Mimeographed document.

versities of the Hemisphere during the last five years have fostered the adoption of specific definitions of purposes and methods in the health sciences and arts. They have made even more evident, if this were possible, the deficiency of **human resources** in number and quality—the latter in terms of specific contributions—as well as the rigid adherence to existing curricula in the schools of medicine, the need to design new systems for meeting the needs of a growing population, and the conviction that the most pressing problems cannot be solved by university professionals alone. The dominant desire is to make the university an instrument of development as well as education. An essential need has been filled with the establishment of a better relationship between teachers and students to make the learning-teaching process more rational. In addition, increasing emphasis has been placed on the inclusion of the behavioral sciences in the training of professionals. All of this is inducing changes in the organization and administration of institutions, with varying degrees of participation by their components.

As a response to this situation, the Governing Bodies have established as a policy the integration of instruction in all the health sciences within a common administrative and academic structure, while recognizing that the feasibility of doing so will vary according to the circumstances of each country and its universities. This explains the connecting links between apparently unrelated activities in 1970. By way of example we can cite the studies on human resources and their projected growth, the definition of educational aims, and the design of the corresponding curricula. The basic methods for introducing the behavioral sciences, including specific lines of research, have been analyzed through seminars. The series of laboratories in human relations and medical pedagogy, begun by our Organization six years ago, have continued.

Of special importance is the workshop on education in the health sciences to be held early in 1971 in our Headquarters. On the basis of a model, it is proposed that 15 leaders devoted exclusively to this field analyze the various components and plan an integrated course content for the countries of Latin America.

* * *

Creating one's own value judgments after achieving self-knowledge is the essential aim of education. Those who are especially well-endowed are capable of constructing the program best suited to their intellectual curiosity and personal inclinations. For them, this program is a blueprint for an entire lifetime and is equally valid for performing highly specialized work or understanding the most important developments in world affairs. For the

great majority, however, we can accept the fact that there is no education without the access to information. This is the basic thought behind two projects in which the Organization is engaged: the supply of **textbooks** for medical students and the **Regional Library of Medicine**, with headquarters in the Paulista School of Medicine in Brazil. The former project is being executed in 110 universities and includes the provision of textbooks on pathology, biochemistry, physiology, pharmacology, with 18 other subjects to be added, thus bringing the total to 22. By the end of 1970, a total of 54,997 copies of textbooks on the four existing fields had been distributed and 26,031 had been sold. The textbook on pediatrics had been prepared and was ready for distribution early in 1971. This complex operation has been financed up to now from the Special Fund for Health Promotion in the regular budget of PAHO. In November, the Inter-American Development Bank approved a loan of \$2 million for this program, and this will make it possible to include the rest of the 22 subjects in the course of the next five years and establish a revolving fund to make the system self-supporting. Action should be taken to provide the libraries of the schools of medicine with additional textbooks on the same subjects for the use of faculty and students.

It is truly said that new discoveries or interpretations of vital phenomena are emerging so rapidly that only the fundamentals are contained in books, and those seeking the latest developments must consult periodicals. It was this that prompted the establishment of the Regional Library of Medicine, which in three years has created an effective link with 200 libraries in Brazil. The idea has emerged of establishing a Pan American biomedical-social information network to expand opportunities for those who wish to be up to date in their work. The aim is to facilitate communication among all the countries of the Americas for the benefit of health professionals, particularly those in rural areas. We have begun a feasibility study of this project, the importance of which should enable it to surmount any obstacle.

* * *

An over-all examination of the work of our Organization in education and training reveals a unity of objectives and a diversity of methods, for societies differ in their characteristics and degree of development. We believe that in the combined efforts of a Hemisphere there is a proper place for international cooperation directed to help bring about, among other things, a better knowledge of reality, the design of models for certain functions, the trial of new techniques, and the advanced training of

teaching personnel. In short, we believe that the time has come to consider a Pan American Health University to supplement, without in any way replacing, that which is the inherent responsibility of each country. The foundations of such an institution are ideas, the message it conveys, and the procedures it employs, rather than buildings or other material resources.

* * *

"There are hard choices to be made. In terms of the **environmental challenge**, the choices are coming to us now with alternatives heavily disguised. For those who would restrict the health sector to environmental problems of known personal health consequences, there is the disturbing question: 'Can we wait for the suspected agent, be it chemical, physical, or biological, to be proven guilty beyond reasonable doubt?' For those who opt for a complete environmental utopia, there are very obvious questions of reality. Needless to say, the selected choices will vary among countries. Overpopulation, economics, and other hard facts of life will influence decisions."⁶

This quotation is from a document submitted to the XVIII Pan American Sanitary Conference which proposes three alternative approaches. The first approach would be to concentrate on the physical factors in the environment, including water supply, disposal of sewage and solid wastes, protection of food, and occupational health. Air and water pollution control, housing hygiene, and radiation protection are added as a supplement.

According to the second approach, emphasis would be placed on the interaction between man and his environment; this requires a deeper knowledge of these interrelations, that is, one proceeding from cause to effect. Obtaining this knowledge entails studies, some of long duration, regarding the influence on health of pollutants present in various components of the environment and either producing or aggravating disease. This is obviously a multidisciplinary study requiring teamwork among many professions, and one that should induce profound changes in concepts, organization, techniques, and procedures, both in the national services and in the international agencies.

Under the third approach, physical conditions would be given the same importance but less research would be involved. The XVIII Pan American Sanitary Conference opted for this approach in Resolution XXXIV,⁷ and also chose environmental pollution as the subject of the Tech-

⁶ Document CSP18/10 (27 August 1970), "Man-Environment Relationships: A Challenge of the 1970's—PAHO/WHO Programs and Plans." Mimeographed document, p. 19.

⁷ Official Document PAHO 104, 89-90.

nical Discussions during the XX Meeting of the Directing Council. It also instructed the Secretariat to prepare projections of problems and programs of the human environment for the decade beginning in 1971.

The Governing Bodies will have to consider what further action needs to be taken in connection with the physical environment and the problems relating to its other components, which are increasingly prevalent in all the countries of the Hemisphere, both developed and developing. For in spite of the striking program in water supply and excreta disposal—and 1970 was the year of greatest investment of national resources and external capital—30 per cent of the urban and more than 70 per cent of the rural population in many countries continue to lack these essential services. Moreover, the air is densely polluted in the major industrial centers, as are the rivers and streams; the accumulation of solid wastes is an eyesore and a threat to health; food control is virtually nonexistent or very deficient; and housing and occupational hygiene is far from meeting long-existing standards. We are all but deafened by noise, and the deterioration of the style of life is not at all surprising. That is why we have said that it is difficult to know what road to choose; but choose we must if we really want a development for human beings, one that will be reflected in their improved well-being, not only in economic indicators.

The role of Governments, institutions, and individuals in public health will have to be redefined in the policy on the human environment.

* * *

The means by which the cellular functions are regulated are complex and finely tuned. The limits of adaptability to a given diet are not clearly understood. The necessary information will result not from a continuation of traditional experiments in human nutrition but from those designed on the basis of the latest concepts of molecular biology and cellular regulation.

It is these considerations that led to the Symposium on **Metabolic Adaptation and Nutrition**,⁸ held during the Ninth Session of the PAHO Advisory Committee on Medical Research. The central topic suggested by this title was carefully examined, and it was emphasized that adaptation is basically an individual phenomenon. The biochemical or molecular aspects of cells, organs, and the hormonal system, operating in each human being, were examined in their various correlations. It was inevitable, because of the times in which we live, that the ecological or environmental imperatives, of which diet is only one, were discussed. On the basis of available knowledge, the cri-

teria for differentiating between what is normal and what is abnormal proved to be very inadequate. The accepted facts are not always viable means of arriving at value judgments for, as we said, adaptation is an individual process. There is a need for more sensitive indicators for identifying the marginal states, and these will come from studies of cellular biology, biochemistry, genetics, and related areas. In this way, new ideas and methods will emerge for reducing the impact of malnutrition on physical and mental health. Meanwhile, given the tremendous importance of the task, we must redouble our efforts to apply what we know.

The surveys on nutrition in Central America and Panama carried out over the last three years were the subject of a report to the PAHO Advisory Committee on Medical Research. This was a joint activity of the Governments, the Institute of Nutrition of Central America and Panama (INCAP), and the U.S. Interdepartmental Committee on Nutrition for National Defense. We understand these to be among the most comprehensive surveys ever undertaken in this field. Based on a single model and a representative sample, the results provide an opportunity for comparisons within and between countries. In varying degrees, the report reveals deficiencies in calories, proteins, vitamin A, riboflavin, iodine, iron, and folic acid—which explains the high prevalence of anemias as well as microbial and parasitic infections with all their consequences. This situation is especially serious in the rural areas because of the low income per family, illiteracy, and the weakness of the economic and health infrastructure, all of which conspires against the execution of programs to reduce mortality and morbidity. A basis is now available for measuring changes in the situation by using known indicators. In addition, a serum bank has been established, bringing together valuable material for retrospective research on antibodies, which reveal previous contact with certain antigens.

It is to be hoped that conditions will make it possible to repeat the surveys some years hence and observe the effects of activities carried out for the benefit of all the undernourished.

An **International Symposium on Mycoses**, sponsored by PAHO, pointed out the importance of the mycotic diseases as a health problem. Their true incidence is unknown because they are not classified among the notifiable diseases and are not reported on a continuing basis. There is sufficient evidence, however, to indicate that, by and large, the cutaneous, subcutaneous, and systemic forms are the most prevalent. Additional information is needed on mycoses caused by certain fungi, usually saprophytes which aggravate chronic or debilitating dis-

⁸ *Scientific Publication PAHO 222* (1971).

eases characterized by a reduction of the inflammatory or immunizing reaction, due either to the action of the fungus itself or to the use of certain drugs. Significant progress has been made in diagnosis and treatment, as well as in ecology and epidemiology, as can be seen in the publication deriving from the Symposium.⁹

The meeting was preceded by an *in situ* survey of the mycology centers in Latin America, which have distinguished specialists but in a limited number that needs to be increased. PAHO has established a coordinating committee for the mycoses to advise it and, with the consent of the Governments, proposes to increase the opportunities for education and advanced training in connection with general and specific problems relating to these infections. If the necessary resources can be obtained, it will sponsor symposia to examine at least those mycoses which are most prevalent in the Americas.

* * *

The **International Conference on the Application of Vaccines against Viral, Rickettsial, and Bacterial Diseases of Man** was held at Headquarters from 14 to 18 December 1970. A very distinguished group of experts described their experiences with more than 25 vaccines which are administered either separately or in combination, with or without adjuvants. The discussions were not limited to the biological and immunological aspects or the effects on human beings; careful consideration was given to quality and safety control and to program organization and evaluation, including cost-benefit and cost-effectiveness analysis.

The publication¹⁰ containing the papers and discussions on all the topics will be a valuable reference work for educators, research workers, administrators, and students of the immunization process, which is a matter of continuing timeliness. We hope to be able to place it at their disposal in 1971 through Governments and universities in the Americas.

The responsibilities of multilateral international organizations include disseminating knowledge, suggesting analyses of basic problems, facilitating the exchange of ideas and experiences on matters of social significance among practitioners in various fields, and promoting education and training in these fields. The Conference was, in our opinion, an excellent example of these responsibilities. It was the fourth of a series that dealt with immunization against poliomyelitis¹¹ and other viral dis-

eases.¹² As its findings and conclusions are disseminated throughout the Americas and provide a basis for action decisions, the people will be able to count on increasingly better protection against the onslaught of microorganisms in their mediate and immediate environment.

* * *

After examining the data derived from the first six to eight months of the **Inter-American Investigation of Mortality in Childhood**, which were gathered in eight of the 10 regions included in the study, the PAHO Advisory Committee on Medical Research, at its Ninth Meeting, emphasized¹³ that this is the first large-scale study in which efforts are being made to determine the qualitative and quantitative aspects of nutritional deficiencies. Since the study is being made in conjunction with the schools of medicine, the information is already being used in the education and training of students, residents, and public health specialists. The Investigation has served to encourage operational activities in the field of nutrition in which resources such as those of the World Food Program are employed. As will be recalled, the proposed goal is to examine the deaths of approximately 35,000 children less than 5 years of age in 13 projects of eight Latin American countries, one in the San Francisco Bay area of California, and, finally, one in the Province of Quebec, Canada. An attempt is made to distinguish between the direct underlying causes and associated causes of mortality in those children. The data gathered indicate that from 35 to 66 per cent of the deaths examined, excluding neonatal deaths, were caused by infectious diseases and that nutritional deficiencies were associated with from 44 to 69 per cent of the deaths from those diseases. This reveals that the host is as important a factor as the agent in the onset of a disease and that both are conditioned by the environment and genetic factors.

The low rates of neonatal mortality would seem to be explained in most cases by marked underregistration.

This Investigation can be expected to have significant effects, once the information collected has been carefully analyzed, on the interpretation of the origin of diseases, on preventive and curative activities, and on the training of professionals, as well as postgraduate instruction.

* * *

Research on medical education is today urgently needed in the Americas. The problems involved may be grouped under three major headings: those derived from

⁹ Scientific Publication PAHO 205 (1970).

¹⁰ Scientific Publication PAHO 226 (1971).

¹¹ Scientific Publications PAHO 44 and 50 (1959 and 1960).

¹² Scientific Publication PAHO 147 (1967).

¹³ Document RD 9/20 (19 June 1970), mimeographed, p. 8.

the relationships between medical and secondary education; problems resulting from the interdependence of medical education and medical care services; and problems inherent in the organization and performance of teaching-learning activities.

By way of example, the Advisory Committee discussed the factors influencing the decision of students to enter medical school; the reasoning process leading up to a clinical diagnosis; and the value of models for designing a curriculum. It was emphasized that it is a difficult matter to achieve scientific accuracy in the evaluation and comparison of different educational processes influenced by a large number of variables which are not always easy to control. The consensus was reached that medical education should be regarded as a subsystem within the health function and that the modern disciplines of systems analysis and operations research can therefore be extremely useful adjuncts for improving the training of professionals with the use of existing resources.

With the same criterion, the XVIII Pan American Sanitary Conference examined the status of **nursing** in the Americas and proposed¹⁴ a system in which areas of responsibility and quantity and category of personnel required will be defined. The system should be compatible with preventive and curative health care objectives envisaged in the policy of each Government. An advisory committee will collaborate during 1971 in the formulation of a model for such a system, to be tested in one of the countries prior to its submission to the Governing Bodies.

* * *

A significant development in the efforts to **eradicate malaria** was the trial use of the insecticide OMS-33 in the areas where *Anopheles* mosquitoes are resistant to chlorinated insecticides, as a result of which transmission was interrupted. Although it seems necessary to continue the epidemiological research and extend the area of application, this method has shown itself to be the most effective of those available for the elimination of malaria. With the consent of the Governments, and in view of the high cost of this product, negotiations have been undertaken to obtain a contribution from the German Federal Republic that will make it possible to use this insecticide on a wider scale.

Plans are being prepared in eight countries to apply the new strategy adopted by the Twenty-Second World Health Assembly.¹⁵ The situation in the Americas is one of progress which, while not as fast as we should like, is sufficient to warrant the continuation of this work which has

already benefited close to 121 million inhabitants of the originally malarious areas. However, there are still 60 million persons exposed to a risk that varies with degree of resistance of the vectors, the efficiency of the program structure and administration, and the availability of financing.

A useful means of assessing the progress made in the Hemisphere is to compare the situation today with what it might have been if malaria eradication or control programs had not been organized since the advent of DDT. In the latter event there would have been approximately 22 million cases, with 220,000 deaths, in 1970, whereas the number of cases reported in that year was 336,975 and the estimate of the actual morbidity was about 1,200,000, with approximately 3,000 deaths. Along with the considerable reduction of the incidence, there is the fact that the pernicious forms of the disease were reduced to an even greater extent because of their greater susceptibility to the measures used.

We wish to make it clear that these are statistics, particularly those for 20 to 30 years ago, which have not been substantiated by careful reporting and etiological diagnosis. Even so, their magnitude is such that—particularly in view of the better understanding of the situation acquired during the last 10 years—they warrant the statement that the program has benefited an enormous number of human beings and contributed to economic growth and the expansion of agricultural and industrial production in extensive regions of the Americas.

That is why we have said that there is no alternative to continuing the program in spite of the obstacles. The only certainty is that, since the vectors are present, any interruption of the work will result in the speedy resumption of transmission and will expose the Hemisphere to the threat of severe malaria epidemics. We trust that the Governments and the international organizations, particularly the United Nations Children's Fund (UNICEF) and the United States Agency for International Development, will continue to contribute until this task is completed. We are hopeful that research will find methods for either increasing the resistance of man to the infection—as would be the case of the vaccine based on sporozoites, now being studied—or interfering with the action of the mosquitoes. A study should be made on ways of including sanitation work in agricultural development projects or roadbuilding projects as a means of eliminating breeding grounds for *Anopheles* mosquitoes.

* * *

The Technical Discussions at the XVIII Pan American Sanitary Conference dealt with **venereal diseases** as a

¹⁴ Resolution XXI. *Official Document PAHO 104*, 75.

¹⁵ Resolution WHA22.39. *Off. Rec. Wld Hlth Org.* 176, 18-19.

national and international health problem. It was pointed out during the discussions that no real progress can be made against these diseases without interdisciplinary collaboration of venereologists with specialists in other areas of medicine (obstetrics, gynecology) and with general physicians, and of the latter with epidemiologists, public health professionals, and research workers. The participation of teachers, health educators, social workers, and of voluntary youth agencies is also needed. This cooperation should be carried out not only at the patient and institutional levels, but also at the inter-state and national levels. It is reasonable to ask whether a concerted international effort might not be feasible in view of the fact that 50 per cent of the syphilis cases and a much higher proportion of the cases of gonorrhea reported require epidemiological studies in which several countries participate.

In spite of very incomplete reporting, an increase in the incidence of these infections is evident. In view of this, consideration was given to the psychological, social, and cultural aspects that contribute to the spread of these diseases and make it difficult to control them. In their desire to check their inhibitions, human beings are turning to an increasing sociability which in some groups is tantamount to promiscuity. With the availability of penicillin, the terror induced by syphilis 20 years ago has been replaced by feelings of safety and complacency. Although more is known about the natural history of venereal diseases and the means for their prevention, it is now perhaps more difficult than before to reduce the reservoir of infection. The Technical Discussions and their report¹⁶ contained, in our opinion, valuable information on the present status of this problem.

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"Possible consequences of the reinfestation of countries by the vector include the potential urbanization of **yellow fever** and the extension of **dengue fever** to areas that are not now affected. Other consequences are the serious effects of such events on the health, economy, and public reaction within the country. The possible appearance of hemorrhagic dengue in this part of the world cannot be disregarded, and *Aedes aegypti* reinfestations should be considered in the light of this additional potential danger. Provided that an effective surveillance program is maintained in the countries which have eliminated *A. aegypti*, history demonstrates that reinfestations can quickly be

controlled, although there will be additional costs for the program."¹⁷

The above statements are included in the report of the PAHO Study Group on the Prevention of *Aedes aegypti*-Borne Diseases, which is supplemented by the report on the Surveillance of Dengue in the Americas.¹⁸ Both of these reports were considered by the XVIII Pan American Sanitary Conference, which in Resolution XLIII¹⁹ again noted the responsibility of the Governments for completing the program started in 1947 and for pressing ahead with the urgently needed measures to prevent further spread of the vector.

Because of the sound experience of the participants we regard both of these documents as excellent and up-to-date reports on an ecological problem. They include the various factors contributing to the problem, identify the areas on which better information and more research is needed, and recommend a large number of measures, all directed to averting epidemics, reducing the causes of existing or potential endemic disease, and preventing the appearance of other diseases carried by *A. aegypti*.

We were instructed to design, with the cooperation of experts, cost-benefit studies on the various alternatives suggested by the Study Group.

Significant advances were made in the hemisphere-wide program for the **eradication of smallpox**, particularly in Brazil, and in programs against other **bacterial and viral diseases**. Further information on these developments is given elsewhere in this *Report*.

The XVIII Pan American Sanitary Conference concerned itself with the problem of **cholera** and heard a presentation by the Director-General of WHO on the current status of the seventh pandemic, which began in 1961 on one of the Celebes Islands of Indonesia. The six earlier pandemics occurred between 1817 and 1923. The relevant document describes the etiology and epidemiology of the disease and the methods for diagnosing and treating it. Dr. Candau said: "In a country that has a reasonable medical service there is no reason to worry about cholera. Cholera is a benign disease if good treatment is available. The use of antibiotics, especially tetracycline, ensures a very low mortality from it. I think this positive attitude ought to be taken, not the negative one of resorting to exaggerated measures that are of no avail at all."²⁰

The Organization has been collaborating with the Governments on the training of microbiologists to identify the cholera vibrio, especially the El Tor biotype, and on

¹⁷ Document CE64/4, Add. 1 (13 May 1970), mimeographed, pp. 11-22.

¹⁸ Document RD 49/10-2 (16 January 1970), mimeographed.

¹⁹ Official Document PAHO 104, 98-99.

²⁰ Official Document PAHO 108, 90.

¹⁶ Scientific Publication PAHO 220 (1971).

the production of vaccine and the distribution of the valuable information compiled by WHO Headquarters.

The Conference urged²¹ the Governments to intensify their surveillance efforts, in order to identify and treat any possible cholera case at the earliest possible time. It also recommended that, in applying the measures provided for in the International Sanitary Regulations, they not go beyond the scope of those Regulations.

The III Inter-American Meeting on **Foot-and-Mouth-Disease and Zoonoses Control**,²² attended by ministers of agriculture of the Americas or their representatives, expressed itself in favor of a food and nutrition policy in terms similar to those used by the Directing Council in 1969.²³ In doing so, the meeting recognized the fact that preventing and treating the damage done by malnutrition and other dietary deficiencies is impossible unless there is information on the available supply and quality of food. Guiding the production of food without attempting to meet the health requirements of the people, along with those of the economy, appears equally illogical.

Putting a food and nutrition policy²⁴ into practice is not a simple matter; but the fundamental factor, the decision of the Governments, has been obtained. Through concerted action of the ministries of health, agriculture, and education, the Food and Agriculture Organization of the United Nations (FAO), UNICEF, and PAHO/WHO, we are hopeful that this can gradually be done.

We refer in this *Report* to the important work of the Pan American Foot-and-Mouth Disease and Zoonoses Centers, to the review of their activities by the Scientific Advisory Committee that works with both, and to the measures for making the Zoonoses Center self-financing. Here we would only like to emphasize once again that our purpose is to reduce the enormous loss of the proteins so essential to a constantly growing population in which malnutrition is still very prevalent.

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The program for the control of those communicable diseases still prevalent in the Americas exhibits one particular weakness: a lack of **systematic epidemiological surveillance**. This activity is the indispensable supplement of all preventive actions, whatever the methods applied. All but a very few of the countries of Latin America and the Caribbean area have organized such surveillance services. They operate as part of the system for the rapid provision of up-to-date information designed to maintain

the levels achieved and provide support for the new stages directed to eliminating, or checking the spread of, infections having various etiologies. It is apposite here to mention the Seminar²⁵ sponsored by the Government of Uruguay and our Organization, the final report of which sets forth standards for the performance of this function which we should like to see applied. It is essential to intensify the training of epidemiologists and include the concepts and techniques of surveillance in their curriculum.

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The **Hospital Maintenance and Engineering Center** was inaugurated officially following the signature of the agreement between the Government of Venezuela, the United Nations Development Program, and WHO. Its aims are closely allied with one aspect of the transfer of modern-type technology, which is a constant concern of the developing countries. These countries find it difficult to make a choice between the many alternatives offered by industrial research and determine which are really essential for resolving certain problems and do not involve excessive automation, which increases unemployment. In any event there is an inescapable need to organize preventive and corrective maintenance of medical care equipment. A tremendous amount of equipment is lying unused in the hospitals of the Hemisphere, generally with defects that could have been avoided or can easily be corrected. This is due to the fact that the hospitals have no skilled maintenance personnel and the countries lack a maintenance system compatible with the structure of the health services. What is needed is effective regionalization in which each area is self-sufficient in the application of maintenance methods but relies on the higher echelons for certain techniques or materials. Structuring such a system requires the establishment of standards for the design, construction, equipping, operation, and maintenance of medical care centers; the training of engineers and other specialists for all these functions; the introduction of the concepts and procedures of these disciplines into the hospital administration curriculum; and the dissemination of experience thus acquired. It would be laboring the obvious to note the impact of this initiative on today's heavy investment in hospital equipment.

The Latin American Conference on **Rehabilitation of the Disabled**, sponsored by the Government of Mexico, the United Nations, and our Organization, was held in Mexico in October 1970. Its central topic—the training

²¹ Resolution IX. *Official Document PAHO 104*, 64.

²² *Scientific Publication PAHO 218* (1971).

²³ Resolution IX. *Official Document PAHO 99*, 59 (1970).

²⁴ *Scientific Publication PAHO 194* (1969).

²⁵ Seminar on Administrative Methods for Vaccination Programs. The report was published in Spanish in *Scientific Publication PAHO 187* (1969).

of the various specialists who have a part in bringing back to the social environment, as active participants, those who have suffered damage to the motor system, the sensory organs, or other systems of the body—explains why the Conference was attended by physicians, physiotherapists, psychologists, social workers, administrators, and occupational therapists. Some countries of the Americas have resources which, with international cooperation, could be useful in providing this education and training.

The vast majority of the directors of the 11,000 hospitals in Latin America have not been trained for this work, either in the university or through special courses. It was this that prompted PAHO to organize its program to disseminate the principles and functions of **hospital administration** and the role of the behavioral sciences and the application of quantitative methods to this field. A number of seminars have been held, and others are planned for the future. Another urgent task is to train teaching staff to continue this work in the countries. And another is to expand the role of the schools of public health in the organization of curative medicine. Without properly trained staff it will be very difficult to institute progressive patient care, an important improvement in the functional structure of medical care facilities. Finally, it is necessary to promote the establishment of a cohesive system for the diagnosis and treatment of patients by coordinating the considerable resources of the ministries of health, the universities, and the social security institutions.

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The Governments have expressed their interest in the strengthening of services to guarantee the **quality, efficacy, and safety of drugs**, in view of the increasing complexity induced by modern medicine. In order to assess and define this problem, the Organization sponsored a survey during 1970 which revealed that there were approximately 2,000 establishments of significant size producing pharmaceutical specialties in the Latin American and Caribbean countries. At the manufacturer's price level, their production amounts to \$1,234 million per year. The consumption of drugs in the same countries, estimated at the retail price, is \$1,950 million per year. Approximately \$3,371,500 per year is allocated to drug control, and 1,192 persons are employed in this work. However, a significant number of these professionals devote only part of their time to these activities.

The results of this survey were placed before the Seminar on Drug Control in the Americas held in Maracay, Venezuela, in November 1970. This Seminar, because of the caliber of its participants and of the consultants

appointed by PAHO/WHO, was able to examine the methods of analysis in the light of the latest advances and to define the responsibilities of the specialists and the Governments, including the matter of the frequency of adverse reactions to drugs. The lack of proportion between the substantial funds devoted to production and sales of drugs and the modest amounts invested in determining their quality and effectiveness indicates that there are possibilities of improving the financing of the latter. The manufacturer that is self-respecting and aware of its social function is the one which, without neglecting its own interests, shows the greatest concern for selling the public preparations that conform to the prescription and aid the recovery of the patient. There is an essential need to intensify the training of personnel, and for the latter to constantly renew its knowledge in order to keep up with the intensive research sponsored by this industry. There is also an urgent need for production technicians to perform periodic inspection of the various stages in the preparation of the drugs. The laboratories must be provided with equipment, materials, and supplies and their physical facilities must be improved. The laws are not always up-to-date nor do they always provide for education to make the consumer a responsible and active participant. Suffice it to bear in mind that a high proportion of the accidents sustained by children are due to the taking of excessive amounts of drugs or of poisonous household preparations which their parents leave within their reach.

It was considerations such as these that led the World Health Assembly and the Governing Bodies of PAHO to include in their policies the provision of advisory services to the Governments in this sensitive field which affects many of their activities. The standards recommended for the manufacture and quality inspection of drugs,²⁶ the proposed system for the certification of the quality of pharmaceuticals entering into international trade,²⁷ the incentives for the organization of quality control laboratories to serve one or more countries, and the center for international surveillance of adverse reactions to drugs are manifestations of the interest of Governments throughout the world in this problem.²⁸ They are all, in my opinion, a reflection of the movement taking shape to motivate the consumer so that he will abandon his passive role and claim his right to receive that which he was assured he was buying.

²⁶ Resolution WHA22.50 of the Twenty-Second World Health Assembly, and Annex 12, *Off. Rec. Wld Hlth Org.* 176, 24-25 and 99-104 (1969).

²⁷ *Ibid.*, pp. 104-105.

²⁸ Resolution WHA24.56 of the Twenty-Fourth World Health Assembly (1971).

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The profound socioeconomic changes taking place in the Region, the modifications of traditional values, and the extraordinary development of the information media have brought about a number of adaptive reactions in the communities, some of which are frankly pathological. It is the young who are the most sensitive to the changes, and it is in them that the implications for **mental health** are most apparent. Other high-risk groups, such as school-age children and the elderly, are also showing signs of the impact.

The principles and methods of epidemiology, applied to the natural history of mental disease, are clearly accepted today by Governments and institutions in the Hemisphere. The concepts of "community psychiatry" are being examined in universities and put into practice in various countries. Their underlying premise is that there are multiple causes in the etiology, pathogenesis, and evolution of psychic disorders and that community psychiatry should be able to operate on substantially the same principles as make it possible to apply an ecological approach to the interpretation of individual health and disease. Despite the tremendous progress of research on functions of the central nervous system, there are still large gaps in the understanding of the origin and interpretation of the facts. Such is the case with the relationships between malnutrition and mental development, which require clarification in at least three respects. First of all, we must adapt or develop behavioral tests that will serve as significant indicators of mental development and be applicable in a wide spectrum of cultures. Then, since it is doubtful that physiological tension affects all the areas of perception and judgment, it is necessary to devise ways of measuring particular aspects of this process and their relationship to malnutrition. Finally, it must be recognized that malnutrition is generally associated with cultural patterns and with a failure to adapt to the family and the environment that can itself affect intellectual growth. Accordingly, suitable techniques are required for distinguishing between nutritional and sociocultural influences and for evaluating the interaction of these two series of variables.

This complex problem was the subject of the Conference on Assessment of Tests of Behavior from Studies of Nutrition in the Western Hemisphere, held in Puerto Rico in October 1970 under the sponsorship of our Organization and the National Institute of Child Health and Human Development of the U.S. Public Health Service. Along with valuable contributions aimed at arriving at an interpretation of what is known today, new areas of multidisciplinary research were identified. We are hopeful that the publication on this Conference will be useful

in designing studies for advancing the understanding of the relationships between malnutrition and mental development.

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A survey was carried out on the measures which the Governments of the Americas are taking to control cigarette advertising. The results are contained in a document²⁹ submitted to the XVIII Pan American Sanitary Conference, which adopted Resolution XXXV³⁰ recognizing that **cigarette smoking** is a significant cause of pulmonary and cardiac disease, including bronchopulmonary cancer, chronic bronchitis, emphysema, and ischemic heart disease.

The most reliable comparative information on these diseases is contained in the report of the Inter-American Investigation of Mortality³¹ that was sponsored by PAHO. The report is a point of departure and provides valuable material for measuring the effects of activities aimed at reducing the number of cases and deaths. PAHO is collaborating with the Governments of eight countries included in this investigation in a survey on the use and abuse of cigarettes. The Conference gave this survey its support and suggested that similar surveys be carried out in all the countries in the Region interested in the problem.

* * *

We have maintained that there is no conflict between planning, an objective process, and **health education**, which is subjective because it deliberately aims at modifying certain customs and attitudes. Rather than being conflicting activities, they are mutually reinforcing because both are directed to individual and social well-being. We should bear in mind that the essential purpose of planning is to sow ideas and objectives and to reap such results as are permitted by cultural patterns, the economy, and available resources. Within this context, culture is understood to be the sum total of the way of life of the people, including their social, political, and economic organization and the characteristics of their thought, emotions, and interpersonal relations.

The outcome of any health plan—even the best formulated—will be very much in doubt if the human beings for whom it is intended do not know in advance the objective sought, the specific benefits to be derived, and above all, what cooperation is expected of them. The demand of the communities to participate in the decision

²⁹ Annex 5, *Official Document PAHO 108*, 393-396.

³⁰ *Official Document PAHO 104*, 91-92.

³¹ *Scientific Publication PAHO 151* (1967).

concerning everything that affects them and to contribute to its implementation appears to be a characteristic of our times. This means that their confidence must be won and consolidated through education, conceived as information for cooperation and action.

The conditions for introducing the principles and methods of education into the health planning process were the subject of a seminar held in Paracas, Peru, in 1969. The report of the seminar indicates a need to assess the educational component in planning. With this purpose, the Organization, in 1970, prepared a model which must be tested in various countries and certain projects, bearing in mind that if the "final behavior" or performance expected in preventive or curative action can be precisely determined, it will then be possible to estimate how much was accomplished. This implies a quantitative expression of change in terms of knowledge, attitudes, and practices relating to a given problem. In these three elements, the psychological, social, and cultural factors are interdependent.

* * *

The present volume of operations of the health services in the Americas—and that which we perceive for the future—explains the need for modern **systems analysis** in which manual work is replaced by electronic computation, unilateral observation by the teamwork approach, and specifically-oriented thought by the comprehensive view of each problem and its consequences.

As we have pointed out, the life sciences operate on the premise that there are multiple causes of normal and pathological states. We are far from understanding the interdependence of the factors conditioning these states. This is the great question around which present-day research in molecular biology and epidemiology revolves. It is another proper objective for the technique we have come to call systems analysis. We are convinced that the time has come to make widespread use of electronic data processing in the health institutions of the Americas. There is sufficient evidence to support this assertion. What needs to be done is to apply the system in line with the characteristics of each country and train the necessary specialists. With these purposes in view, we sought the advice of a group of experts,³² whose recommendations have been extremely useful in the performance of our responsibilities.

The **Computer Center for Health** was inaugurated in April 1970 in Buenos Aires, Argentina, thanks to the generous contributions of the Secretariat of State for

Public Health of that country and the National University of Buenos Aires. Here the programmers required by Latin America will be trained, methods appropriate to the nature of the various problems will be investigated, and, of course, requirements of agencies of the Government of the host country will be met. The contribution of the United Nations Development Program has been sought in order to expand the work of this Center.

A Computer Science Section has been established at PAHO Headquarters to serve the Organization and to furnish advisory services to the Governments. The most noteworthy example of the latter services is described in the preceding paragraph. The Inter-American Investigation of Mortality in Childhood, the statistics on health conditions in the Americas (1965-1968),³³ various linear programming problems for mathematical modeling for the Santa Lucía River basin project in Uruguay, and the textbook program are some of the activities in which this unit has participated. To this should be added, in the area of administration, the program budget, finance and accounts, personnel and payroll transactions, inventory control, and data on fellowships.

* * *

The catastrophe that befell the Republic of Peru on Sunday, 31 May 1970, surpassed all similar disasters in the recent history of the Continent. It affected an area of approximately 83,000 km² in the Departments of Ancash, La Libertad, and Lima—an area extending from the coast to the central mountain range. The number of persons involved in the disaster was 1,971,000, of whom 926,000 were living in an area where destruction was total or very great. The official reports speak of more than 50,000 dead and 20,000 missing. It is believed that the earthquake left more than 20,000 orphans or homeless persons in its wake, and the number of injured is estimated at 150,000.³⁴ It was too much tragedy for a single nation, whose Government with singular determination devoted itself immediately to emergency operations and planning for rehabilitation. World public opinion, along with expressing the feelings of brotherhood inherent in the human condition, mobilized resources which helped to mitigate the effects of this catastrophe. The XVIII Pan American Sanitary Conference heard the report of the Delegation of Peru and that on the work done by WHO and PAHO. Bearing in mind the lessons taught by this earthquake and by other disasters which have occurred with regrettable frequency in the Region, it adopted Resolutions XIX and

³² *Scientific Publication PAHO 207* (1970).

³⁴ *Official Document PAHO 108*, 456-459.

³³ *Scientific Publication PAHO 211* (1970).

XXX.³⁵ Special mention should be made of the Inter-American Emergency Aid Fund of the Organization of American States, of whose Committee, headed by the Secretary General of the OAS, the Director of the Pan American Sanitary Bureau is a member. The Committee placed the sum of \$100,000 at our disposal for the purchase of medical supplies, which was a valuable complement to the advisory services and materials provided by our Organization to the Government of Peru.

* * *

During 1970 the PAHO and WHO cooperated with the countries and territories of the Americas through 629 projects. A summary of what was accomplished in each of these projects constitutes Chapter IX of this *Report*. The other parts of the document contain a summary of the policy for each function or program and a description of the general or special activities carried out in conjunction with the infrastructure or health services of the Governments. We have attempted in this Introduction to identify

³⁵ *Official Document PAHO 104*, 72-73 and 84-85.

certain areas, point out their significance, and perceive the future. As in previous years, it is a pleasure to acknowledge the understanding with which the authorities have accepted our cooperation. Owing to the diversified definition of health today, it is understandable that the WHO and PAHO have direct relations with various ministries or departments, universities, and other institutions in each country. They also maintain relations with a large number of the specialized organizations or agencies of the United Nations and the Inter-American System, as well as with voluntary and private groups. All of these relationships are characterized by cordial teamwork based on a community of ideals and purposes.

* * *

The social phenomena of our times—the speeding up of the pace of change that pervades everything, from theoretical concepts of mathematics to industry and customs—makes even more apparent in our sphere of activities the urgent need to learn so that we can teach. As Unamuno so aptly said: “It is not bread, but yeast, that we ought to sell.”

I. PROTECTION OF HEALTH



In the malaria eradication program in Paraguay, a sprayman applies insecticide to furniture, as part of the extradomiciliary treatment of a rural house.

I. PROTECTION OF HEALTH

A. ERADICATION AND CONTROL OF DISEASES

MALARIA

Strategy reviews. The year 1970 was a very significant one for the malaria eradication programs in the Americas: the over-all strategy of eradication was re-examined in the light of the criteria established by the Director-General of WHO in the report presented to and approved by the Twenty-Second World Health Assembly. The progress of each country's program was reviewed from the technical, administrative, operational, and financial viewpoints and subsequently a new plan of operations was drafted for the future, taking into account the prospects of achieving malaria eradication within a time period set on a more realistic basis according to the conditions existing in the particular country. Eight country projects—those of Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, and Panama—were re-examined during the year by the specially organized strategy review teams. In the remainder of the countries a preliminary review was made by the national and PAHO project personnel in 1970, and a strategy review was planned for 1971.

Status of the programs. Of the 23 malaria eradication programs under way, one (Cuba) reached the final goal of eradication, one (Guyana) reached the consolidation phase in the entire country, five (Argentina, Brazil, Dominican Republic, Peru, and Surinam) increased the areas that were in the consolidation and/or maintenance phases, and three (Costa Rica, Panama, and Paraguay) made remarkable progress in the attack phase, showing good prospects of achieving malaria eradication within a given time limit. In the rest of the countries, the epidemiological situation remained practically the same as in 1969, and in some cases there was even a slight deterioration. The reasons for the slow progress of work

were principally technical for El Salvador, Guatemala, Honduras, Nicaragua, the western part of Venezuela, and parts of Colombia and Mexico; financial for Bolivia and Mexico; and operational and financial for Ecuador and Haiti.

Figures 1 and 2 and Tables 1 and 2 show the current status of malaria eradication in the Americas, by population and phase of the programs.

Of the 181.3 million inhabitants living in the originally malarious areas of the Hemisphere, 44.6 per cent (80.8 million) were in areas that had reached the maintenance phase of the program (eradication claimed); 22.4 per cent (40.5 million) were in consolidation-phase areas; and 33.0 per cent (59.8 million) were in attack-phase areas. Only 0.1 per cent (162,000 persons) were living in areas where field activities were suspended (preparatory phase). The corresponding figures for 1969 can be seen in Table 1.

The information on case-detection in the individual countries is set forth in Table 3.

Argentina continued to make progress in the program, the major part of its attack-phase area having been passed to the consolidation phase early in the year. Of the total

TABLE 1. DISTRIBUTION OF POPULATION OF ORIGINALLY MALARIOUS AREAS IN THE AMERICAS, BY PHASE OF PROGRAM, 1969-1970.

Phase	1969		1970	
	Population (in thousands)	%	Population (in thousands)	%
Total in originally malarious areas.....	176,325	35.9 ^a	181,257	35.8 ^a
Maintenance phase (eradication claimed).....	72,757	41.3	80,770	44.6
Consolidation phase.....	46,987	26.6	40,518	22.4
Attack phase.....	56,375	32.0	59,807	33.0
Preparatory phase.....	206	0.1	162	0.1

^a Based on estimated total population.

I. PROTECTION OF HEALTH: DISEASES

TABLE 2. STATUS OF MALARIA ERADICATION IN THE AMERICAS, BY POPULATION AND PHASE OF PROGRAM, 1970.

(Population in thousands)

Country or other political unit	Total population	Population of originally malarious areas									
		Total		Malaria eradication claimed (maintenance phase)		Consolidation phase		Attack phase		Preparatory phase or program not yet started	
		Total	%	Total	%	Total	%	Total	%	Total	%
Argentina.....	23,413	2,843	12.1	1,585	55.8	1,183	41.6	75	2.6	—	—
Barbados.....	253 ^a	—	—	—	—	—	—	—	—	—	—
Bolivia.....	4,943	1,800	36.4	—	—	1,389	77.2	411	22.8	—	—
Brazil.....	93,870	37,014	39.4	830	2.2	13,780	37.2	22,404	60.5	—	—
Canada.....	21,089 ^a	—	—	—	—	—	—	—	—	—	—
Chile.....	9,566 ^a	165	1.7	165	100.0	—	—	—	—	—	—
Colombia.....	21,780	12,418	57.0	—	—	8,382	67.5	3,874	31.2	162	1.3
Costa Rica.....	1,767	550	31.1	—	—	100	18.2	450	81.8	—	—
Cuba.....	8,553	3,009	35.2	3,009	100.0	—	—	—	—	—	—
Dominican Republic.....	4,011	3,983	99.3	3,593	90.2	280	7.0	110	2.8	—	—
Ecuador.....	5,888	3,262	55.4	—	—	1,286	39.4	1,976	60.6	—	—
El Salvador.....	3,512	3,064	87.2	—	—	—	—	3,064	100.0	—	—
Guatemala.....	5,170	2,363	45.7	—	—	—	—	2,363	100.0	—	—
Guyana.....	714	714	100.0	671	94.0	43	6.0	—	—	—	—
Haiti.....	4,867	3,588	73.7	—	—	—	—	3,588	100.0	—	—
Honduras.....	2,514	2,196	87.4	—	—	423	19.3	1,773	80.7	—	—
Jamaica.....	2,233	1,861	83.3	1,861 ^b	100.0	—	—	—	—	—	—
Mexico.....	48,314	23,917	49.5	—	—	11,226	46.9	12,691	53.1	—	—
Nicaragua.....	1,988	1,988	100.0	—	—	—	—	1,988	100.0	—	—
Panama.....	1,464	1,405	96.0	—	—	—	—	1,405	100.0	—	—
Paraguay.....	2,396	1,959	81.8	—	—	—	—	1,959	100.0	—	—
Peru.....	13,587	4,737	34.9	1,299	27.4	2,283	48.2	1,155	24.4	—	—
Trinidad and Tobago.....	1,158	998	86.2	998 ^b	100.0	—	—	—	—	—	—
United States of America.....	205,056	56,370	27.5	56,370 ^b	100.0	—	—	—	—	—	—
Uruguay.....	2,852 ^a	—	—	—	—	—	—	—	—	—	—
Venezuela.....	9,793	7,287	74.4	6,876 ^c	94.4	—	—	411	5.6	—	—
Antigua.....	63 ^a	—	—	—	—	—	—	—	—	—	—
Bahamas.....	144 ^a	—	—	—	—	—	—	—	—	—	—
Bermuda.....	51 ^a	—	—	—	—	—	—	—	—	—	—
British Honduras.....	120	120	100.0	—	—	50	41.7	70	58.3	—	—
Canal Zone.....	51	51	100.0	—	—	51	100.0	—	—	—	—
Dominica.....	74 ^a	18 ^d	24.3	18 ^b	100.0	—	—	—	—	—	—
Falkland Islands.....	2 ^a	—	—	—	—	—	—	—	—	—	—
French Guiana.....	45	45	100.0	27	60.0	15	33.3	3	6.7	—	—
Grenada and Carriacou.....	106 ^d	36	34.0	36 ^b	100.0	—	—	—	—	—	—
Guadeloupe.....	335 ^d	293	87.5	293	100.0	—	—	—	—	—	—
Martinique.....	333 ^e	207	62.2	207	100.0	—	—	—	—	—	—
Montserrat.....	15 ^a	—	—	—	—	—	—	—	—	—	—
Netherlands Antilles.....	218 ^a	—	—	—	—	—	—	—	—	—	—
Puerto Rico.....	2,800	2,600	92.9	2,600 ^b	100.0	—	—	—	—	—	—
St. Kitts, Nevis, Anguilla.....	56 ^a	—	—	—	—	—	—	—	—	—	—
St. Lucia.....	112 ^d	96	85.7	96 ^b	100.0	—	—	—	—	—	—
St. Pierre and Miquelon.....	5 ^d	—	—	—	—	—	—	—	—	—	—
St. Vincent.....	95 ^a	—	—	—	—	—	—	—	—	—	—
Surinam.....	376	242	64.4	178	73.6	27	11.2	37	15.3	—	—
Virgin Islands (U.K.).....	9 ^e	—	—	—	—	—	—	—	—	—	—
Virgin Islands (U.S.A.).....	58 ^e	58	100.0	58 ^b	100.0	—	—	—	—	—	—
Total.....	505,819	181,257	35.8	80,770	44.6	40,518	22.4	59,807	33.0	162	0.1

— None.

^a Country estimates provided by the malaria eradication program.^b Population in areas where eradication of malaria has been certified by PAHO.^c Includes an area with 5,140,197 inhabitants where eradication of malaria has been certified by PAHO.^d 1969 figures.^e 1968 figures.

Voluntary collaborators play an important role in all malaria eradication programs, taking blood smears to detect malaria cases and distributing antimalaria drugs. The voluntary posts are visited periodically by the program evaluators, who check on their activities and supply their materials. Below: Voluntary collaborator in a Costa Rican village. Right: Program evaluator takes blood sample in Mexico.



population in the malarious areas, 55.8 per cent was in the maintenance phase, 41.6 per cent in the consolidation phase, and only 2.6 per cent in the attack phase. Eighty-six malaria cases were found among 95,410 blood smears examined during the year; 70 of the cases were detected in the consolidation-phase area, seven in the maintenance area, and nine in the area under attack. The epidemiological situation appeared to be very favorable for the early eradication of the disease, as the risk of importation of cases from the neighboring countries had practically disappeared.

In *Bolivia* financial difficulties continued to be serious in 1970, obliging the Malaria Eradication Service to limit the scope of its activities in the attack operations as well as in malaria surveillance. The number of houses sprayed was reduced from 43,232 in the first cycle to 20,441 in the second, and the evaluation and field supervision activities were also considerably reduced because of the shortage of funds. The further deterioration of the malaria situation was evidenced by the increase in cases

from 4,413 in 1969 to almost 7,000 in 1970. The Organization, in addition to providing advisory services, assisted with a special field trial of mass administration of chloroquine, primaquine, and pyrimethamine in seven operational areas in the south with a total population of 16,445. The drugs were given in three days as curative treatment and were to be repeated every 60 days from September 1970 to March 1971.

Brazil continued to make progress in its eradication program, having transferred 79 municipalities with 1,099,000 inhabitants from the attack to the consolidation phase. In addition, 75 municipalities with 817,365 inhabitants were considered to have interrupted transmission and were placed under observation without insecticide protection. During the year 2,030,459 blood smears were examined, among which 54,644 malaria cases were found. In comparison with 1969, there was a reduction in cases and in the slide positivity rate in the country as a whole. On the other hand, the reorganization undertaken by the Malaria Eradication Service and the reduction of the malaria

TABLE 3. MALARIA CASE-DETECTION IN THE AMERICAS, BY COUNTRY AND PHASE OF PROGRAM, 1970.

Country or other political unit	Total		Maintenance phase		Consolidation phase		Attack phase		Non-malarious areas	
	Slides examined	Positive cases	Slides examined	Positive cases	Slides examined	Positive cases	Slides examined	Positive cases	Slides examined	Positive cases
Argentina.....	95,410	86	40,225	7	47,206	70	7,846	9	133	—
Bolivia.....	167,265	6,562	—	—	32,003	1,259	135,019	5,532	243	71
Brazil.....	2,030,459	54,644	21,287	8	709,526	560	1,269,080	52,452	30,566	1,624
Colombia.....	685,412	32,272	—	—	375,073	4,885	305,408	27,004	4,841	383
Costa Rica.....	195,484	350	—	—	33,637	26	161,665	290	182	34
Cuba.....	584,084	1	375,661	1	—	—	—	—	208,423	—
Dominican Republic.....	628,221	161	456,957	2	69,988	—	101,224	159	52	—
Ecuador.....	360,879	28,375	—	—	142,216	4,299	218,663	24,076	—	—
El Salvador.....	572,373	45,436	—	—	—	—	553,965	44,960	18,408	476
Guatemala.....	447,706	11,044	—	—	—	—	445,128	10,841	2,578	203
Guyana.....	63,623	18	17,637	1	45,986	17	—	—	—	—
Haiti.....	357,366	10,658	—	—	—	—	357,366	10,658	—	—
Honduras.....	357,436	34,537	—	—	35,673	611	320,019	33,837	1,744	89
Jamaica.....	39,817	2	39,817	2	—	—	—	—	—	—
Mexico ^a	1,659,861	55,218	—	—	530,034	3,573	1,112,460	51,201	17,367	444
Nicaragua.....	281,386	27,260	—	—	—	—	281,386	27,260	—	—
Panama.....	237,477	4,584	—	—	—	—	237,477	4,584	—	—
Paraguay.....	157,587	1,429	—	—	—	—	156,486	1,421	1,101	8
Peru.....	310,237	4,494	33,681	234	112,392	253	164,164	4,007	—	—
Trinidad and Tobago.....	25,301	1	25,301	1	—	—	—	—	—	—
United States of America ^a	1,531 ^b	3,133	—	—	—	—	—	—	1,531	3,133
Venezuela.....	271,474	15,145	180,710	2,753	—	—	88,424	11,789	2,340	603
British Honduras.....	15,522	33	—	—	2,825	5	12,697	28	—	—
Canal Zone.....	35,462	57	—	—	35,462	57	—	—	—	—
Dominica.....	—	—	—	—	—	—	—	—	—	—
French Guiana.....	8,237	117	1,043	53	137	19	7,057	45	—	—
Grenada.....	644	—	644	—	—	—	—	—	—	—
Guadeloupe.....	56,215	—	55,196	—	—	—	—	—	1,019	—
Puerto Rico.....	—	39	—	39	—	—	—	—	—	—
St. Lucia.....	—	—	—	—	—	—	—	—	—	—
Surinam.....	48,702	1,019	—	—	25,810	84	20,615	886	2,277	49
Total.....	9,695,171	336,975	1,248,159	3,101	2,197,968	15,718	5,956,239	311,039	292,805	7,117

— None.

... Data not available.

^a January–November.^b Only those examined at the Center for Disease Control.

budget by 6.2 per cent at the beginning of the year and by a further 10.7 per cent in mid-year made it difficult for the Service to carry out the planned program. In December a team of officials of the Government and the participating international agencies made a review of the program and agreed that the malarious area would be divided into two parts as a basis for applying the most practical attack measures. In one part, containing 75 per cent of the population of the area, field operations will be intensified to achieve eradication within the shortest possible time limit. In the other part, with 25 per cent of the population, appropriate protection will be given to the urban centers and towns and pilot projects will be undertaken in the Amazon region to investigate the response of malaria to various attack measures.

Malaria transmission in *British Honduras* was virtually interrupted, but a limited spraying program had to be maintained to prevent possible outbreaks due to sources of infection imported from neighboring countries. During the year 15,522 blood smears were examined and 33 malaria cases were found, four of them imported and the rest locally infected.

In the *Caribbean area*, Haiti continued to record malaria transmission and there was even an increase in incidence in 1970. However, transmission was generally restricted to certain areas where complementary measures could effectively be applied. For the first time since the start of the program, the spraying cycle was carried out on time in the second half of the year. It is expected that the consistent application of attack measures in the fu-

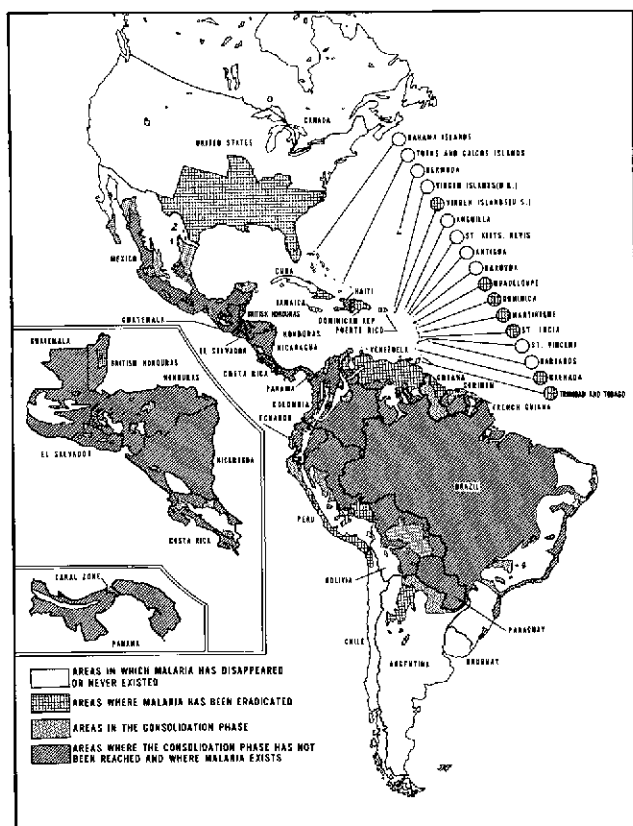


FIG. 1. Status of the malaria eradication campaign in the Americas, December 1970.

ture will further restrict the foci of infection. The Dominican Republic maintained its malaria-free status, except for two foci situated at the border with Haiti. The population in the maintenance-phase area was increased during the year from 5.1 to 90.2 per cent of the total of the originally malarious areas. Nevertheless, certain preventive measures will have to be continued in limited areas along the border for as long as malaria exists in Haiti. Cuba had completed its third year of malaria surveillance without discovering autochthonous cases, and the entire country was therefore placed in the maintenance phase. The other Caribbean countries and territories maintained their malaria-free status.

In *Central America*, all five countries completed the last year of the coordinated three-year plan. Costa Rica continued to make progress and recorded a further reduction in malaria incidence: 350 cases were detected during the year, as compared with 688 in 1969. An outbreak that occurred in Chacarita during September-October produced more than a third of all the cases recorded in the country, but it was brought under control by emergency measures. A new plan was drawn up to continue the attack measures for two years more in order to eliminate

the remaining infection foci. In El Salvador, Guatemala, Honduras, and Nicaragua the problems of vector resistance to DDT and of the population's low acceptance of mass drug treatment continued to be the main obstacles to further progress. Upon completion of the strategy reviews, the Governments decided to use propoxur (OMS-33) in place of DDT in areas where the vector was resistant to the latter insecticide. A new plan of operations was drawn up by each Government in line with the policy of a long-range malaria eradication program. In El Salvador and Nicaragua the use of OMS-33 was initiated in 1970 with encouraging results, although it was too soon to evaluate its efficiency.

In *Colombia* the over-all epidemiological situation remained practically unchanged. The zones where the country's land-settlement schemes were being carried out continued to produce almost 60 per cent of the malaria cases recorded, although they contained less than 6 per cent of the population of Colombia's malarious areas.

Ecuador achieved a general improvement in spraying coverage as well as a reduction in slide positivity rates in both the attack-phase and the consolidation-phase areas. However, administrative and financial difficulties continued to impede the progress of the program.

In *French Guiana, Guyana, and Surinam* satisfactory results were obtained from the use of medicated salt. In French Guiana a medicated-salt plant was constructed in 1970 and the product was being distributed with regularity. Malaria transmission was practically interrupted, but great effort in the application of attack measures continued to be required because of the importation of cases from Brazil and the foci of infection remaining within the country. In Guyana the attack phase was concluded at the year's end, as no evidence was found to indicate any local transmission in the last two years. Attack measures will be continued on a limited scale in the frontier regions to prevent reinfection. Surinam made further progress in transferring to the maintenance phase the zones previously in the advanced consolidation phase. At the end of the year, 74 per cent of the population of the malarious areas were in the maintenance phase, 11 per cent in the consolidation phase, and 15 per cent in the attack phase.

Mexico continued the so-called "transitional period" activities in the first half of the year. In the second half, however, upon receipt of additional funds for the program, field operations were intensified along the Gulf of Mexico and the Yucatán Peninsula, principally to stamp out a serious outbreak in that region. Even with the budget increase, the program was still inadequately financed and the malaria situation showed further deteriora-

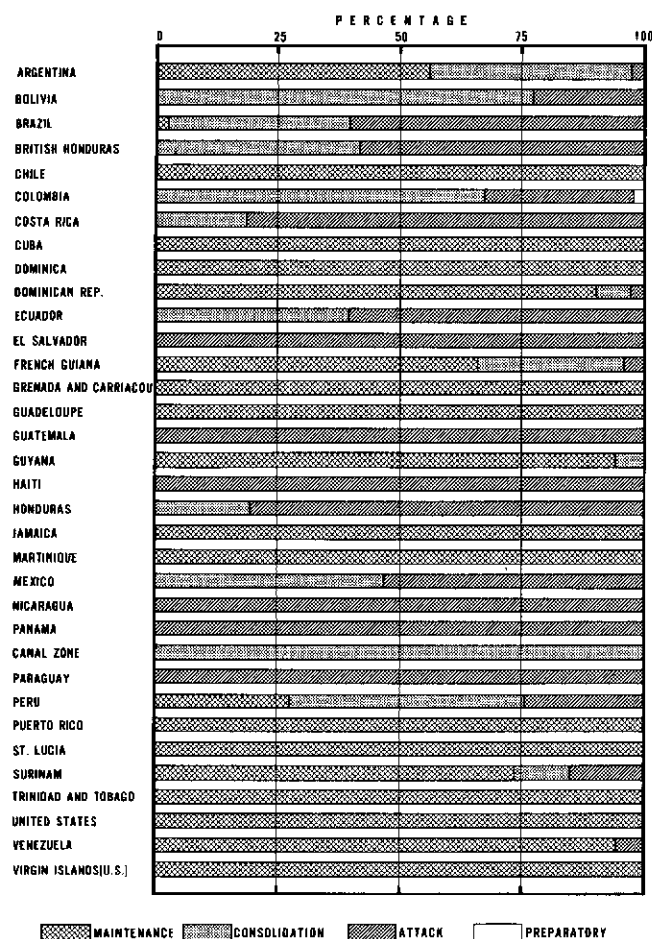


FIG. 2. Distribution of population in the originally malarious areas of the Americas, by phase of program, 1970.

tion, as evidenced by the increase in cases and the appearance of outbreaks. In the first 11 months, 55,218 cases were recorded and the positivity rate was 3.3 per cent (as compared with 44,328 cases and a 2.0 per cent rate in the same period in 1969).

Panama continued the second year of its three-year plan, with encouraging results. The over-all positivity rate showed the expected sharp reduction during the year. However, the reduction was less marked in some areas, especially along Lake Gatun and in the Chagres district, where additional efforts will have to be made to improve supervision and investigation.

Paraguay made significant progress in reducing the slide positivity rate, which dropped from 18.2 per cent in 1968 to 8.0 in 1969 and to 0.9 in 1970. Malaria cases, which had reached 50,304 in 1967, were cut down to 1,429 in 1970. The Government continued to accord high priority to the program and has assured sufficient financing for the future. Plans were being made to assign to

the Malaria Eradication Service more responsibility for the carrying out of general health services, as a step toward the organization of a malaria surveillance program coordinated with other health activities in the future.

In *Peru* an area of 3,040 km² with 57,705 inhabitants was passed from the attack to the consolidation phase, and 111,322 km² with 130,298 inhabitants were transferred from consolidation to the maintenance phase. With those changes, 24.4 per cent of the population of the malarious area was in the attack phase, 48.2 per cent in consolidation, and 27.4 per cent in the maintenance phase. However, a low level of malaria transmission continued to exist in the attack-phase area, and even a slight increase in malaria incidence was observed. In the maintenance area, two small outbreaks occurred but they were brought under control by the year's end. The malaria budget was increased by 23 per cent in 1970, and a further increase of 6 per cent was expected for 1971 and 1972.

The final report on the certification of the continental *United States of America, Puerto Rico, and Virgin Islands* as a country that had achieved malaria eradication was presented to the WHO Expert Committee on Malaria that met in Geneva in October 1970. The Committee approved the report and concurred with the proposal to include that country on the register of countries in which malaria has been eradicated. With that certification, nine political units in the Western Hemisphere appear on the WHO register.

In *Venezuela* there was no significant change in the status of the malarious area by phases. In the attack-phase area, however, the number of malaria cases increased considerably in 1970.

Technical meetings. A series of meetings of the representatives of PAHO, UNICEF, AID, and the U.S. Center for Disease Control were held during January and March to make the necessary arrangements and preparations for the strategy reviews of the malaria eradication programs in Central America, Panama, Haiti, and Ecuador. In August the Working Group on Coordination of Malaria Eradication Programs in Central America and Panama met in San José, Costa Rica, to discuss the action to be taken by the respective countries in the light of the strategy reviews.

A meeting was held in Panama, 24-28 August, to develop plans for an extended investigation to determine the effectiveness of aerial spraying of insecticides for the prevention of malaria. Participants included officials from several branches of the National Malaria Eradication Service and from the Gorgas Memorial Laboratory, the U.S. Army, the U.S. Public Health Service, and the Organization. The proposed investigation, which would be carried

out in areas of persistent transmission, would require the cooperation of all those agencies.

Border meetings of malaria eradication authorities were held by Colombia and Ecuador (29-30 April), Colombia and Venezuela (29-30 May), Brazil and Guyana (23 January), and Brazil and Paraguay (10-11 September).

The education and training activities in the malaria programs and those related to research are described in Chapters III and V of this *Report*.

YELLOW FEVER CONTROL AND AEDES AEGYPTI ERADICATION

Yellow Fever

Eighty-six cases of jungle yellow fever were reported in the Americas in 1970, or almost twice the number in 1969, as can be seen from Table 4. However, 87 per cent of the cases were found in a single country—Peru—where an epidemic outbreak occurred between December 1969 and May 1970. As in prior years, there were no cases of urban yellow fever.

The geographic distribution of cases is shown in Figure 3.

Bolivia reported one case in the Department of Chuquisaca and another in Santa Cruz Department.

The two cases in Brazil occurred in Pará State (Municipalities of Marabá and Portel).

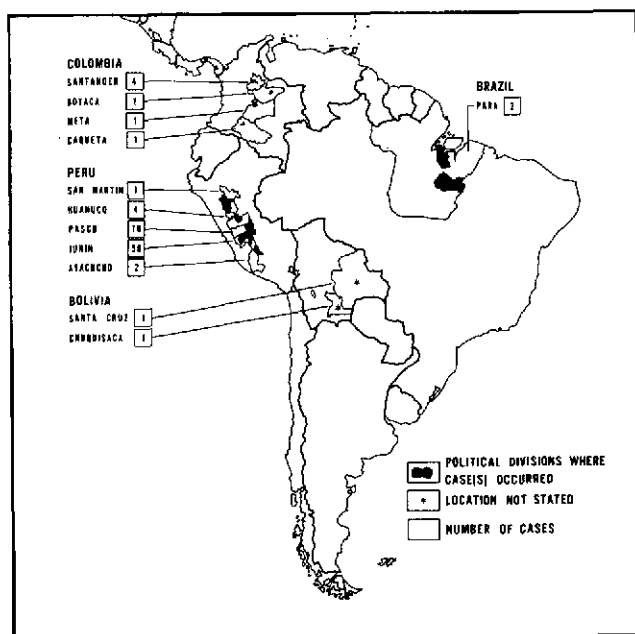


FIG. 3. Reported cases of jungle yellow fever in the Americas, 1970.

TABLE 4. REPORTED CASES OF JUNGLE YELLOW FEVER IN THE AMERICAS, 1966-1970.^a

Country or other political unit	1966	1967	1968	1969	1970
Argentina.....	51	1	—	—	—
Bolivia.....	69	—	27	8	2
Brazil.....	167	2	2	4	2
Colombia.....	3	5	11	7	7
Ecuador.....	—	1	—	—	—
Guyana.....	—	—	1	—	—
Peru.....	9	3	5	28	75
Surinam.....	—	—	1	1	—
Venezuela.....	5	—	—	—	—
Total.....	304	12	47	48	86

— None.

^a Based on official reports received at PASB through 5 May 1971.

In Colombia seven cases were reported: one in the Department of Boyacá (Municipality of Paz de Ariporo), another in Meta (Municipality of Restrepo), four in Santander (Municipalities of Barrancabermeja and Girón), and one in Caquetá (Municipality of Puerto Rico).

In Peru 75 cases appeared in the course of the year: two in Ayacucho Department (La Mar Province), four in Huánuco (Huamalies and Leoncio Prado Provinces), 58 in Junín (Satipo and Tarma Provinces), 10 in Pasco (Oxapampa Province), and one in San Martín (Huallaga Province). The epidemic that broke out in December 1969 and affected various localities in the Provinces of Oxapampa (Pasco), Satipo, and Tarma (Junín) produced 86 cases, with 61 deaths, up to May 1970. Because of the agricultural situation in the region, workers were brought in from the Andean highlands with no immunity to the disease. Immunization activities were stepped up, and by June 273,797 persons had been vaccinated against yellow fever.

The agreements between the Organization and the Governments of Brazil and Colombia for the production of 17D yellow fever vaccine and the provision of free diagnosis services to the countries of the Americas and other parts of the world remained in force. In the course of 1970, the Oswaldo Cruz Institute in Brazil produced 5,000,000 doses of vaccine, and the National Institute of Health of Colombia 1,629,000 doses. Of this total of 6,629,000 doses, 1,892,400 were distributed to other countries, including 432,000 to countries in Europe and Africa.

Aedes aegypti Eradication

The continental eradication campaign proceeded satisfactorily during the year, apart from one or two rein-

I. PROTECTION OF HEALTH: DISEASES

TABLE 5. STATUS OF THE AEDES AEGYPTI ERADICATION CAMPAIGN IN THE AMERICAS, 1970.^a

Country or other political unit	Date		Area assumed initially infested		Localities or other units inspected since beginning of campaign					Present stage of campaign
	Campaign begun	Latest reported inspection	Total (km ²)	Inspected (%)	Number	Found initially positive				
						Total	Treated			
							Total	Verified		
Argentina	June 1953	Dec. 1970	1,000,000	100.0	3,750	166	166	166	—	b, c
Barbados ¹	Mar. 1954	Dec. 1970	171	100.0	61	61	61	61	34	d, e
Bolivia	June 1932	Dec. 1970	100,000	100.0	282	65	65	65	—	b, c
Brazil	Jan. 1931	Dec. 1970	5,358,822	100.0	268,576	36,119	36,119	36,119	28	g, c, e
Chile	June 1945	Dec. 1970	104,373	100.0	301	48	48	48	—	b, c
Colombia	Nov. 1950	Dec. 1970	280,000	100.0	3,805	367	363	358	9	d, e
Costa Rica	April 1949	Dec. 1970	20,000	100.0	1,360	104	104	104	—	b, c
Cuba	Mar. 1954	Dec. 1970	100,000	37.4	1,306	1,060	995	963	256	d, e
Dominican Republic	Oct. 1952	Aug. 1962	42,020	80.4	1,420	351	351	319	15	d
Ecuador	June 1946	Dec. 1967	69,454	100.0	2,824	337	337	337	—	b
El Salvador	April 1949	Dec. 1970	18,675	100.0	1,061	218	190	190	25	g, c
Guatemala	Jan. 1949	Nov. 1970	36,423	100.0	2,485	140	140	140	—	b, c
Guyana ¹	Mar. 1946	Dec. 1970	4,662	100.0	93	77	33	33	20	d, e
Haiti	Oct. 1953	Sept. 1958	27,750	49.4	2,379	605	602	435	27	d
Honduras	Sept. 1949	Dec. 1970	69,929	100.0	621	82	72	72	25	g, c, e
Jamaica	Feb. 1950	Dec. 1966	11,424	100.0	14	12	2	2	2	d, h
Mexico	Jan. 1951	Dec. 1970	1,000,000	100.0	4,272	602	602	602	10	g, c, e
Nicaragua	Jan. 1950	Dec. 1970	65,263	100.0	3,126	18	18	18	—	b, c
Panama	Feb. 1949	Dec. 1970	56,246	100.0	2,853	44	44	44	—	g, b, c
Paraguay	Jan. 1948	Dec. 1970	200,000	100.0	1,561	98	98	98	—	b, c
Peru	Jan. 1940	Dec. 1964	638,000	100.0	4,320	191	191	191	—	b
Trinidad and Tobago	Jan. 1951	Dec. 1970	3,108	100.0	128	122	122	122	6	d, e
United States of America	May 1964	Mar. 1966	1,536,819	71.1	649	248	30	30	30	d
Uruguay	Oct. 1948	Dec. 1970	187,000	100.0	1,020	133	133	133	—	b, c
Venezuela ¹	June 1948	Dec. 1970	710,000	71.8	6,514	981	233	192	44	d, e
Anguilla	April 1953	Sept. 1966	88	100.0	19	19	19	19	18	d
Antigua ¹	Aug. 1954	Dec. 1970	440	100.0	58	55	—	—	—	d, i
Aruba	Mar. 1952	Dec. 1970	174	100.0	9	9	9	9	9	d, e
Bahamas	June 1954	Oct. 1969	11,405	1.3	13	10	10	10	10	d, h
Bermuda	Jan. 1951	1963	53	100.0	9	9	9	9	—	f
Bonaire	Sept. 1952	Dec. 1970	246	100.0	6	6	6	6	4	d, i
British Honduras	Oct. 1950	Sept. 1970	22,965	100.0	84	2	2	2	—	b, c
Canal Zone	1948	Dec. 1970	1,432	100.0	21	2	2	2	—	b, c
Cayman Islands	1969	Dec. 1970	259	100.0	3	3	3	3	2	d, e
Curaçao	Oct. 1951	Dec. 1969	448	100.0	5	5	5	5	5	d, i
Dominica	Feb. 1951	June 1965	751	50.0	136	66	66	66	16	d, h
French Guiana ¹	May 1949	Dec. 1970	91,000	100.0	222	55	55	55	6	g, e
Grenada ¹	Jan. 1957	Dec. 1970	311	100.0	12	12	1	—	—	d, i
Guadeloupe ¹	Nov. 1952	Dec. 1969	1,619	4.9	53	38	38	27	20	d, e
Martinique ¹	Nov. 1953	1969	1,000	100.0	34	21	21	21	19	d, e
Montserrat	May 1956	Dec. 1969	83	100.0	33	16	16	16	5	d, i
Puerto Rico	Sept. 1964	Mar. 1966	8,896	73.6	56	56	36	36	36	d
Saba, St. Eustatius	July 1958	Aug. 1959	31	100.0	16	15	15	15	—	d, h
St. Kitts, Nevis	April 1953	Sept. 1966	308	100.0	43	43	43	43	7	d
St. Lucia	May 1953	Aug. 1970	259	100.0	53	53	53	53	37	d, e
St. Martin	Dec. 1958	Mar. 1964	34	100.0	18	15	15	15	15	d, h
St. Vincent	Mar. 1953	Feb. 1965	332	100.0	13	13	13	13	—	d, h
Surinam ¹	Dec. 1962	Dec. 1970	48,000	37.1	77	77	70	70	63	d, e
Turks and Caicos Islands	—	—	430	—	—	—	—	—	—	d
Virgin Islands (U.K.)	Mar. 1960	Feb. 1963	153	74.6	23	23	23	23	8	d
Virgin Islands (U.S.A.)	Aug. 1964	Mar. 1966	344	100.0	3	3	3	3	3	d

— None or no activity.

... Data not available.

^a Based on official reports received at PASB through 30 April 1971.^b Eradication completed.^c With vigilance.^d Positive for *A. aegypti*.^e Program in operation.^f Negative for *A. aegypti*.^g Reinfestation with *A. aegypti* after eradication.^h Planning or reorganization stage.ⁱ Preliminary phase of operation or intensification stage.^j Campaign restarted or reorganized in 1968–1970.

festations that occurred in the border region between the United States of America and Mexico. Panama eliminated the reinfestation discovered in 1969, and Brazil gave considerable impetus to the campaign, which was on the point of succeeding in eliminating the vector. The programs in Antigua, the Cayman Islands, Grenada, Jamaica, and the Netherlands Antilles began to operate, while the Bahamas, the British Virgin Islands, Dominica, Montserrat, and St. Vincent made plans to start their campaigns in 1971.

Thirteen countries and territories continued to be free of *A. aegypti*: Argentina, British Honduras, Bermuda, Bolivia, Canal Zone, Chile, Costa Rica, Ecuador, Guatemala, Nicaragua, Paraguay, Peru, and Uruguay. Brazil, El Salvador, Honduras, and Mexico continued to be infested. The progress of the continental program has been slow owing to the existence of infested zones in the extreme north of South America, parts of the United States of America, and the Caribbean area.

The XVIII Pan American Sanitary Conference, in reviewing the status of *A. aegypti* eradication in the Hemisphere, expressed great concern about the evident danger arising from the existence of infested areas and recommended (Resolution XLIII): (a) the intensification of surveillance activities in the countries free of the vector; (b) the adoption of appropriate measures for the elimination of the mosquito in reinfested countries; and (c) the application by infested countries of the necessary measures to eradicate *A. aegypti*, with priority attention to those designed to ensure that the vector will not be exported to countries free of it.

The Organization continued with special interest to collaborate with the Governments of countries that have eradicated the vector, with a view to intensifying vigilance activities. In the course of 1970 surveillance plans were brought up to date in British Honduras, Costa Rica, Ecuador, Guatemala, and Nicaragua and encouragement was given to similar operations in other countries.

Study Group. Acting pursuant to Resolution XXIII of the XIX Meeting of the Directing Council (1969), the Organization convened in Washington, D.C., from 9 to 14 February 1970, a Study Group on the Prevention of *Aedes aegypti*-Borne Diseases, comprising professionals with experience in epidemiology, sanitary engineering, virology, public health administration, entomology, and anthropology. The Group reviewed in detail the strategy and methods for the prevention of these diseases in the Americas, and its conclusions and recommendations appeared in the report submitted to the 64th Meeting of the Executive Committee and to the XVIII Pan American Sanitary Conference (1970).



PAHO Study Group on the Prevention of *Aedes aegypti*-Borne Diseases.

On the basis of the general guidelines concerning cost-benefit analyses described in the report of the Group, a preliminary study was carried out on the subject by a firm of specialists and was submitted to the Conference under the title "Cost-Benefit Aspects of Preventing *Aedes aegypti*-Borne Diseases in the Western Hemisphere."

In Resolution XLIII, the Conference requested the Organization to continue to carry out the studies recommended by the Group.

Status of the continental campaign. The situation of the campaign in the countries and territories still infested is shown in Table 5 and Figure 4 and is summarized below.

In the *Barbados* campaign, which completed its second year of activity, four and a half cycles of treatment with Abate and Baytex were carried out. Twenty-seven of the 61 initially positive localities continued to show negative results for *A. aegypti*. In spite of certain difficulties encountered during the year, the house infestation index in the positive localities fell from 1.0 per cent in 1969 to 0.5 in 1970.

In *Brazil* the campaign was reorganized as a result of reinfestations in Belém (Pará), São Luis (Maranhão), and neighboring areas, and it was proceeding on an intensified scale, with coverage extended to the whole of the reinfested area. A number of localities were declared negative, and the vector density in localities still positive was significantly reduced.

The situation in *Colombia* improved considerably in Cúcuta and La Guajira, but it worsened along the Atlantic coast. Because of lack of funds, it was not possible to take

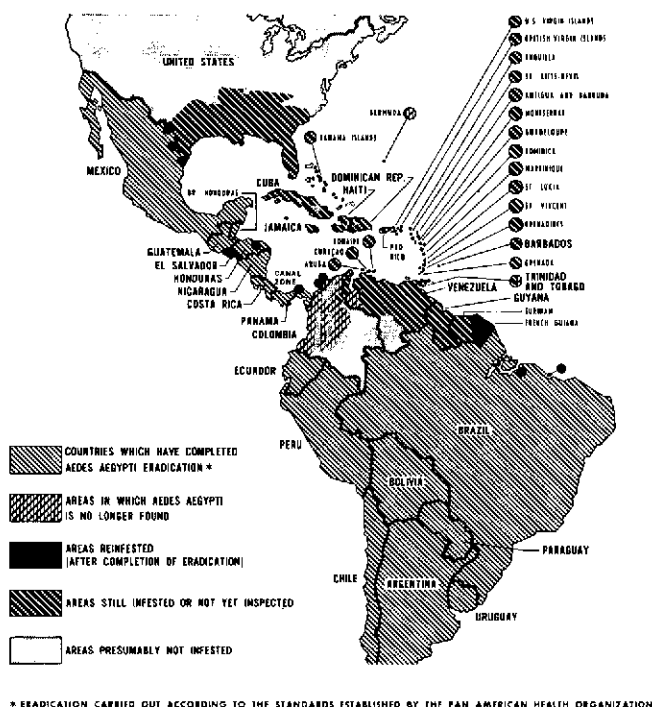


FIG. 4. Status of the *Aedes aegypti* eradication campaign in the Americas, December 1970.

adequate measures to combat the reinfestations in Barranquilla and Cartagena, and the vector spread in those two cities and also in a number of localities in the neighborhood of the former. Faced with that situation, in the second half of the year the Government increased the program funds and the Organization gave assistance in preparing a revised plan of operations, which was put into operation immediately.

Cuba's program was seriously delayed because of the time it took to change insecticides, after the vector showed resistance to DDT in Havana Province. Following the intensive training of personnel and the arrival of the new organophosphorus insecticides, activities were resumed toward the end of the year.

The *Dominican Republic* did not resume its campaign.

In *El Salvador* the program was in operation only in the city of San Salvador and the Ilopango international airport, and the results were limited. Preliminary arrangements were being made to organize a campaign on a national scale.

Considerable impetus was given to the activities in *Guyana* as a result of the reorganization carried out in 1969. In the areas covered by the campaign, infestation was eliminated in 13 of the 77 localities initially positive, and in 13 of them the infestation indices fell to less than 1 per cent. The house infestation index in the localities still positive fell from 4.2 per cent in 1969 to 1.1 in 1970.

Haiti did not resume the campaign.

In *Honduras* the limited campaign operations proved insufficient to prevent the spread of the vector, which had been reintroduced in the north of the country in 1968. However, good results were obtained in the areas treated, and in San Pedro Sula the infestation index dropped from 32.4 per cent in 1969 to 1.0 in 1970, and infestation was eliminated in nine of the 34 reinfested localities.

Jamaica set up its plan of operations for the national program and began activities in a circumscribed area near Kingston. The Government submitted an application for aid to the United Nations Development Program to supplement the funds regarded as necessary for the development of the campaign.

Mexico continued, as in the past few years, to find new foci of reinfestation along the border with the United States of America. In 1970, nine reinfested localities were discovered in the States of Coahuila and Tamaulipas, and great efforts were being made to eliminate the vector



An inspector of the *Aedes aegypti* eradication team in Guyana sprays insecticide on the outer surface of a water barrel (perifocal treatment method). He carries a small mirror for reflecting the rays of the sun and a flashlight for inspecting water deposits to detect those positive for *A. aegypti*.

once again. Despite the concern of both countries to find an effective solution to the border problem, the facts appeared to demonstrate that no effective result had been arrived at so far and that the situation was tending to deteriorate.

In *Panama* the efforts being made by the Government to eliminate *A. aegypti*, which had been reintroduced in 1969, were proving highly effective. Reinfestation was eliminated in the city of Colón and three neighboring localities, and three consecutive checks showed negative results. Inspection of the city of Panama also proved negative. The inspections continued throughout the rest of the country, as did consolidation of the results in the reinfested areas and the establishment of routine measures of vigilance in international ports and airports and at vulnerable points.

Trinidad and Tobago. Eradication was almost complete in the island of Trinidad, where in 1970 only five foci were found in Port-of-Spain and one in the Siparia District. *A. aegypti* continued to be found in vessels arriving from Caribbean ports still infested. Tobago continued to be regarded as negative.

The campaign in the *United States of America* remained suspended, both on the mainland and in Puerto Rico and the Virgin Islands.

In *Venezuela* limited activities were continued in the western region of the country.

France. The campaigns were actively pursued in Guadeloupe and Martinique and also in French Guiana, where the results were significant in all areas except the city of Cayenne.

Kingdom of the Netherlands. Toward the end of the year the campaign was begun in Aruba and Bonaire. In Curaçao, Saba, St. Eustatius, and part of St. Martin preparatory activities were undertaken. In Surinam, work was continued in the area of Paramaribo and along the coast. Administrative problems and transport difficulties, combined with heavy rains and other problems, hindered the progress of the campaign operations and the achievement of better results, especially in the city of Paramaribo, where the infestation index increased from 4.5 per cent in 1969 to 11.0 in 1970. However, in the other three areas covered (Commewijne and Marowijne; Saramacca, Coronie, and Nickerie; and South Paramaribo, Para, and Brokopondo) the indices fell from 15.0, 7.0, and 8.0 per cent in 1969 to 3.2, 1.0, and 1.5, respectively.

United Kingdom. St. Lucia obtained satisfactory results in its campaign, eliminating infestation from nine localities and reducing the infestation index to under 1 per cent in 13.

Antigua, Grenada, and the Cayman Islands (Grand Cayman and Little Cayman) started their campaigns during the year, and Montserrat embarked on the preparatory phase.

The Bahamas, Dominica, St. Vincent, and the Virgin Islands began to organize their programs.

The Turks and Caicos Islands, St. Kitts, and Nevis and Anguilla continued to be infested and had no campaigns.

DENGUE

No epidemic outbreak of dengue took place in the Americas in 1970, unlike 1969, when there was an outbreak in the Caribbean and in the northern part of South America. Cases continued to occur in the countries and zones infested by *Aedes aegypti*, the vector responsible for the transmission of dengue during the 1963 and 1969 epidemics. There was a sharp decline in the number of cases in relation to 1969 in the Dominican Republic (from 16 to 3), Grenada (81 to 15), Jamaica (545 to 31), Puerto Rico, where the reduction was drastic (from 16,665 to 136), and Venezuela, where 4,097 cases were reported in 1969 and none in 1970.

Although dengue has not been a serious disease in the Americas, the fact that it can cause hemorrhagic fever when two or more types of dengue virus are successively or simultaneously endemic (two types occur in the Caribbean area) makes this disease a serious health risk. The Organization has been paying close attention to dengue in the past few years, and on 15-16 January 1970 it convened the first meeting of the Scientific Advisory Committee on Dengue. The Committee considered the importance of the disease and the current status of vigilance, and made a series of basic recommendations for the establishment of a program of dengue surveillance in the Americas (see Chapter V). The PAHO Study Group on the Prevention of *Aedes aegypti*-Borne Diseases likewise dealt with dengue in its report.

SMALLPOX

A total of 1,795 cases of smallpox (5,586 less than in 1969) were reported in the Americas in 1970 (Table 6); 1,771 occurred in Brazil and the other 24 in Argentina. Of the cases in Argentina, one was imported and 23 were autochthonous, and all occurred in the Province of

I. PROTECTION OF HEALTH: DISEASES

TABLE 6. REPORTED CASES OF SMALLPOX IN THE AMERICAS, 1966-1970.^a

Country or other political unit	1966	1967	1968	1969	1970	Total
Argentina.....	21	23 ^b	—	1	24 ^b	69
Brazil.....	3,518	4,514	4,372	7,377	1,771	21,552
Colombia.....	8 ^c	—	—	—	—	8 ^c
French Guiana...	—	—	1 ^d	—	—	1
Paraguay.....	5	—	—	—	—	5
Peru.....	13	—	—	—	—	13
Uruguay.....	—	—	2 ^b	3 ^e	—	5
Total.....	3,565	4,537	4,375	7,381	1,795	21,653

— None.

^a Based on official reports received at PASB through 16 June 1971.

^b Includes one imported case.

^c Confirmed cases only.

^d Imported case.

^e Two imported cases.

Misiones. Brazil continued to be the only country in the Americas where smallpox is endemic.

The problem of smallpox has been a matter of concern to the Governing Bodies of PAHO and WHO for more than 20 years. In 1967 the Twentieth World Health Assembly invited Governments to increase their efforts to achieve eradication within the shortest possible time. In 1970 the Twenty-Third Assembly endorsed the recommendations of the Forty-Fifth Session of the WHO Executive Board concerning eradication programs, while the XVIII Pan American Sanitary Conference (Resolution XII) affirmed once again that the eradication of smallpox continued to be one of the top priorities for the Hemisphere and for the Organization. It urged countries to strengthen their programs and to intensify the production of freeze-dried vaccine, and expressed thanks for the donations made to the Organization's vaccine bank. In addition, it congratulated the Brazilian Government on the results achieved in its campaign and urged the Director of PASB to continue to take whatever measures were necessary to coordinate and support the efforts being made to eradicate smallpox.

In compliance with the Governing Bodies' recommendations, the Organization has signed agreements with the Governments of Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Paraguay, Peru, Uruguay, and Venezuela, under which it provides them with assistance in their eradication, maintenance, and vigilance campaigns. The agreements embody two types of priorities: (a) countries where smallpox still exists, and (b) countries that have eliminated the disease but need maintenance and epidemiological surveillance programs because they are adjacent to other countries where smallpox persists.

Between 1967 and 1970, the assistance given by

PAHO/WHO to the countries of the Americas amounted to \$2,852,233 and included the provision of technical advisory services, personnel training, and equipment and supplies.

Technical advice was provided by assigning epidemiologists and statisticians to assist the Governments in the organization, execution, supervision, and evaluation of programs, and especially in epidemiological surveillance activities.

Another aspect of technical advisory services was the cooperation that experts of the Connaught Laboratories of the University of Toronto, Canada, continued to give the countries through periodic visits to vaccine production laboratories, where they advise on production techniques. The vaccines produced nationally are sent to the Connaught Laboratories for purity and potency testing, in accordance with the agreement between the Laboratories and the Organization.

Technical and scientific information was distributed on a large scale to the various countries in the form of operational manuals, reports on epidemiology and control, teaching materials, and publicity.

Personnel training was carried out by means of courses and seminars to prepare technicians in clinical diagnosis and laboratory work, and by the award of travel grants for the study of methods and techniques used in the field. Fellowships were granted to production laboratory chiefs for observation and training at the Connaught Laboratories.

The Organization also provided countries with equip-

TABLE 7. SMALLPOX VACCINATIONS AND PRODUCTION OF FREEZE-DRIED SMALLPOX VACCINE IN COUNTRIES WHICH HAVE AN AGREEMENT WITH THE ORGANIZATION FOR THE ERADICATION PROGRAM, 1970.^a

Country	Number of vaccinations	Freeze-dried vaccine produced ^b (Doses)
Argentina.....	4,044,357	44,350,325
Bolivia.....	312,618	235,250
Brazil.....	30,654,265	72,298,050
Chile.....	820,144	721,000
Colombia.....	2,216,659	10,800,000
Cuba.....	39,102	—
Ecuador.....	635,050	1,800,000
Paraguay.....	273,718	—
Peru.....	1,371,956	6,227,800
Uruguay.....	369,802	—
Venezuela.....	874,119	—
Total.....	41,611,790	136,432,425

— None.

... Data not available.

^a Based on official reports received at PASB through 5 May 1971.

^b WHO accepts only freeze-dried vaccine for the smallpox eradication program.



Long lines of people await their turn at a vaccination center in the State of Rio de Janeiro, Brazil.

ment and supplies for their campaigns, including freeze-drying equipment, vehicles and launches, jet-injectors, film projectors, bifurcated needles, microscopes, drugs and other items for the production, distribution, and application of freeze-dried vaccine.

Shortage of budgetary funds has been a constant obstacle to the smallpox programs in most of the countries. Lack of administrative continuity is another problem occurring relatively frequently and affecting the targets programmed annually. In addition, failure to fulfill the minimum standards for vaccines established by WHO has caused the breakdown of certain programs and has made it necessary to repeat them. At the present time all but one of the laboratories producing freeze-dried vaccine have had their product approved by the Connaught Laboratories for the absence of contaminants and for satisfactory potency and stability.

The freeze-dried vaccine bank set up at the PAHO Zone V Office in Rio de Janeiro continued to receive contributions from the various producing countries for distribution to the other countries. The vaccine supplied to Middle America is prepared in eggs (instead of calves or sheep), so as to avoid the danger of reintroducing foot-and-mouth disease in that part of the Hemisphere. Table 7 gives details of the production of freeze-dried vaccine and the number of vaccinations in 1970 in the countries that have agreements with the Organization for the smallpox eradication program.

Status of the programs. *Argentina* began the third year of the vaccination program, with an operating budget of \$212,500 divided up among 13 provinces. A

full-time program chief was appointed and the cooperation of the provincial health services was enlisted. Of the country's 23 provinces, 17 have taken part in the program. The School of Public Health of the National University of Buenos Aires detailed a group of students to participate for a month in all stages of the program operations in one of the provinces. This personal experience will prove highly important once the students resume their various activities in different parts of the country.

The outbreak of smallpox in the Department of 25 de Mayo, Misiones Province, with 24 cases and one death, was the result of a case imported from Rio Grande do Sul, Brazil. This outbreak demonstrated the need for the maintenance and vigilance program to guard against reintroduction of the disease, which with the exception of one case in 1969 had been absent from Argentina since 1967.

As a result of the outbreak, 22,000 persons were vaccinated in an intensive program in the Departments of 25 de Mayo and Guaraní, both in Misiones (95 per cent of the estimated population of the area affected). Misiones Province had begun a smallpox vaccination program in 1968, but broke it off for lack of funds. It is hoped to complete it in the near future.

Production of freeze-dried smallpox vaccine (prepared in sheep), all of it of excellent quality, amounted in 1970 to 44,350,325 doses, of which 10 million were sent to the PAHO vaccine bank in Brazil.

Bolivia continued its maintenance program, administering smallpox vaccine combined with BCG to children under 15 years of age. The total number of persons

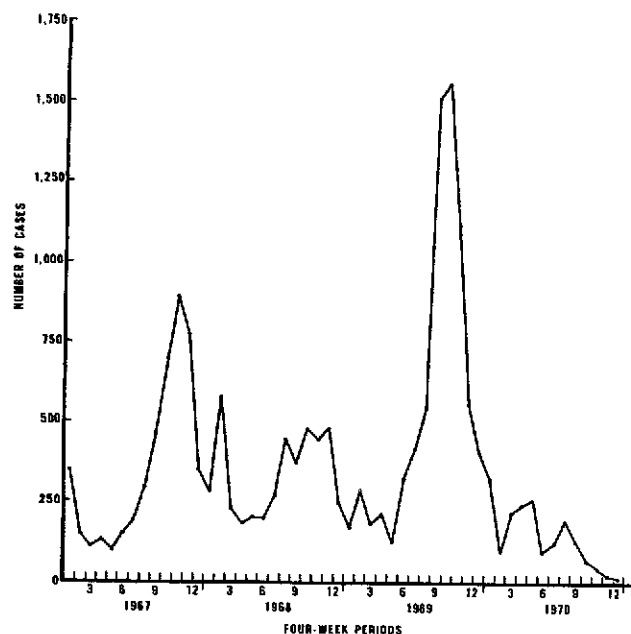


FIG. 5. Reported cases of smallpox in Brazil, 1967-1970, by four-week periods.

vaccinated during the year was 312,618 (70.7 per cent of the target) and included all age groups in Santa Cruz Department and part of the city of La Paz. Vaccinations carried out since 1968 covered 31.5 per cent of the population requiring vaccination. Production of freeze-dried vaccine amounted to 235,250 doses. Only one suspected case appeared, and samples were sent to the laboratory; the result was negative.

In *Brazil* the epidemiological picture of smallpox showed a marked change in comparison with previous years. In spite of the fact that surveillance activities were intensified throughout the country, only 1,771 cases were reported as compared with 7,377 in 1969. No new cases were registered after September, except for one in Guanabara that was left over from an outbreak discovered in that month and was being investigated (Figures 5 and 6).

It is significant to note that the interruption in transmission took place during a period when according to the seasonal curve there should have been a rise in incidence.

The 2,665 epidemiological surveillance units organized in the country regularly sent in their reports.

Of the target of 33 million vaccinations programmed for 1970, 30,654,265 persons were vaccinated, making a total of 76,780,430 vaccinations carried out since the program began (or 83 per cent of the population of Brazil, which according to the latest census numbered 92.3 million).

Vaccination in the Amazon region was begun on

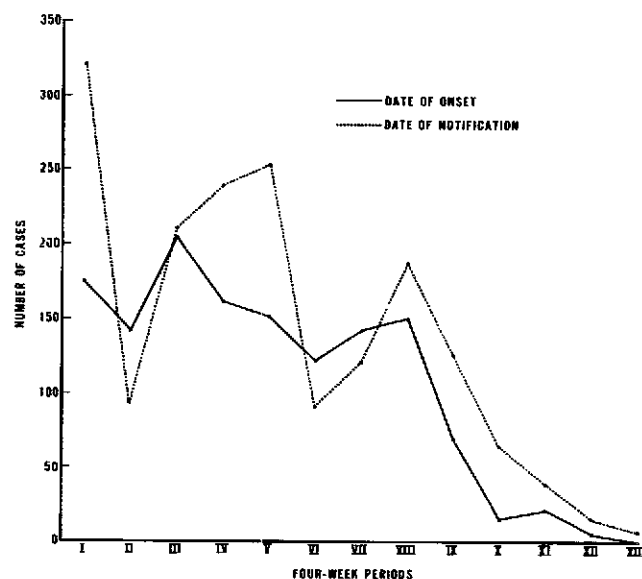


FIG. 6. Reported cases of smallpox in Brazil in 1970, by week of onset of disease and date of notification.

5 August, with the help of the brigades set up for the malaria eradication campaign. As many as 272 brigades were mobilized from strategically selected localities, and they covered the area in five months of uninterrupted activities. More than 400 craft of large, medium, and small tonnage were used for the transport of material and vaccines, vaccination brigades, and supervisory personnel, respectively.

In the three laboratories supplying antigen for the campaign, 72,298,050 doses of freeze-dried vaccine were produced.

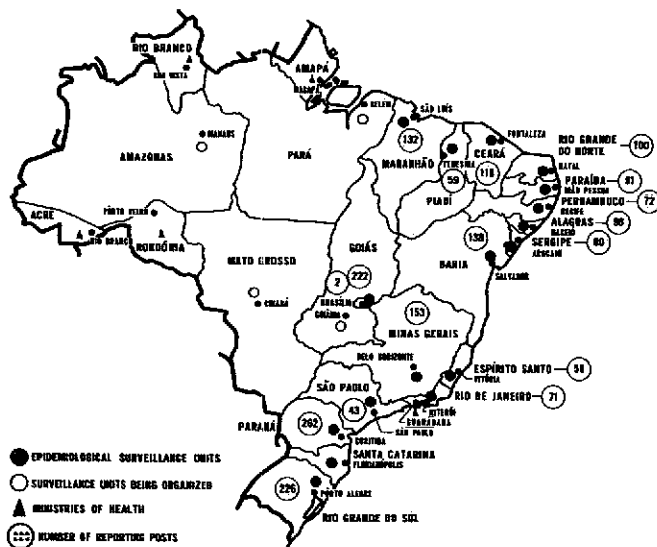


FIG. 7. Epidemiological surveillance program: Status of the reporting system, Brazil, October 1970.

Between 1968 and 1970, the year in which the activities were stepped up, the Government invested more than \$4 million in the program.

With the attack phase practically completed, special attention was devoted to epidemiological surveillance, and a large number of reporting units were established to carry it out (Figure 7).

Revaccination was begun in the northeastern states, where the population had been vaccinated during the early years of the program. In Guanabara State vaccination was organized in factories and also in *favelas*, since in one of these slums it had been found that about 39 per cent of the dwellers showed no vaccination marks.

Colombia continued its vaccination program regularly, with a coverage amounting to 76.1 per cent of the total population—an encouraging record from the viewpoint of the continental eradication plan. The malaria eradication services collaborated in smallpox vaccination, and other types of immunization were added to the program to establish a basis for general maintenance operations. During 1970, 2,216,659 persons were vaccinated, with takes of 92.2 per cent for primary vaccinations and 83.2 per cent for revaccinations.

The diagnostic laboratory received specimens from 21 suspected cases of smallpox, but all proved to be negative. The freeze-dried smallpox vaccine laboratory produced 10.8 million doses of vaccine (prepared in calves), all of it of excellent quality.

An agreement was signed with the Government of Cuba for the development of maintenance and surveillance programs. Smallpox was eradicated from Cuba in 1923, but it is estimated that only 3 per cent of the population is protected, and there is a risk of introduction of the disease.

Vaccination of the rural child population was begun, and as soon as the country begins the production of freeze-dried vaccine the child population in the cities will likewise be immunized. During the first quarter of 1970, 39,102 children under 2 years of age were vaccinated as part of the rural immunization program (29 per cent of the year's target).

In Ecuador there have been no cases of smallpox since 1964, and in the absence of an adequate health infrastructure maintenance is being achieved by means of vertical services. Smallpox vaccination is being carried out mainly on children under 5 years of age. By October 1970, 142,108 children had been vaccinated (38.1 per cent of the annual target). In addition, 492,942 persons in the other age groups were immunized in Azuay and Guayaquil. The percentage of takes was 95.6 for primary vaccinations and 46.7 for revaccinations.

The freeze-dried vaccine production laboratory resumed operations following the training of another technician, and it produced 1.8 million doses. All specimens from suspected cases sent to the laboratory proved negative.

In Paraguay there have been no cases of smallpox since 1966. In spite of efforts to introduce an intensive vaccination program, lack of funds has made it impossible to do so. Maintenance is effected through the general health services, which in 1970 vaccinated 273,718 persons, 70.6 per cent of them for the first time. The total of vaccinations administered since 1967, when the agreement with PAHO was signed, was 774,718 (approximately 35 per cent of the population).

It is essential to organize epidemiological surveillance to ensure protection against the reintroduction of smallpox such as occurred previously.

Peru has been free of the disease since 1966, when 13 cases were reported. In 1970 the attack phase was continued, and the number of vaccinators was doubled in order to speed up the program. That effort was still insufficient, as shown by the cumulative percentage of coverage from 1968 to November 1970—only 18.3 per cent. With the impetus given to the program during the year, it was possible to administer a total of 1,371,956 vaccinations (71.8 per cent of the 1970 target), with 97.7 per cent takes for primary vaccinations and 79.0 per cent for revaccinations.

The number of doses of freeze-dried smallpox vaccine prepared in the course of the year was 6,227,800. Samples of only two suspected cases were sent to the laboratory and in both cases the result was negative.

Financial difficulties and problems of administrative structure affecting the continuity of operations were the major obstacles to the development of the program.

The sporadic cases of smallpox that have occurred in Uruguay in the past few years were the result of cases imported from the endemic area of Brazil. In 1970 no cases were reported. The intensive vaccination program begun in the second half of 1968 was hampered by financial difficulties during the first two years. Nevertheless, activities were intensified in 1970, and 369,802 persons were vaccinated in 16 of the 19 departments in the country. Of these, 76,163 were primary vaccinations and 293,639 revaccinations. The total number of vaccinated and revaccinated persons amounted to 1,614,739 out of a population of 2,851,600 inhabitants.

Final preparations were made for beginning production of freeze-dried smallpox vaccine, with the Organization providing the necessary technical advisory services and equipment.

PLAGUE

During the twentieth century, plague has existed in 15 countries of the Americas, but since 1959 cases in humans have been reported only in Bolivia, Brazil, Ecuador, Peru, the United States of America, and Venezuela—where the disease exists in its sylvatic form.

The Organization, since its founding, has collaborated with the countries to solve the problem of plague, one of its main goals being control of the spread of the disease.

In the first part of the century, and up to 1959, when only 93 cases were reported, the incidence of plague had been steadily decreasing; but in 1960 there was a change in the trend with 258 cases recorded, and by 1966 the number had risen to 897. In 1967 there was a sharp drop to 223 and again an increase in 1968 and 1969, when the number of cases was 392 and 424, respectively. However, in 1970 there was another downward movement, with 314 cases reported to the Organization: 41 in Bolivia, 101 in Brazil, 31 in Ecuador, 128 in Peru, and 13 in the United States of America (Table 8 and Figure 8).

The 41 cases in *Bolivia* were attributable to outbreaks occurring in the localities of Los Altos, Altumcama, Cruz Pata, and Tigri Rumi (Caupolicán Province, Department of La Paz), in the neighborhood of Cantón de Apolo in the same province, where there had been a violent outbreak in 1969.

In *Brazil* the 101 cases registered marked a decided decline in comparison with the 285 and 293 in 1968 and 1969. In the State of Ceará there were 79 cases, in Bahia 11, in Pernambuco 10, and in Alagoas 1.

The Organization continued to cooperate with the Plague Research Center at Exu, Pernambuco, in its studies on the factors connected with focalization, per-

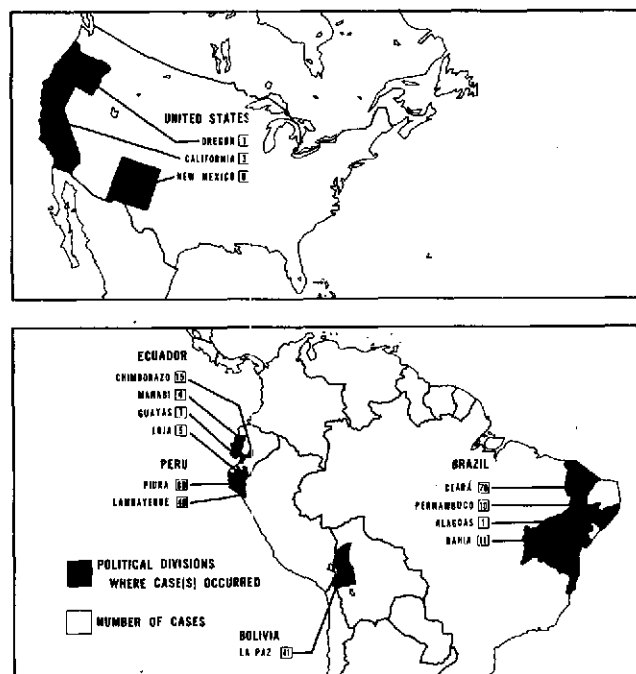


FIG. 8. Reported cases of plague in the Americas, 1970.

sistence, and epizootization of the disease. Chapter V of this *Report* gives information on these research activities.

The 31 cases in *Ecuador* did not represent an appreciable increase over 1968 (24) and 1969 (23). In Chimborazo Province there were 15 cases, in Guayas 7, in Loja 5, and in Manabí 4.

The control campaign continued to have the cooperation of the Organization, and three courses for training the field staff were held in Chimborazo, El Oro, and Loja. Activities were concentrated on the active plague foci and on areas where, according to the findings of surveillance and field research on the ecology of plague, such activities are necessary if the risk of human infection is to be reduced. By November, 71,209 houses had been disinfested

TABLE 8. REPORTED CASES OF PLAGUE IN THE AMERICAS, 1960-1970.^a

Country	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	Total
Bolivia.....	12	20	—	53	49	149	3	3	35	95	41	460
Brazil.....	28	106	36	39	285	119	48	157	285	293	101	1,497
Ecuador.....	77	105	326	258	194	369	171	19	24	23	31	1,597
Peru.....	139	68	164	72	125	200	669	41	45	8	128	1,659
United States of America.....	2	3	—	1	—	8	6 ^b	3	3	5	13	44
Venezuela.....	—	6	1	—	—	—	—	—	—	—	—	7
Total.....	258	308	527	423	653	845	897	223	392	424	314	5,264

— None.

^a Based on official reports received at PASB through 16 June 1971.

^b Including one imported case.

and 291,642 had been deratted (100 per cent of the target).

In *Peru* the number of cases increased considerably (128) as compared with 1969 (8), 1968 (45), and 1967 (41). The cases were found in the Department of Piura, Provinces of Huancabamba (77) and Ayabaca (3), and in Lambayeque Department, Provinces of Ferreñafe (19) and Lambayeque (29).

The Organization provided the Peruvian Government with short-term advisory services, equipment, and supplies for field and laboratory work. The program continued to be attached for administrative and financial purposes to the Piura-Tumbes Health Area, and its action was essentially local and longitudinal. Between January and October, 2,209 houses (88 per cent of the target) were disinfested and deratted and measures were taken for the control of 21 outbreaks of the disease.

In the United States of America, the 13 cases occurred in the States of California (3), New Mexico (9), and Oregon (1).

CHOLERA

In the course of the year the seventh cholera pandemic spread farther afield. The pandemic began in 1961, when the El Tor strain overflowed its endemic focus in the Celebes Islands of Indonesia, spread through Southeast Asia during that year and 1962, and pushed northward to reach Korea in 1963. In 1964 it invaded South Asia, and in 1965-1966 reached the Middle East.

The year 1970 witnessed the most widespread propagation of the pandemic (Table 9 and Figure 9), with epidemic outbreaks occurring both in the endemic zones and in countries which since 1964-1965 had been free of the disease (Korea, Sabah, Sarawak, and Brunei). Similarly, it spread through the Middle East and penetrated into Europe and regions of North, West, and East Africa.

In August the USSR notified WHO that the El Tor vibrio had been isolated in cases occurring in the region of Astrakhan and Odessa. In the same month the presence of cholera was reported also in Lebanon, Israel, Libya, and Trucial Oman. In September it continued to spread through the Middle East and attacked Syria, Jordan, and Saudi Arabia, and in the course of its propagation through North Africa it reached Tunisia and penetrated into West Africa, affecting Ghana, Guinea, Mali, and Sierra Leone.

In October it appeared in Turkey, reached Czechoslovakia, and spread through West Africa to Liberia and

the Ivory Coast; in November it invaded Togo and in December Nigeria and Dahomey.

In November and December cases were recorded in East Africa (Ethiopia, the French Territory of Afars and Issas, and Somalia) and the Middle East (Gaza). Imported cases were also reported in Japan, the United Kingdom, France, Upper Volta, and Kuwait.

The spread of the pandemic and the invasion of Africa represent a serious problem and raise the question of whether cholera might not appear without warning in the Americas. The XVIII Pan American Sanitary Conference expressed concern about the situation and recom-

TABLE 9. COUNTRIES NOTIFYING CASES FOR THE FIRST TIME DURING THE SEVENTH CHOLERA PANDEMIC IN 1970.

Country	Date of first notification	Total cases notified in 1970
<i>Africa</i>		
Dahomey.....	16 Dec.	24
Ethiopia.....	6 Nov.	850
French Territory of Afars and Issas.....	13 Nov.	6 ^a
Ghana.....	1 Sept.	213 ^b
Guinea.....	3 Sept.	2,000 ^c
Ivory Coast.....	20 Oct.	828
Liberia.....	6 Oct.	30
Libya.....	23 Aug.	28
Mali.....	24 Sept.	2,603
Nigeria.....	27 Dec.	19
Sierra Leone.....	29 Sept.	92
Somalia.....	5 Dec.	43
Togo.....	24 Nov.	75 ^d
Tunisia.....	30 Sept.	27
Upper Volta.....	17 Dec.	1 ^e
<i>Asia</i>		
Gaza.....	13 Nov.	239
Israel.....	21 Aug.	250
Japan.....	21 Sept.	5 ^e
Jordan.....	3 Sept.	3
Kuwait.....	5 Sept.	4 ^e
Lebanon.....	14 Aug.	54
Saudi Arabia.....	9 Sept.	266
Syria.....	2 Sept.	49
Trucial Oman.....	27 Aug.	8
<i>Europe</i>		
Czechoslovakia.....	26 Oct.	4
France.....	23 Nov.	1 ^e
Turkey.....	17 Oct.	1,185
United Kingdom.....	22 Sept.	1 ^e
USSR.....	10 Aug.	720

^a One imported case.

^b Twelve imported cases.

^c Not notified by the Government.

^d Two imported cases.

^e Imported cases.

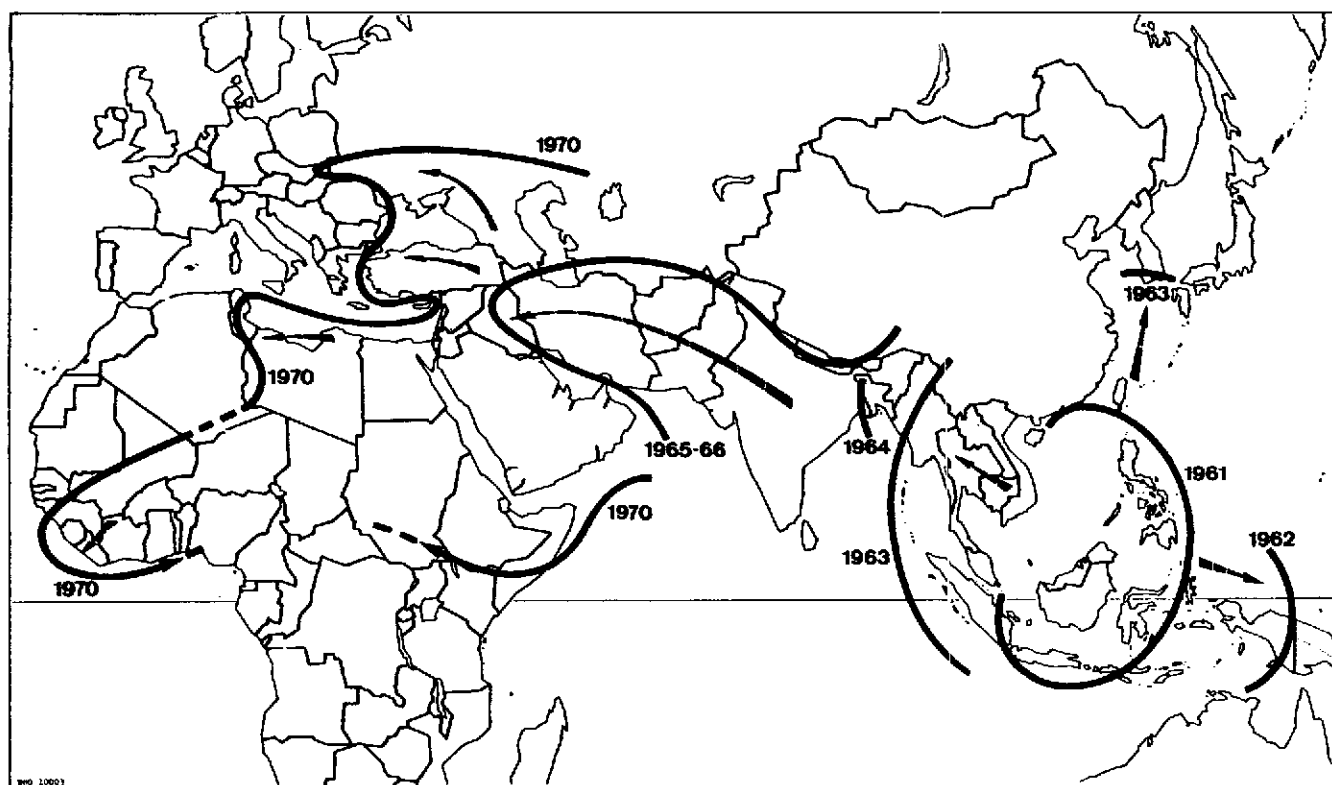


FIG. 9. Spread of the seventh cholera pandemic, 1961-1970.

mended (Resolution IX) that Governments intensify their surveillance work with a view to the early detection of the disease in the event it appears in the Americas.

The Organization distributed information on the cholera situation, on vigilance measures, and on control and the treatment of cases. In addition, with the collaboration of the U.S. Center for Disease Control, it organized a course on the bacteriological diagnosis of cholera, which was attended by professionals from 13 countries; it trained one of its officials in the preparation of vaccine in order to give assistance to Governments upon request; and it obtained supplies of vaccine and distributed them in answer to requests from the countries.

TUBERCULOSIS

Because of the extent of its prevalence, and the enormous reservoir of infected persons, tuberculosis continues to be an important and complex problem, with no prospect of an immediate solution. Tables 10, 11, and 12 show the number of reported cases and deaths, with rates per 100,000 inhabitants, in the periods 1958-1969

and 1964-1969 in the three regions of the Americas and by countries, respectively.

According to the orientation given to the program in recent years, control activities in 1970 were aimed at three immediate basic objectives: cutting the transmission chain, while at the same time alleviating the suffering of patients; increasing the biological resistance of the population; and preventing the appearance of the disease in persons exposed to special risk. To achieve these objectives it is essential to plan programs in accordance with the following principles: rigorous selection of priorities, proper distribution of resources, and coverage of the population at a useful level by preventive measures and treatment; integration with the basic health services; and use of simple, standardized, low-cost methods that can be applied by non-specialist personnel.

The limited resources available to deal with a problem of this magnitude have obliged health administrators to seek solutions based on a strict principle of selection among the various priorities competing with one another in the field of tuberculosis control. By means of specific Zone or country projects, the Organization has cooperated with the various Governments in the development of their programs, in accordance with the three basic priorities: epidemiological, sociological, and tactical.

TABLE 10. REPORTED CASES AND DEATHS FROM TUBERCULOSIS, WITH RATES PER 100,000 POPULATION IN THE THREE REGIONS OF THE AMERICAS, 1958-1969.

Year	Northern America				Middle America				South America			
	Cases		Deaths		Cases		Deaths ^a		Cases ^b		Deaths ^a	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1958	70,775	37.0	13,449	7.0	30,344	48.0	14,544	24.8	68,507	130.4	11,299	30.7
1959	64,138	32.9	12,439	6.4	35,609	54.0	14,299	23.6	72,021	131.5	11,445	30.2
1960	61,860	31.3	11,691	5.9	39,722	59.0	14,814	23.7	71,179	125.6	11,642	29.8
1961	59,722	29.7	10,708	5.3	37,233	53.9	14,278	22.3	73,428	128.1	11,496	28.5
1962	60,099	29.4	10,295	5.0	40,067	57.1	14,842	22.4	74,747	128.2	11,441	27.6
1963	59,784	28.8	10,070	4.9	43,702	59.6	14,401	21.3	71,811	131.9	11,716	27.4
1964	55,441	26.3	8,976	4.3	41,872	55.1	14,203	19.7	70,751	119.8	10,487	24.1
1965	53,840	25.2	8,633	4.0	45,529	58.9	13,960	19.1	72,585	109.8	10,306	24.1
1966	52,296	24.2	8,294	3.8	37,435	46.6	13,074	18.9	77,580	118.2	10,882	23.6
1967	50,261	23.0	7,550	3.5	40,266	48.6	11,780	17.4	73,562	110.9	10,580	22.3
1968	47,454	21.5	6,922	3.1	38,669	45.3	10,899	16.9	90,694	89.9	4,902	21.3
1969	43,565	19.5	...	...	39,242	44.5	...	...	62,069	83.3	...	...

^a Excluding Haiti; Jamaica in 1958-1963; Cuba in 1966 and 1968; Trinidad and Tobago in 1965 and 1968; and Guatemala in 1968.

^b Excluding Brazil and Chile.

^c Excluding Argentina, Bolivia, Brazil and Peru; Guyana in 1964-1967; and Paraguay in 1964.

Emphasis has been placed on ensuring that control programs concentrate on the groups in which the prevalence is greatest, in other words inactive and symptomatic cases and contacts. On this principle an effort is being made to extend the scope of operations, balancing costs against the benefits to be obtained without affecting the useful yield of activities.

By using specialist advisers in various Zone Offices, the Organization achieved closer cooperation with national health authorities, assisting them in extending preventive activities and patient care, in accordance with the principles referred to and using as a basis the general health service network, and helping them to improve the collection of epidemiological and operational data. In addition, technical assistance to Governments was increased with the participation of short-term consultants, who visited nine countries to evaluate the status of the programs, to study alternative ways of improving them, and to make concrete recommendations for the efficient use of resources. Training courses and seminars were also organized, and PAHO participated in the organization of diagnostic and control activities.

As far as its budget permitted, the Organization provided fellowships to national officials as well as equipment and supplies for campaigns.

Status of the programs. Below is a summary of the main activities carried out in 1970 in the individual countries, excluding activities relating to human resources, which are dealt with in Chapter III of this Report.

In Argentina a tuberculosis control program was or-

ganized in the metropolitan area of Buenos Aires, using the services of 13 hospital areas.

Bolivia signed an agreement with the Organization to intensify control activities. Vaccination of children under 15 years of age with BCG was continued. Demonstration centers were being organized at La Paz, Las Yungas, and Tarija.

An agreement was signed between the Government of Brazil and the Organization for the development of a verification area for tuberculosis control methods in a district of the city of Fortaleza, Ceará. In Rio Grande do Sul an experimental vaccination program using BCG intradermally was begun, and the Organization sent a short-term consultant to help with the preparation of a program designed to cover the entire state. Another consultant collaborated with the recently created National



Children receive BCG vaccination in a tuberculosis control campaign.

I. PROTECTION OF HEALTH: DISEASES

TABLE 11. REPORTED CASES OF TUBERCULOSIS AND RATES PER 100,000 POPULATION, BY COUNTRY, 1964-1969.

Country or other political unit	Number						Rates					
	1964	1965	1966	1967	1968	1969	1964	1965	1966	1967	1968	1969
<i>Northern America</i>												
Canada ^a	4,541	4,803	4,517	4,601	4,824	4,438	23.6	24.5	22.5	23.2	23.2	21
United States of America ^a	50,874	49,011	47,767	45,647	42,623	39,120	26.6	25.3	24.4	23.1	21.2	19
Bermuda.....	16	14	6	13	7	7	33.3	29.2	12.2	26.0	14.0	13
St. Pierre and Miquelon.....	10	12	6	...	...	...	200.0	240.0	120.0	...	...	...
<i>Middle America</i>												
Barbados.....	79	42	28	24	30	36 ^b	32.8	17.2	11.3	9.6	11.9	14
Costa Rica ^b	501	570	567	582	446	386	34.8	38.3	36.8	36.6	27.3	22
Cuba.....	3,909	4,958	2,846	2,950	3,310	3,513	36.1	65.0	36.5	37.2	41.0	42
Dominican Republic ^b	993	1,042	569	435	664	893	28.4	28.8	15.2	11.2	16.5	21
El Salvador ^{b,c}	4,544	4,823	5,595	4,897	4,424	4,399	160.9	218.7	245.7	200.2	163.7	154
Guatemala.....	3,714	6,121	5,524	5,360	6,411	3,059	86.3	137.9	120.7	113.6	131.8	61
Haiti ^b	3,862	3,514	3,391	3,224	2,251	4,901	89.6	79.9	75.6	70.4	48.2	102
Honduras ^{b,d}	2,601	2,321	2,183	2,322	2,311	1,708	208.7	203.4	160.6	142.7	142.0	109
Jamaica.....	362	301	356	307	369	348	20.8	16.8	19.4	16.4	19.3	17
Mexico ^b	15,834	16,070	10,306	14,683	14,150	15,424	38.4	37.6	23.3	32.1	29.9	31
Nicaragua.....	1,241	1,998	2,311	1,961	1,531	1,212	77.7	120.7	134.4	110.0	83.1	63
Panama.....	1,549	1,354	1,035	1,353	1,025	1,595	128.5	114.6	80.4	101.8	74.7	112
Trinidad and Tobago.....	312	135	796	21	199	185	32.8	13.9	80.0	2.1	19.5	17
Antigua.....	4	—	6	—	...	...	6.7	—	10.0	—	...	...
Bahamas.....	145	143	70	142	127	102	108.2	105.1	50.0	89.9	71.8	52
British Honduras.....	74	80	56	51	111	72 ^b	71.8	74.8	50.5	44.3	95.7	60
Canal Zone.....	17	19	22	12	31	24	31.5	35.2	39.3	21.4	55.4	46
Cayman Islands.....	—	...	...	...	...	...	...	...	...	...	...	...
Dominica.....	82	111	67	77	67	51	126.2	168.2	98.5	110.0	93.1	68
Grenada.....	...	...	...	...	...	28	...	...	...	...	...	26
Guadeloupe.....	187	75	162	181	148	214	60.7	23.8	50.8	56.6	46.5	66
Martinique.....	103	135	142	162	181	108	32.8	41.9	43.4	49.1	55.5	32
Montserrat.....	3	6	6	...	...	...	21.4	42.9	42.9	...	...	...
Netherlands Antilles.....	8	...	16	2	5	...	3.9	...	7.6	0.9	2.3	...
Puerto Rico.....	1,685	1,602	1,247	1,448	741	883	65.4	60.9	46.8	53.7	27.2	32
St. Kitts, Nevis, and Anguilla.....	16	19	7	15	13	13 ^b	28.1	33.3	12.3	26.3	23.2	23
St. Lucia.....	44	88	93	40	125	64	47.8	93.6	90.3	38.1	115.7	58
St. Vincent.....	...	...	19	...	...	24 ^b	...	...	21.3	...	...	25
Turks and Caicos Islands.....	—	...	11	10	...	...	...	...	183.3	166.7	...	...
Virgin Islands (U.K.).....	...	...	—	7	...	...	...	...	...	77.8	...	...
Virgin Islands (U.S.A.).....	3	2	4	...	...	...	7.3	4.7	7.4	...	...	...
<i>South America</i>												
Argentina.....	21,101	16,380	22,007	21,367	18,461	16,152	95.0	72.7	96.1	91.9	78.2	67
Bolivia ^{b,c}	1,471	2,485	1,956	1,099	2,460	2,947	34.8	57.3	105.0	123.2	124.9	146
Brazil.....	...	...	...	...	39,813	...	...	...	...	...	45.1	...
Chile.....	*	*	*	*	...	...	*	*	*	*	*	...
Colombia ^b	13,128	13,362	14,617	18,319	16,206	17,940	75.2	74.2	78.6	95.5	81.7	87
Ecuador ^b.....	...	5,930	6,170	4,715	4,560	...	...	115.1	115.8	85.6	80.1	...
Guyana.....	195	293	242	225	236	161	30.6	44.7	35.7	32.2	32.8	21
Paraguay ^c	1,447	1,127	1,358	1,415	1,337	1,801	131.5	106.2	124.3	125.2	115.4	149
Peru ^c	24,041	23,853	22,433	17,774	19,813	16,528	445.4	390.5	368.5	285.8	155.1	125
Uruguay.....	2,058	1,804	2,130	1,857	1,601	1,140	76.7	66.4	77.5	66.7	56.8	40
Venezuela ^c	7,121	7,192	6,514	6,639	5,911	5,262	123.8	120.0	104.7	102.0	88.4	76
Falkland Islands.....	...	2	1	...	—	...	...	100.0	50.0	...	—	...
French Guiana.....	27	12	2	10	13	6	79.4	34.3	5.4	26.3	32.5	12
Surinam ^c	162	145	150	142	113	132	54.9	48.3	48.2	39.1	30.1	28

— None.

... Data not available.

* Not notifiable.

^a Newly reported active cases.^b Cases are tuberculosis of the respiratory system in Colombia and Ecuador also in Costa Rica (1968), Dominican Republic (1967), El Salvador (1966), Haiti (1965 and 1966), Honduras (1964-1966), Mexico (1964 and 1966), and Bolivia (1964).^c Reporting area for case data, with following exceptions: Bolivia, 1964 and 1965; Peru, 1968 and 1969; Surinam, 1967, 1968, and 1969.

TABLE 12. REPORTED DEATHS FROM TUBERCULOSIS AND RATES PER 100,000 POPULATION, BY COUNTRY, 1964-1969.

Country or other political unit	Number						Rates					
	1964	1965	1966	1967	1968	1969	1964	1965	1966	1967	1968	1969
<i>Northern America</i>												
Canada.....	670	697	669	658	630	526	3.5	3.6	3.3	3.2	3.0	2.5
United States of America.....	8,303	7,934	7,625	6,901	6,292	...	4.3	4.1	3.9	3.5	3.1	...
Bermuda.....	2	2	...	—	—	...	4.2	4.2	...	—	—	...
St. Pierre and Miquelon.....	1	—	—	...	...	...	20.0	—	—	...	...	...
<i>Middle America</i>												
Barbados.....	14	8	10	10	19	11	5.8	3.3	4.0	4.0	7.5	4.3
Costa Rica.....	169	144	130	144	143	141	11.7	9.7	8.4	9.1	8.7	8.4
Cuba.....	1,159	1,048	...	941	...	...	15.2	13.7	...	11.9	...	...
Dominican Republic.....	249	252	358	341	315	262	7.1	7.0	9.5	8.8	7.8	6.3
El Salvador.....	448	457	410	365	429	444	15.9	15.6	13.5	11.6	13.1	13.1
Guatemala.....	1,255	1,215	1,207	1,117	...	...	29.2	27.4	26.4	23.7	...	...
Haiti.....	...	...	...	...	...	...	...	...	...	...	...	...
Honduras.....	191	183	174	142	112	...	9.1	8.4	7.7	6.1	4.6	...
Jamaica.....	92	69	67	64	74	...	5.3	3.9	3.6	3.4	3.9	...
Mexico.....	9,535	9,723	9,798	9,439	9,188	9,116	23.1	22.8	22.2	20.7	19.4	18.6
Nicaragua.....	92	107	85	...	111	...	5.8	6.5	4.9	...	6.0	...
Panama.....	285	247	261	269	272	247	23.7	20.9	20.3	20.2	19.8	17.4
Trinidad and Tobago.....	70	...	50	58	...	...	7.4	...	5.0	5.7	...	...
Antigua.....	4	...	4	...	...	...	6.7	...	6.7	...	...	...
Bahamas.....	8	9	...	...	...	...	6.0	6.6	...	...	...	...
British Honduras.....	12	11	10	15	7	...	11.7	10.3	9.0	13.0	6.0	...
Canal Zone.....	2	—	1	1	—	—	3.7	—	1.8	1.8	—	—
Cayman Islands.....	...	...	—	...	...	...	...	...	—	...	...	...
Dominica.....	...	...	...	13	9	14	...	...	...	18.6	12.5	18.9
Grenada.....	2	...	...	5	...	...	2.2	...	...	5.0	...	...
Guadeloupe.....	42	21	41	51	...	...	13.6	6.7	12.9	15.9	...	...
Martinique.....	...	...	...	39	46	...	...	...	...	11.8	14.2	...
Montserrat.....	3	...	—	...	...	...	21.4	...	—	...	...	...
Netherlands Antilles.....	...	...	5	...	...	...	...	...	2.4	...	...	...
Puerto Rico.....	498	456	442	...	417	328	19.3	17.3	16.6	...	15.3	11.9
St. Kitts, Nevis, Anguilla.....	...	10	13	11	...	6	...	17.5	22.8	19.3	...	10.7
St. Lucia.....	...	...	8	14	12	...	...	...	7.8	13.3	11.1	...
St. Vincent.....	3	...	...	...	...	...	3.5	...	...	...	...	...
Turks and Caicos Islands.....	...	...	...	...	...	...	...	...	...	...	...	...
Virgin Islands (U.K.).....	...	...	—	—	...	...	...	...	—	—	...	...
Virgin Islands (U.S.A.).....	1	—	...	...	...	...	2.4	—	...	...	...	...
<i>South America</i>												
Argentina ^a.....	...	2,652	2,406	2,742	...	...	...	14.5	13.6	12.3	...	...
Bolivia.....	...	...	...	...	...	...	...	...	...	...	...	...
Brazil.....	...	...	...	...	...	...	...	...	...	...	...	...
Chile.....	3,853	3,682	3,544	3,341	3,150	2,830	45.6	42.6	39.9	36.7	33.7	29.3
Colombia.....	3,839	3,930	4,168	4,265	...	...	22.0	21.8	22.4	22.2	...	...
Ecuador.....	1,153	1,160	1,302	1,193	...	...	23.2	22.5	24.4	21.7	...	...
Guyana.....	...	...	...	...	...	40	...	...	...	6.2	...	...
Paraguay ^a.....	...	289	241	271	290	291	...	27.2	22.1	24.0	25.0	23.5
Peru ^b	3,246	3,095	...	4,652	...	...	66.1	58.8	...	37.6	...	...
Uruguay.....	379	366	309	339	276	250	14.1	13.5	11.2	12.2	9.8	8.8
Venezuela.....	1,236	1,348	1,307	1,171	1,186	1,212	14.8	15.7	14.8	12.9	12.7	12.1
Falkland Islands.....	...	—	—	...	—	...	...	—	—	...	—	...
French Guiana.....	...	...	...	...	...	...	26.5	37.1	...	...	...	...
Surinam.....	18	18	11	...	...	...	5.5	5.3	3.1	...	...	...

— None.

... Data not available.

^a Registration area, for death data.^b Districts with medical certification, for death data, in 1964 and 1965.

Tuberculosis Division on the designing of a national bacteriological diagnosis network.

In *Central America*, a short-term consultant visited Costa Rica, El Salvador, Guatemala, Honduras, and Panama to give advice on ways of standardizing and modernizing laboratory techniques in the tuberculosis campaign. In Costa Rica, El Salvador, and Honduras the integrated control programs were extended and strengthened, and in Panama the extension of the tuberculosis program was begun throughout the Central Region, where training courses were given. In Nicaragua an integration plan was established for Region II, and in Guatemala the situation remained unchanged.

In *Chile* the program continued normally in accordance with the methodological principles established several years before. A short-term consultant evaluated the epidemiological activities and the program administration and found them to be efficient.

Colombia continued to develop its program with a well-designed epidemiological approach; its evaluation after two years of activity showed that the targets were being met and that a notable impact was being made on the population.

In *Cuba* the activities programmed for the year were completed and others were started in two verification areas: Havana and the north of Oriente Province.

The *Dominican Republic* signed an agreement with the Organization in August to institute a national control program, and a permanent consultant was assigned to the country.

Ecuador, with advice from PAHO, introduced a BCG vaccination program in July. Four basic units of the Ministry of Public Health integrated their activities with the Ecuadorian Antituberculosis League (LEA). In addition, an agreement for joint action between the National Department of Health and LEA was drawn up.

In *Haiti* vaccination with BCG was continued at Des Chapelles and in neighboring localities, and the possibility of organizing a tuberculosis program in Port-au-Prince was under consideration.

In *Mexico*, 1,917,062 children had been vaccinated in 20 states by August. The laboratory for the production of freeze-dried BCG vaccine was ready to begin production. In Ciudad Juárez (Chihuahua) a demonstration program was begun in March and will be extended later to other border cities; the program included BCG vaccination of children under 15 years of age, and X-rays and sputum examination of suspected cases. In April a verification program was begun in Puebla, including X-rays of children over 15 years and sputum examination of suspected cases.

In *Paraguay* BCG vaccination was carried out in the various health regions. A consultant was sent to evaluate epidemiological activities and the administration of the program, and another was assigned to assist with the organization of bacteriological diagnosis.

The program authorities in *Peru* established contact with the schools of medicine with a view to introducing the teaching of tuberculosis control into the study plans. Demonstration programs were under way in the hospital area of Lima, in Piura and Tumbes, and in the southwest health zone (the latter being an extension of the Tacna program). The national BCG vaccination campaign proceeded to the extent that budgetary possibilities allowed. A short-term consultant visited the country in the course of the year to evaluate activities.

LEPROSY

The information on the problem of leprosy in the countries of the Americas, as reported to the PASB in 1970, is set forth in Tables 13-17.

There were 195,085 cases of leprosy on the active registers of 31 countries and territories. Of this number, 139,967 (71.7 per cent) were under control (regular treatment or surveillance). Contacts in 22 countries and territories numbered 654,769, of which 237,760 (36.3 per cent) were under surveillance.

The data on the various clinical forms of the disease, available from 24 countries and territories, showed that of 186,459 cases, 53.8 per cent were lepromatous, 20.5 per cent tuberculoid, 21.3 per cent indeterminate, and 4.4 per cent of other clinical or nonspecified forms (Table 14).

Table 16 shows the new cases of leprosy reported in the six-year period 1965-1970. The highest case rates during that period were reported by French Guiana, Surinam, Guadeloupe, Martinique, Paraguay, and Guyana.

To support the Governments' efforts to improve the organization and administration of the control programs, the Organization continued to provide technical advice and assistance. Several countries took further steps to incorporate the leprosy service into the over-all public health program. A few countries had still not moved very far in that direction, and at least one country reverted from an integrated program to a vertical program.

A plan was being worked out in the Dominican Republic to extend the control program to include the rural areas in the north of the country. A course in preventive rehabilitation was held in Cuba, and in the State of São Paulo, Brazil, the name of the disease was officially

TABLE 13. LEPROSY CASES IN THE ACTIVE REGISTER, UNDER AND WITHOUT SURVEILLANCE, IN 31 COUNTRIES AND OTHER POLITICAL UNITS OF THE AMERICAS, 1970 OR MOST RECENT YEAR.

Country or other political unit	Date	Cases			Per cent under surveillance
		Total	Under surveillance	Without surveillance	
Argentina ^a	31 Dec. 1967	9,627	6,122	3,505	63.6
Barbados.....	31 Dec. 1968	45	45	...	...
Bolivia.....	30 June 1969	1,560	1,560	...	...
Brazil.....	31 Dec. 1968	112,184	80,215	31,969	71.5
Canada.....	31 Dec. 1967	31	28	3	90.3
Chile ^b	31 Dec. 1968	31	31	...	...
Colombia.....	31 Dec. 1969	16,499	14,438	2,061	87.5
Costa Rica.....	30 June 1970	504	504	—	100.0
Cuba.....	30 June 1970	4,536	4,332	204	95.5
Dominican Republic.....	31 Dec. 1969	1,610	1,563	47	97.1
Ecuador.....	31 Dec. 1968	1,585	1,563	22	98.6
El Salvador.....	30 June 1970	233	233	...	...
Guatemala.....	31 Dec. 1967	374	313	61	83.7
Guyana.....	31 Dec. 1968	754	545	209	72.3
Haiti.....	31 Dec. 1969	178	32	146	18.0
Honduras.....	31 Dec. 1969	274	166	108	60.6
Jamaica.....	11 Nov. 1967	1,015	610	405	60.1
Mexico.....	30 June 1970	13,496	9,055	4,441	67.1
Nicaragua.....	31 Dec. 1969	300	189	111	63.0
Panama.....	31 Dec. 1968	168	168	...	...
Paraguay.....	31 Dec. 1968	4,256	3,867	389	90.9
Peru.....	31 Dec. 1966	2,973	1,636	1,337	55.0
Trinidad and Tobago.....	31 Dec. 1968	1,461	671	790	45.9
United States of America.....	13 Feb. 1968	1,363	1,363	...	...
Uruguay.....	31 Dec. 1969	514	514	...	...
Venezuela.....	31 Dec. 1968	17,569	8,386	9,183	47.7
Antigua.....	31 Dec. 1967	68	68	...	...
French Guiana.....	31 Dec. 1967	948	821	127	86.6
Martinique.....	31 Dec. 1966	804	804	...	...
St. Lucia.....	31 Dec. 1968	112	112	...	...
St. Vincent.....	31 Dec. 1968	13	13	...	...
Total.....		195,085	139,967	55,118	71.7

— None.

... Data not available.

^a Data refer to Provinces of Buenos Aires, Córdoba, Entre Ríos, Formosa, Misiones, Salta, Santa Fe, and Tucumán.^b Easter Island only.

changed to Hanseniasis in an attempt to create a new and more realistic image of this ancient ailment, correcting the misconceptions of the past.

Trends of the disease are difficult to measure accurately without reliable and comparable data. Studies to find better methods of obtaining such data were undertaken by the Organization following the appointment of a Regional Adviser in Epidemiological Surveillance and of Zone epidemiologists. Emphasis will be placed on developing the means for assessing program effectiveness.

Proper diagnosis and classification by clinical form

are essential for the complete reporting of the disease and for comparable analysis. Methods for correlating more closely the clinical diagnosis and the histopathological examination of the case were under study.

A fully effective control program is one that encompasses diligent case-finding, early diagnosis and treatment, complete medical and rehabilitation services, and training and research at all levels. It is toward the goal of effective control that the Organization has directed its efforts in providing technical assistance to the countries of the Hemisphere.

Status of the programs. In *Argentina*, as of December 1967, there were 9,627 cases in the active register in eight provinces; 6,122 cases (63.6 per cent) were under surveillance. Of the 16,812 contacts registered in those provinces, 7,884 (46.9 per cent) were under surveillance.

In *Bolivia*, in mid-1969, there were 1,560 patients registered at the Recovery Center at Los Negros (Department of Santa Cruz) and in the Monteagudo (Chuquisaca) program, which has had the assistance of the German Mission for Aid to Leprosy Patients. Training courses for medical and paramedical personnel continued to be conducted in Monteagudo. The National Institute of Communicable Diseases continued negotiations with the World Food Program for a plan to provide food-assistance to patients and contacts, as an incentive for them to come regularly to the control service.

The cases registered in *Brazil* as of December 1968 numbered 112,184, with 71.5 per cent under control. Of the 428,376 registered contacts, 31.5 per cent were under control.

In *Colombia* the leprosy control program was reorganized into a vertical program. At the end of 1969 there were 16,499 registered cases (87.5 per cent under surveillance) and 46,884 contacts (51.4 per cent under surveillance).

The leprosy control service in *Costa Rica* continued to function efficiently as a vertical program under the Social Welfare Department of the Ministry of Public Health and with the assistance of the country's 19 health districts and the social security medical services. Short courses were conducted for newly graduated physicians going into rural practice. In mid-1970 there were 504 registered cases, all of which were under surveillance. Of the 2,842 contacts, 45.6 per cent were under surveillance.

The program in *Cuba*, fully integrated into the general health services, continued to be carried out by the dermatological services in the provincial capitals and in some of the regions, in accordance with uniform standards for diagnosis, treatment, and control. As of June 1970, 95.5 per cent of the 4,536 registered cases were under

TABLE 14. LEPROSY CASES IN THE ACTIVE REGISTER, BY CLINICAL FORM, IN 24 COUNTRIES AND OTHER POLITICAL UNITS OF THE AMERICAS, 1970 OR MOST RECENT YEAR.

Country or other political unit	Date	Clinical form					Per cent	
		Total	Lepromatous	Tuberculoid	Indeterminate	Other forms and not specified	Lepromatous	Tuberculoid
Argentina ^a	31 Dec. 1967	6,122 ^b	3,164	1,806	889	263	51.7	29.5
Barbados.....	31 Dec. 1968	45	3 ^c	...	...	42	6.7 ^c	...
Brazil.....	31 Dec. 1968	112,184	61,589 ^c	23,110	27,485	—	54.9 ^c	20.6
Canada.....	31 Dec. 1967	31	8	4	1	18	25.8	12.9
Chile ^d	31 Dec. 1968	31	5 ^c	23	3	—	16.1 ^c	74.2
Colombia.....	31 Dec. 1968	18,147	11,103	...	...	7,044	61.2	...
Costa Rica.....	30 June 1970	504	327	48	127	2	64.9	9.5
Cuba.....	30 June 1970	4,536	2,736	1,020	608	172	60.3	22.5
Dominican Republic.....	31 Dec. 1969	1,610	666	496	442	6	41.4	30.8
Ecuador.....	31 Dec. 1968	1,585	685	332	528	40	43.2	20.9
El Salvador.....	30 June 1970	233	89	50	75	19	38.2	21.5
Guatemala.....	31 Dec. 1967	374	200	111	16	47	53.5	29.7
Haiti.....	31 Dec. 1969	178	44	116	6	12	24.7	65.2
Honduras.....	31 Dec. 1969	274	42	124	106	2	15.3	45.3
Jamaica.....	11 Nov. 1967	610 ^b	267	192	138	13	43.8	31.5
Mexico.....	30 June 1969	13,654	7,453	2,678	3,354	169	54.6	19.6
Nicaragua.....	31 Dec. 1968	290	114	131	44	1	39.3	45.2
Panama.....	31 Dec. 1968	168	100	62	6	—	59.5	36.9
Paraguay.....	31 Dec. 1967	4,256	2,186	1,179	804	87	51.4	27.7
Peru.....	31 Dec. 1966	1,636 ^b	800	250	558	28	48.9	15.3
Trinidad and Tobago.....	31 Dec. 1968	1,461	309	958	15	179	21.1	65.6
Venezuela.....	31 Dec. 1968	17,569	8,228 ^c	5,159	4,182	—	46.8 ^c	29.4
French Guiana.....	31 Dec. 1967	948	176	355	410	7	18.6	37.4
St. Vincent.....	31 Dec. 1968	13	4 ^c	...	...	9	30.8 ^c	...
Total.....		186,459	100,298	38,204	39,797	8,160	53.8	20.5

— None.

... Data not available.

^a Data refer to Provinces of Buenos Aires, Córdoba, Entre Ríos, Formosa, Misiones, Salta, Santa Fe, and Tucumán.

^b Only cases under surveillance.

^c Including borderline cases.

^d Easter Island only.

TABLE 15. CASES OF LEPROSY IN THE ACTIVE REGISTER AND UNDER SURVEILLANCE, ACCORDING TO TREATMENT, IN 29 COUNTRIES AND OTHER POLITICAL UNITS OF THE AMERICAS, 1970 OR MOST RECENT YEAR.

Country or other political unit	Date	Total	Treatment			Per cent under ambulatory treatment ^a
			Hospitalized	Ambulatory	Not specified	
Argentina ^b	31 Dec. 1967	6,122	874	5,248	—	85.7
Barbados.....	31 Dec. 1968	45	7	38	—	84.4
Bolivia.....	30 June 1969	1,560	98	1,462	—	93.7
Brazil.....	31 Dec. 1968	80,215	17,799	62,416	—	77.8
Canada.....	31 Dec. 1967	28	1	19	8	95.0
Chile ^c	31 Dec. 1968	31	4	27	—	87.1
Colombia.....	31 Dec. 1968	13,368	714	12,654	—	94.7
Costa Rica.....	31 Dec. 1968	527	84	443	—	84.1
Cuba.....	30 June 1970	4,332	417	3,915	—	90.4
Dominican Republic.....	31 Dec. 1969	1,563	112	...	1,451	...
Ecuador.....	31 Dec. 1968	1,563	204	1,350	9	86.9
El Salvador.....	30 June 1970	233	90	...	143	...
Guatemala.....	31 Dec. 1967	313	37	276	—	88.2
Guyana.....	31 Dec. 1968	545	135	410	—	75.2
Haiti.....	31 Dec. 1969	178	—	178	—	100.0
Honduras.....	31 Dec. 1969	166	6	160	—	96.4
Jamaica.....	11 Nov. 1967	610	95	...	515	...
Nicaragua.....	31 Dec. 1968	179	85	65	29	43.3
Panama.....	31 Dec. 1968	168	73	95	—	56.5
Paraguay.....	31 Dec. 1968	3,867	256	3,602	9	93.4
Peru.....	31 Dec. 1966	1,636	317	1,003	316	76.0
Trinidad and Tobago.....	31 Dec. 1968	671	198	473	—	70.5
United States of America.....	31 Dec. 1967	1,363	293	689	381	70.2
Venezuela.....	31 Dec. 1968	8,386	550	7,234	602	92.0
Antigua.....	31 Dec. 1967	68	23	30	15	56.6
French Guiana.....	31 Dec. 1967	821	95	492	234	83.8
Martinique.....	31 Dec. 1966	804	149	655	—	81.5
St. Lucia.....	31 Dec. 1968	112	8	104	—	92.9
St. Vincent.....	31 Dec. 1968	13	13	—	—	—
Total.....		129,487	22,737	103,038	3,712	81.9

— None.

... Data not available.

^a Percentage based on total cases under hospital and outpatient care.

^b Data refer to Provinces of Buenos Aires, Córdoba, Entre Ríos, Formosa, Misiones, Salta, Santa Fe, and Tucumán.

^c Easter Island only.

TABLE 16. NEW CASES OF LEPROSY REPORTED IN THE AMERICAS, 1965-1970.*

Country or other political unit	1965	1966	1967	1968	1969	1970
Argentina.....	1,168	921	986	554	570	359
Bolivia.....	—	19	...	49	...	...
Brazil.....	5,869	4,563	5,439	5,668 ^a	5,618 ^a	3,352 ^a
Canada.....	1	1	3	3	2	6
Colombia.....	230	990	237	246	...	...
Costa Rica.....	38	37	39	32	25	17
Cuba.....	331	330	283	329	277 ^a	267
Dominican Republic.....	24	26	166	148	2	8
Ecuador.....	333	179	155	200	...	...
El Salvador.....	3	7	2	...	4	3
Guatemala.....	111	169	146	107	...	...
Guyana.....	992 ^a	22	...	119	...	...
Haiti.....	5	2	7	2	2 ^a	3
Honduras.....	28	21	26	21	7	...
Jamaica.....	26	21	19	29 ^a	14 ^a	11
Mexico.....	271	121	864	765	...	...
Nicaragua.....	18	11	...	2	...	...
Panama.....	7	1	1	1	—	...
Paraguay.....	297	215	245	217	...	...
Peru.....	37	51	47	112	225 ^a	76
Trinidad and Tobago.....	22	48	—	2	...	6
United States of America.....	96	109	81	123	98	126
Uruguay.....	27	33	15	12	17	10
Venezuela.....	362	381	381	334	636	...
French Guiana.....	57	25	44	41	39 ^a	63 ^a
Grenada.....	...	...	...	...	18 ^a	35 ^a
Guadeloupe.....	104	119	106	135	119 ^a	73 ^a
Martinique.....	34	60	49	27	...	...
St. Lucia.....	3	3	11	5	69 ^a	6 ^a
Surinam.....	218	181	222	237	260 ^a	201 ^a

— None.

... Data not available.

* A few cases also reported from other areas of the Region were not included.

^a Provisional figures.

surveillance. Of the 15,388 contacts registered, 68 per cent were under surveillance.

In the *Dominican Republic*, where the program was carried on by the Dermatological Institute and the Colonia Nuestra Señora de las Mercedes Sanatorium, there were 1,610 registered cases as of December 1969, with 97.1 per cent under surveillance, and 2,000 contacts.

In *Ecuador* budgetary difficulties continued to impede the progress of the program. The data available for December 1968 showed 1,585 registered cases, of which 98.6 per cent were under control. A total of 2,725 contacts were registered as of August 1970.

El Salvador had 233 cases and 721 contacts on the active register as of June 1970.

The leprosy program in *Guatemala* was being organized under the responsibility of the chief of the Communicable Disease Department. Very little is known about the prevalence of the disease in the country. According to the data for December 1967, there were 374 registered cases and 2,463 contacts.

In *Haiti* 178 cases were registered at the Dermatological Clinic of the University Hospital of Port-au-Prince as of December 1969.

In *Honduras*, where the control work continued to be done by a dermatological clinic and a mobile unit, the data for December 1969 showed 274 registered cases.

Mexico continued to conduct its program through 19 dermatological clinics and 19 mobile teams, which had the assistance of regular units of the health services for

the follow-up of patients and contacts. Training in leprosy diagnosis was continued in the clinics. As of 30 June 1970 there were 13,496 cases in the active register, 67.1 per cent of them under surveillance; the contacts in June 1969 numbered 33,131, with 49.6 per cent under surveillance.

In *Nicaragua*, as of December 1969, 300 cases were registered, and 63.0 per cent were under surveillance. Contacts numbered 1,454, with 14.2 per cent under surveillance.

Panama continued to maintain a vertical program; it had the support of the general health services, and CARE was providing food for distribution to patients and contacts. Training in leprosy diagnosis was offered in the health centers. The latest available figures, for December 1968, showed 168 cases and 852 contacts registered.

In *Paraguay*, as of December 1968, there were 4,256 cases and 14,408 contacts registered.

Peru continued to conduct its activities through the polyvalent health units and the health posts. According to 1966 figures, there were 2,973 cases and 20,120 contacts registered. The problem of leprosy is limited to the Amazon region. Chemoprophylaxis is given to contacts of open cases and BCG immunization to high risk groups.

Surinam diagnosed 201 new cases of leprosy during 1970.

In *Venezuela* the Division of Dermatology continued to conduct the campaign. The cases registered as of 1968 numbered 17,569 and the contacts 62,596.

I. PROTECTION OF HEALTH: DISEASES

TABLE 17. CONTACTS OF LEPROSY PATIENTS, UNDER AND WITHOUT SURVEILLANCE, IN 22 COUNTRIES AND OTHER POLITICAL UNITS OF THE AMERICAS, 1970 OR MOST RECENT YEAR.

Country or other political unit	Date	Contacts			Per cent under surveillance
		Total	Under surveillance	Without surveillance	
Argentina ^a	31 Dec. 1967	16,812	7,884	8,928	46.9
Bolivia ^b	April 1968	691	691	...	...
Brazil.....	31 Dec. 1968	428,376	135,137	293,239	31.5
Chile ^c	31 Dec. 1968	34	34	...	...
Colombia.....	31 Dec. 1969	46,884	24,112	22,772	51.4
Costa Rica.....	30 June 1970	2,842	1,296	1,546	45.6
Cuba.....	30 June 1970	15,388	10,468	4,920	68.0
Dominican Republic.....	31 Dec. 1969	2,000	2,000	...	...
Ecuador.....	31 Aug. 1970	2,725	2,725	...	...
El Salvador.....	30 June 1970	721	486	235	67.4
Guatemala.....	31 Dec. 1967	2,463	1,835	628	74.5
Haiti.....	31 Dec. 1968	269	58	211	21.6
Honduras.....	31 Dec. 1969	2,228	870	1,358	39.0
Mexico.....	30 June 1969	33,131	16,442	16,689	49.6
Nicaragua.....	31 Dec. 1969	1,454	207	1,247	14.2
Panama.....	31 Dec. 1968	852	581	271	68.2
Paraguay.....	31 Dec. 1968	14,408	3,847	10,561	26.7
Peru.....	31 Dec. 1966	20,120	2,732	17,388	13.6
Trinidad and Tobago.....	31 Dec. 1968	488	298	190	61.1
Venezuela.....	31 Dec. 1968	62,596	25,868	36,728	41.3
St. Lucia.....	31 Dec. 1968	273	175	98	64.1
St. Vincent.....	31 Dec. 1968	14	14	...	...
Total.....		654,769	237,760	417,009	36.3

... Data not available.

^a Data refer to Provinces of Buenos Aires, Córdoba, Entre Ríos, Formosa, Misiones, Salta, Santa Fe, and Tucumán.

^b Data provided by the Los Negros Rehabilitation Center, Department of Santa Cruz.

^c Easter Island only.

VENEREAL DISEASES

Following a major recurrence of early infectious syphilis in most parts of the world during World War II, there was a rapid decline in incidence until 1956-1958. The 1960's saw a general increase, which had begun to level off by the end of the decade. Gonorrhea followed a somewhat similar trend, but at the end of the 1960's was on the increase in most countries. The same pattern was observed in most parts of the Americas. Indeed, by 1970 gonorrhea had become the leading infectious disease, second possibly only to the common cold in most countries, and was considered a pandemic by many of them. The number of cases reported is most often only a small portion of the actual incidence of the diseases.

It has been estimated that not more than one-third of the cases of syphilis and one-tenth of the gonorrhea cases are reported. Gonorrhea has been reported to be from three to 50 times more frequent than early syphilis.

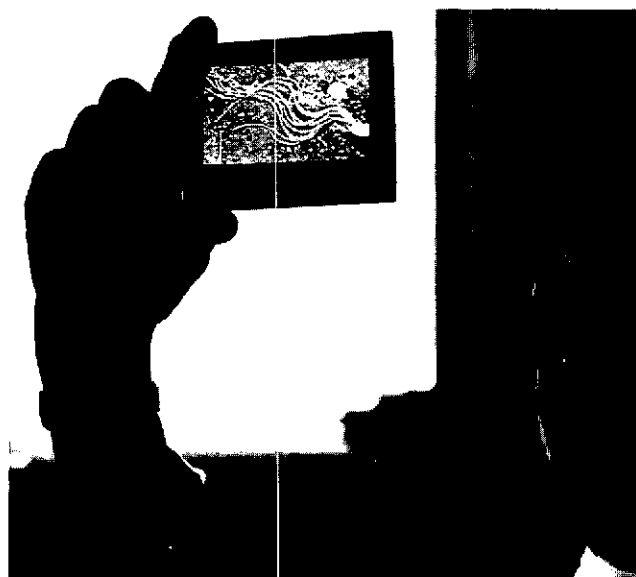
The available data on cases of syphilis and gonorrhea in 33 countries and territories of the Americas are presented in Table 18.

Technical Discussions. Reflecting the world-wide concern about these diseases, the countries of the Americas, at the XIX Meeting of the PAHO Directing Council, chose the topic "Venereal Diseases as a National and International Health Problem" for the Technical Discussions that were held at the XVIII Pan American Sanitary Conference (Washington, D.C., September 1970). The report and working documents of the Discussions are to be published in the PASB *Boletín*¹ as well as in a Scientific Publication² issued in both Spanish and English editions for wide distribution in the Americas.

The recommendations adopted dealt first with the need for intensifying the efforts to define more accurately the status and extent of the problem in the various countries and to examine closely the present control programs with a view to achieving more effective and efficient utilization of available resources. It was proposed that proper registration and reporting systems be established and that provision be made for the tabulation, analysis, and interpretation of data relating to stages of the disease, their epidemiological importance, and their value as indicators of the evolution of the disease.

¹ Vol. LXX, No. 1 (January 1971).

² Scientific Publication PAHO 220 (1971).



Electromicrograph of a treponeme.

TABLE 18. REPORTED CASES OF SYPHILIS AND GONORRHEA IN 33 COUNTRIES AND OTHER POLITICAL UNITS OF THE AMERICAS, 1970.^a

Country or other political unit	Syphilis	Gonorrhea
Argentina.....	5,336	10,250
Bolivia ^b	897	932
Canada.....	2,500	31,475
Chile ^b	2,294	...
Colombia ^b.....	...	28,607
Costa Rica.....	955	2,806
Cuba.....	566	231
Dominican Republic.....	8,688	11,390
El Salvador.....	8,045	6,439
Guatemala ^b	1,363	4,634
Haiti.....	2,310	2,250
Honduras ^b	2,922	4,955
Jamaica.....	962	24,158
Mexico.....	9,534	9,504
Nicaragua.....	1,477	2,457
Panama ^b	687	1,547
Paraguay.....	2,233	815
Peru ^b	2,402	5,646
Trinidad and Tobago.....	467	9,363
United States of America...	21,742 ^c	...
Uruguay ^b	174	114
Bahamas.....	206	139
Bermuda.....	37	505
British Honduras.....	43	241
Canal Zone.....	14	45
Dominica ^b	7	80
French Guiana.....	28	309
Grenada.....	222	1,518
Guadeloupe.....	108	...
Puerto Rico.....	2,163	2,440
St. Kitts, Nevis, and Anguilla	55	59
St. Lucia.....	285	835
Virgin Islands (U.S.A.).....	32 ^c	...

... Data not available.

^a Based on official reports received at PASB through 5 May 1971.

^b Data for entire year not yet available.

^c Primary and secondary syphilis.

It was emphasized that venereal disease services should be complete, easily accessible, and free. They should be incorporated into the existing health services so as to ensure the continuity of their activities, and they should make use of both public health agencies and other institutions providing medical services. A central agency should have responsibility for the direction of the national venereal disease control program, for the establishment of standards, and for supervision and evaluation of program activities.

The recommendation that the necessary funds be allotted for carrying out an effective control program was based on a recognition of the economic impact the venereal diseases have on the patient—in terms of direct medical costs, time lost from work, and long-term institutional care—and of the benefits resulting from prevention of these diseases and their complications.

The participants urged that more resources be made available to develop a simple and rapid diagnostic test for gonorrhea; to investigate psychosocial factors and high-risk groups; and to develop new and better health education methods that would bring the necessary response from the community and its leaders and from professional personnel who should apply their influence to assure an effective control program.

It was considered essential to promote the teaching of venereal diseases in medical schools, adopting a comprehensive approach to the subject so as to prepare the physician to make the proper diagnosis, implement effective therapy, and ensure that appropriate contact surveillance is carried out. Training for auxiliary personnel should be introduced or expanded, and continuing education for physicians should be provided.

Finally, it was recommended that studies be made of methods for limiting the spread of venereal diseases nationally and internationally, and that effective legislation be introduced to combat the diseases and curb their spread.

Assistance to the countries. The Organization continued to assist the Governments in their efforts to improve venereal disease control. Short-term consultants were assigned to Costa Rica and Nicaragua to evaluate the problem and recommend measures for strengthening the existing control programs. In Colombia, a comprehensive study of the problem was made and a plan for a national control program was drawn up. The training activities during the year, which are described in Chapter III, included courses in both Chile and Cuba.

With the exception of chancroid, lymphogranuloma venereum, and granuloma inguinale, the incidence of the

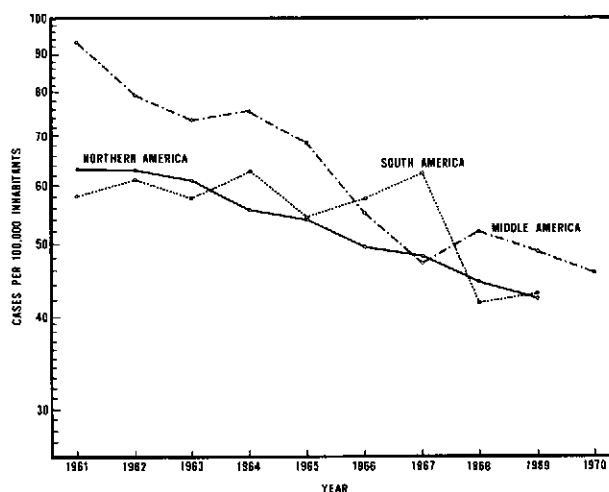


FIG. 10. Reported cases of syphilis (all forms) per 100,000 inhabitants in the three regions of the Americas, 1961-1970.

venereal diseases continues to be high, and in most countries is increasing. The many problems of control are compounded by the growing numbers of people and by the changing life styles of many population groups. Opportunities for contact are greater than ever, and the increased mobility of people makes venereal disease control a truly serious international health problem. Now, more than ever before, the Governments and the Organization must intensify their efforts, if the costs in human suffering and lost productivity as well as the direct medical costs are to be reduced.

YAWS

The year 1970 marked the twentieth anniversary of the yaws eradication program in Haiti. Two decades ago it was estimated that nearly one million cases existed in a population of 3.5 million; yaws thus constituted the country's major public health problem, ranking even before malaria, tuberculosis, enteric diseases, and malnutrition. In 1970, only 32 cases were reported from Haiti.

The early success and the relatively low cost of the program in Haiti stimulated additional requests from other countries of the Hemisphere for assistance with their programs, and by 1970 only the following cases were reported: West Indies 358, Colombia 34, Dominican Republic 2, Guatemala 1, Jamaica 3, Peru 32, Trinidad and Tobago 143.

In spite of the effectiveness of the eradication methods, it is apparent that continued and persistent surveillance is necessary to completely eradicate this disease from the Hemisphere. The Organization stands prepared to assist in the accomplishment of that goal.

POLIOMYELITIS

Because of the lack of continuity in poliomyelitis vaccination programs, resulting from financial difficulties and the deficient health structure of the majority of Latin American countries, the epidemiological situation of this disease is not marked by any appreciable reduction of morbidity and mortality comparable to that achieved in the developed countries.

The data on cases reported in the Americas between 1965 and 1970 (Table 19) illustrate this situation. The

fluctuations that have occurred represent phenomena common to all the acute communicable diseases. In some countries, such as Brazil, where there was an increase in the number of cases during the year (2,263) the change may be attributed in part to improved registration and reporting.

Only Canada, Cuba, and the United States of America, which have well-organized vaccination programs, continued to achieve effective results in relation to the incidence of the disease. In Cuba only one case of poliomyelitis has been registered since 1964 and that occurred in 1970, while Canada reported only one case in 1970, and the United States of America 30 cases.

Budgetary difficulties constitute the main obstacle to efficient vaccination campaigns, but inadequate coverage plans and in some instances poor preservation of the vaccine are also significant causes of the lack of success.

As a result of these problems, the vaccination schedules programmed are not being completed. While a high percentage of susceptible persons receive the initial dose of vaccine, the number receiving the second dose is considerably less, and those given the third are fewer still. There is no way of establishing regular maintenance programs, so that sporadic vaccination continues to be the rule in practically all the countries, which means that the wild viruses persist in the area and as soon as a sufficient number of susceptible persons are forthcoming, outbreaks again recur.

Table 20 shows the number of vaccinations, by country, carried out between 1965 and 1969.

Situation in individual countries. In Mexico there was a considerable increase in number of cases over the previous years (2,043 in 1970, 679 in 1969, and 850 in



Child receiving oral poliomyelitis vaccine.

TABLE 19. REPORTED CASES OF POLIOMYELITIS IN 26 COUNTRIES OF THE AMERICAS, WITH RATES PER 100,000 POPULATION, 1965-1970.

Country	Cases						Rates					
	1965	1966	1967	1968	1969 ^a	1970 ^a	1965	1966	1967	1968	1969 ^a	1970 ^a
Argentina.....	260	574	80	168	254	242	1.2	2.5	0.3	0.7	1.1	1.0
Barbados.....	—	—	1	—	—	—	—	—	0.4	—	—	—
Bolivia ^b	41	14	4	6	20	110	0.9	0.8	0.4	0.3	1.0	5.3
Brazil.....	...	...	...	1,585	1,143	2,263	...	...	...	1.8	1.3	2.4
Canada.....	3	3	2	—	2	1	0.0	0.0	0.0	—	0.0	0.0
Chile.....	206	141	79	63	83	190	2.4	1.6	0.9	0.7	0.9	1.9
Colombia.....	330	489	529	261	244	649	1.8	2.6	2.8	1.3	1.2	3.1
Costa Rica.....	15	10	7	3	105	22	1.0	0.6	0.4	0.2	6.3	1.3
Cuba.....	—	—	—	—	—	1	—	—	—	—	—	0.0
Dominican Republic.....	46	17	51	30	38	9	1.3	0.5	1.3	0.7	0.9	0.2
Ecuador.....	217	148	796	52	503	164	4.2	2.8	14.5	0.9	8.7	2.7
El Salvador ^c	81	36	74	63	38	68	3.7	1.6	3.0	2.3	1.3	2.3
Guatemala.....	210	118	240	146	124	108	4.7	2.6	5.1	3.0	2.5	2.1
Guyana.....	—	—	1	7	—	—	—	—	0.1	1.0	—	—
Haiti.....	5	5	3	2	3	3	0.1	0.1	0.1	0.0	0.1	0.1
Honduras ^c	265	38	79	62	37	16	23.2	2.8	4.9	3.8	2.3	0.9
Jamaica.....	53	6	7	—	1	6	3.0	0.3	0.4	—	0.1	0.3
Mexico.....	477	1,024	636	850	679	2,043	1.1	2.3	1.4	1.8	1.4	4.0
Nicaragua.....	105	15	461	7	154	9	6.3	0.9	25.9	0.4	8.0	0.5
Panama.....	9	4	55	6	9	12	0.7	0.3	4.1	0.1	0.6	0.8
Paraguay ^c	18	14	63	70	111	124	1.7	1.3	5.6	6.0	9.2	10.0
Peru ^d	444	138	161	270	103	174	7.5	2.3	2.6	2.1	0.8	1.3
Trinidad and Tobago.....	—	1	3	1	9	3	—	0.1	0.3	0.1	0.9	0.3
United States of America.....	72	113	41	53	20	30	0.0	0.1	0.0	0.0	0.0	0.0
Uruguay.....	12	29	22	6	6	5	0.4	1.1	0.8	0.2	0.2	0.2
Venezuela ^e	118	199	121	568	61	117	2.0	3.2	1.9	8.5	0.9	1.6
Northern America.....	75	116	43	53	22	31	0.0	0.1	0.0	0.0	0.0	0.0
Middle America.....	1,266	1,274	1,617	1,170	1,197	2,300	1.7	1.7	2.1	1.6	1.4	2.7
South America ^e	1,646	1,746	1,856	3,056	2,528	4,038	2.2	2.4	2.5	1.7	1.6	1.9

— None.

... Data not available.

^a Provisional data; incomplete data for Colombia and Panama in 1969, and for Bolivia, Colombia, Honduras, Mexico, Peru, Uruguay, and Venezuela in 1970.

^b Reporting area from 1966.^c Reporting area.^d Reporting area up to 1967.^e Excluding Brazil up to 1968.

TABLE 20. PERSONS IMMUNIZED WITH ATTENUATED LIVE POLIOVIRUS VACCINE BY COUNTRY, 1965-1969.

Country	Number of doses ^a	1965	1966	1967	1968	1969
Argentina ^b	3	6,774,571	10,186,196	3,005,529	2,244,742	2,600,342 ^b
Barbados.....	3	2,118	1,521	2,484	18,068	2,103
Bolivia.....	2	10,505	71,797	...	608	...
Brazil.....	2	...	...	7,708,056	...	...
Canada.....	3	2,155,706 ^b	1,521,747 ^b	1,394,779	1,547,394 ^b	1,118,983 ^b
Chile.....	2	190,935	228,271	268,227	239,590	829,555
Colombia.....	2	29,364	92,421	228,878 ^b	...	242,691 ^b
Costa Rica.....	3	...	94,967 ^b	302,378 ^b	87,861 ^b	1,156,119 ^b
Cuba.....	2	230,716	234,985	222,872	204,936	926,278 ^b
Dominican Republic.....	2	72,101	28,659	24,436	2,328,349 ^b	...
Ecuador.....	3	...	15,484	620,091 ^c	493,634	...
El Salvador.....	2	174	186,238	82,853	69,241	221,860 ^b
Guatemala.....	2	175,384	67,163	65,359	28,879	...
Guyana.....	...	...	20,604	...	7,044 ^c	...
Honduras.....	2	106,540	50,213	79,832	64,505	222,979 ^b
Jamaica.....	3	13,135	21,347	7,351	...	...
Mexico.....	3	3,635,686	1,140,510	1,701,127	2,293,027	2,748,371 ^b
Nicaragua.....	3	19,680	...	...	65,283	...
Panama.....	2	5,761	8,958	60,970	14,010	4,283
Paraguay.....	2	266,789	16,931	11,976	763	26,924
Peru.....	3	17,981	1,969,500 ^c	2,930,028 ^b	2,344,162 ^b	1,235,940 ^b
United States of America ^d ...	3	...	...	...	8,066,000	...
Uruguay ^b	2	34,043	81,915	335,854	188,417	...
Venezuela.....	3	476,311 ^c	486,801	137,914	190,730	437,918

... Data not available.

^a From country reports on the number of doses usually given in the primary course.

^b Number of doses administered.^c Based on second doses only.

^d Based on the percentage of the population 1-4 years of age found to have had 3 or more doses of live or inactivated poliovirus vaccine in a sample survey in 1969.

1968). There was no continuity in the intensive vaccination programs, which since 1968 had proceeded in the country in three stages. By July 1970, 6,125,105 children had been vaccinated, but the program was not supplemented by regular and permanent maintenance activities. This explains the outbreaks registered during the year and occurring principally in the areas initially vaccinated under the vertical program.

In Asunción, Paraguay, an epidemic broke out in September, reaching its peak of intensity between 19 and 22 October and continuing until 7 November, with a total of 68 cases, all of them children under 4 years of age, and 12 deaths (11 in children under 2). Type 1 virus was isolated. In all, 60,000 doses of vaccine were administered, representing a 90 per cent primary coverage of the under 5 years age group.

In Colombia 649 cases were reported (244 in 1969), most of them in the Departments of Antioquia and Valle del Cauca, and produced by Type 1 virus.

In Bolivia there were 110 cases (20 in 1969), most of them in Cochabamba and Sucre.

Chile reported 190 cases (83 in 1969) and Venezuela 117 (61 the previous year).

Vaccine production. In an effort to assist countries with intensive vaccination programs, PAHO continued to help the Mexican Government with the organization of a poliomyelitis vaccine production laboratory of a capacity sufficiently large to cope with the minimum needs of the various countries. A consultant specially trained in large-scale vaccine production techniques was contracted, with a view to organizing and promoting manufacturing activities at the industrial level. The consultant, Dr. Albert Sabin, again visited Mexico to look into the production laboratory situation and to recommend future action.

A consultant was sent to Guatemala to work with the Government on the preparation of a national vaccination plan to be financed by the World Health Foundation, in accordance with arrangements made previously.

INFLUENZA

The influenza situation in 1970 presented a generally favorable picture in comparison with the previous year. The information on countries affected by the disease during the year is summarized below.

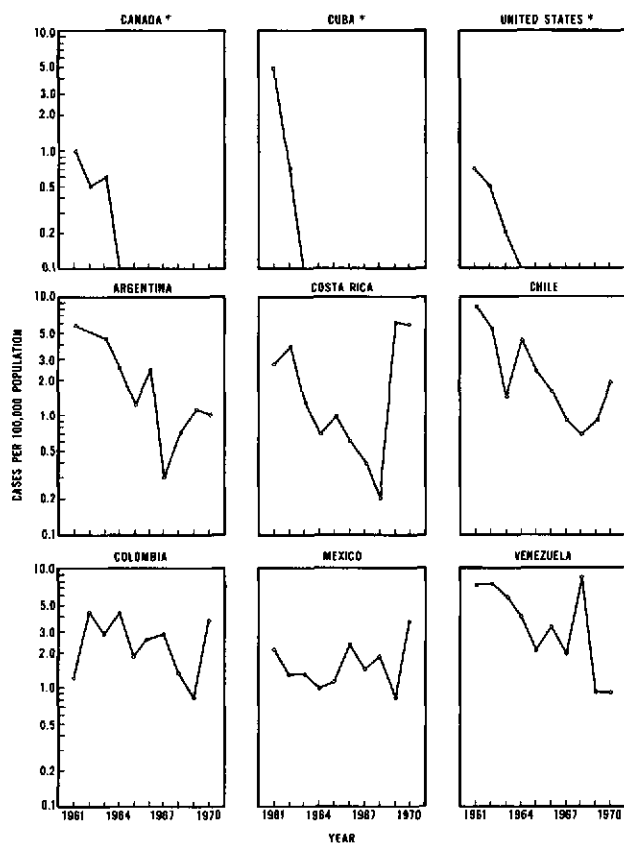
In *Argentina* there was an epidemic of moderate intensity in Buenos Aires between June and September, and various strains of A2/Hong Kong/68 virus were isolated. In Córdoba increases in incidence were observed in June and July, and continued until September.

In *Canada* an increase in incidence was observed in mid-March. Localized outbreaks occurred in all parts of the country except the north, and a low-intensity epidemic of A2/Hong Kong/68 virus affected the entire Province of Newfoundland.

An outbreak occurred in *Chile* between June and August, in the Province of Santiago; this was confirmed by isolation of the virus.

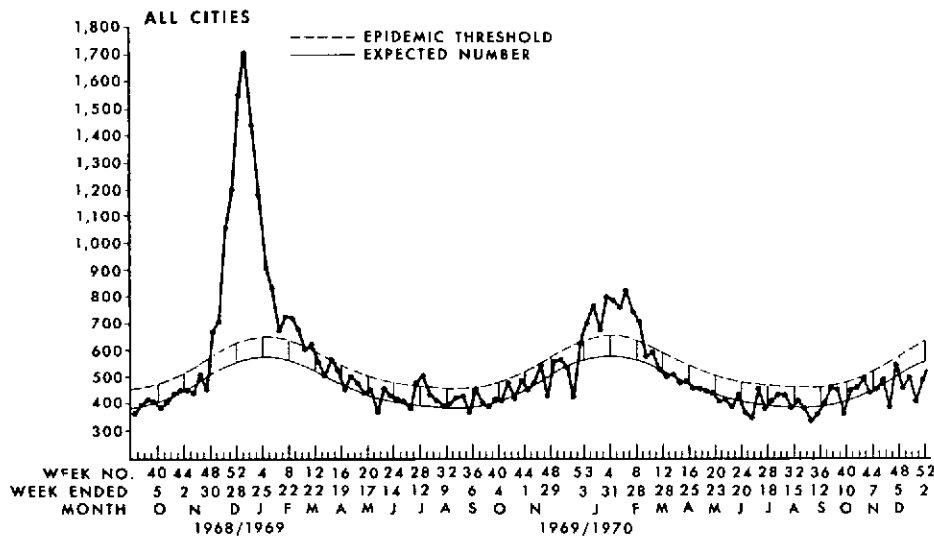
In *Jamaica* the incidence of influenza increased in January and the first half of February in Kingston, and strains of A2/Hong Kong/68 virus were isolated.

In *Mexico* the epidemic that began in November 1969 in the Federal District continued until the end of January 1970. It was estimated that some 35 or 40 per cent of the population was affected. The A2/Hong Kong/68 virus was isolated. During the same period outbreaks were reported in various regions of the country, simul-



* After 1962 in Cuba and 1963 in Canada and the United States, the rate per 100,000 population has been less than 0.1.

FIG. 11. Reported cases of poliomyelitis per 100,000 population in selected countries of the Americas, 1961-1970.



Source: Center for Disease Control, U.S. Public Health Service.
Morbidity and Mortality - Weekly Report, Vol. 20, No. 4, 1971

FIG. 12. Pneumonia-influenza deaths in 122 cities in the United States of America, 1968-1970.

taneously with or shortly after the appearance of the disease in the capital.

In the *United States of America*, following the serious epidemic the previous year, influenza morbidity was moderate in 1970. In contrast to the sharp increase in mortality from pneumonia and influenza in 122 cities at the beginning of 1969, the seasonal rise was slight (Figure 12). The A2/Hong Kong/68 virus was isolated from sporadic cases and in sporadic outbreaks. Localized outbreaks occurred in Alaska in January, and in March there were isolated outbreaks that generally speaking did not affect the main urban centers. The East Coast, the Southeast, Northwest, and the State of North Dakota were the regions most affected.

In Puerto Rico, between August and October there was an increase in influenza-like disease in localities in the north, northeast, and center of the island, and A2/Hong Kong/68 virus was isolated from samples taken from patients. In 1968-1969 the epidemic affected the entire island, but the 1970 outbreak was less widespread, and was regarded as due to an attack by the virus on isolated groups of susceptible persons.

There was an outbreak in the Canal Zone in June and July, and strains of the virus were isolated.

In *Venezuela*, where 24,312 cases of influenza had been reported between January and October 1969, there were new outbreaks from December 1969 to February 1970, and A2/Hong Kong/68 virus was isolated. In January, 25,082 cases were reported, and in February 4,421.

The Organization continued to collaborate with the Governments as in previous years, as part of its program

to combat the viral diseases. It provided information on influenza outbreaks in various parts of the world; supplied reagents for early diagnosis and strains for the preparation of vaccines; awarded fellowships; and provided technical assistance for control activities.

ARBOVIRUS INFECTIONS

Hemorrhagic Fever

In 1970 there were 1,596 cases of viral hemorrhagic fever reported in Argentina, as compared with 721 in 1969, 164 in 1968, 1,125 in 1967, 643 in 1966, and 148 in 1965. Of that number, 1,396 occurred in Buenos Aires Province, 169 in Córdoba, 25 in Santa Fe, three in La Pampa, two in Santiago del Estero, and one in Tucumán.

In Bolivia, following the outbreak of 44 cases registered in 1969 in Beni Department (La Cayoba, near Magdalena), when the Machupo virus was isolated in three of the six fatal cases and in captured rodents (*Calomys callosus*), only nine cases were reported in the same Department in 1970.

Encephalitis

In Venezuela, the outbreak of Venezuelan equine encephalitis (VEE) that occurred in 1969 in Zulia State

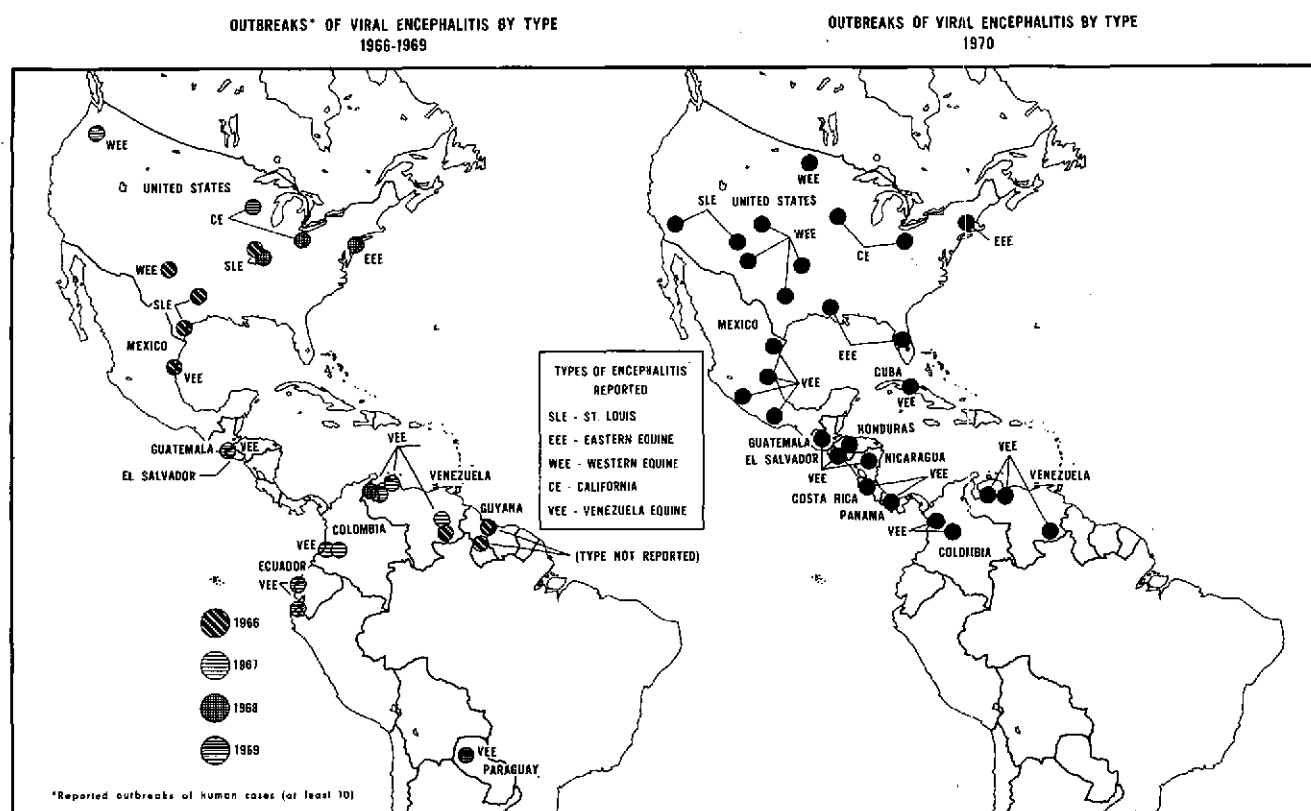


FIG. 13. Outbreaks of encephalitis in the Americas, by type.

and caused 4,017 human cases, most of them benign, spread to the State of Falcón, where by February 1970 1,275 cases in humans had been registered. In July an outbreak was reported in the localities of Marín and Tamanabares in the State of Yaracuy, the presence of VEE virus being detected in the brain of equines dying of the disease. There were few cases in humans. The virus was isolated in one patient from Marín with a febrile syndrome. The campaign against the disease proceeded by means of vaccination of equines, spraying, and treatment of suspected cases.

In Trinidad and Tobago, where the presence of Eastern equine encephalitis had been identified in previous years in animals, the virus was isolated during 1970 in one patient who died, and four other cases were identified (one serious case where the patient recovered and three subclinical cases with serological findings).

In Costa Rica three clinical cases of encephalitis in humans were reported, and in El Salvador there was information on 14.

In Mexico, according to official reports, more than 15,000 horses died in August in the States of Chiapas and Oaxaca. During the third quarter of the year an

epizootic of equine encephalitis was recorded in Tabasco State, and there were a few cases also in humans.

The Organization advised the health and agriculture authorities of El Salvador, Guatemala, Honduras, and Nicaragua on control activities in connection with Venezuelan equine encephalitis, and particularly on vaccination programs; and in the course of the year more than 375,000 doses of modified live VEE virus vaccine were administered to horses. In Colombia a vaccination program was started and 100,000 doses of this same vaccine were administered. The Venezuelan authorities immunized 50,000 equines with inactivated vaccines.

In the United States of America, 1,567 cases of primary encephalitis (due to arthropod-borne virus or of nonspecified etiology) were reported, as compared with 1,613 cases in 1969. Three cases in humans were confirmed as involving encephalitis virus of the Eastern equine type: two in Florida and one in Massachusetts; while 35 horses died in Massachusetts, and four in Louisiana, as a result of the same virus. Cases caused by the California type of virus were confirmed in Ohio (9) and Iowa (1). St. Louis encephalitis was confirmed in a case occurring in California and another in New

Mexico, where in addition a number of deaths of horses occurred which were serologically related to recent infection with the St. Louis virus. Only one case of Western equine encephalitis in a human was reported, but in Colorado, North Dakota, Texas, New Mexico, and Oklahoma a number of horses died from infection with this virus.

Routine studies at the Wisconsin State Laboratory of the sera from patients hospitalized with a history of fever and central nervous system symptoms, showed serological evidence of infection with the California encephalitis virus in 27 persons hospitalized in that state up to 23 September. In the course of research carried out by the University of Wisconsin over the past few years, the virus has been isolated in mosquitoes, especially *Aedes triseriatus*, and antibodies have been found in the sera of several species of squirrels captured in wooded areas.

In the State of Florida, during an intense arbovirus surveillance between June and October 1970, the state laboratories examined sera and other specimens obtained from 20 cases of encephalitis and 31 of aseptic meningitis reported by hospitals, and of 805 other cases possibly due to infection of the central nervous system. Two cases were confirmed as due to the Eastern equine encephalomyelitis virus. Sera of hens (3,368 samples) from various parts of the state were examined, and only one showed evidence (and that was doubtful) of infection by St. Louis encephalitis virus. Of 3,820 sera samples from wild birds captured with nets and from 297 trapped mammals, the sera of six birds and one mammal were found to be positive for St. Louis encephalitis, and those of four mammals showed positive signs of Eastern equine encephalitis. In the serological tests carried out on 418 sera samples from horses, 60 were positive for that type of encephalitis.

The research being carried out in British Honduras, Honduras, and Mexico on encephalitis and other arbovirus infections is discussed at length in Chapter V.

PARASITIC DISEASES

First emphasis was placed during the year on encouraging national programs for control of the more important parasitic diseases. As a result of work with responsible authorities in a number of countries, progress was made toward improvement of the programs. However, although there was rising interest and some increase in control activity, it was clear that these diseases continued to have low priority in many countries, and in general were not

receiving the attention they should have because of their important public health and economic impact.

To provide a more adequate basis for good control programs, encouragement was also given to the collection of more complete data on the prevalence and severity of the diseases, to the development and systematic use of diagnostic techniques, and to research on a limited number of subjects closely related to problems of control.

The efforts to collect more data on the parasitic diseases resulted in little change, and the information available in most countries was quite inadequate. The program to improve diagnostic techniques was more successful. More and more laboratories were using improved techniques for fecal examinations, and as a result of a collaborative study the serologic diagnosis of Chagas' disease will be much more reliable in the future. Although very limited funds were available to support research projects, it was possible to undertake several small studies that should result in improved possibilities for the control of schistosomiasis and Chagas' disease.

With the objective of assessing the needs for training and research on parasitic diseases in the Member Countries, a consultant visited 30 institutions in nine countries and presented recommendations concerning the future of research and training programs.

Chagas' Disease

Efforts to encourage control programs resulted in progress in Brazil and Peru.

In São Paulo assistance was given to the state-wide control program, which has substantially reduced transmission by the systematic use of house-spraying with insecticide. In addition, an expanded control program for Minas Gerais was discussed.

In Peru a consultant reviewed with local authorities the plan for a control program in the southern part of the country in which the University of Arequipa would collaborate. A draft proposal for the program was prepared, and to support the projected activities the University of Arequipa Medical School was provided with supplies and equipment to increase its capability for both laboratory and field work on the disease.

Additional equipment was furnished for the control program in Uruguay.

The collaborative study, involving a series of laboratories, for the development of better diagnostic procedures was continued. The results were reviewed and plans for the future were made at a meeting of the collaborators held in San José, Costa Rica. Two antigens for the complement fixation test were selected as the best



Xenodiagnosis of Chagas' disease, as done at the Institute for Chagas' Disease in Buenos Aires. Photos show, from left to right, cages for rearing the vector insects; method for transferring them to containers; and racks for holding the insects to be used in the tests.

of eight that were evaluated, and detailed plans were made to select one as the standard antigen. Progress was also made toward standardizing the procedure for the complement fixation test. The study also resulted in a new procedure for antigen evaluation that may be applied to other organisms. Finally, a plan was made to standardize the hemagglutination test.

Two research grants were made, one of them to support research in serologic diagnosis and the other to study alteration of virulence of the parasite and survival of the parasite in the vectors.

Schistosomiasis

Assistance to national programs was continued. In Brazil the need for an expanding control effort was recognized and plans for that purpose were discussed in some detail. A proposal was made for a new control program to include the States of Sergipe and Alagoas. In the pilot control program in Bahia, which had the enthusiastic cooperation of the local population, systematic use of molluscicides reduced transmission drastically. In Guanabara and São Paulo States, the new drug hycanthone was being used on a large scale, with results that were considered to be highly satisfactory, although drug toxicity was a matter of serious concern. São Paulo continued to carry out an excellent control campaign in

which all known foci of the disease were being attacked. Molluscicides, sanitation, water management, and drugs were all being used to interrupt transmission.

The long-standing national program in Venezuela was continued. Transmission was reduced in many areas, but some problem foci persisted.

A grant was made to a Brazilian specialist to support his research on the value of chemotherapy in the presence of continuous re-exposure to infection. Such treatment may help the victim to resist reinfection and reduce the prevalence of the severe forms of the disease.

ZOONOSES

Significant achievements in the control of zoonoses in Latin America were recorded during the year, owing principally to the establishment of veterinary medical services in ministries of health and agriculture and the development of national and local programs to combat the disease. The decisions taken at the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, at the Ministerial Level (Buenos Aires, 14-17 April), together with the technical assistance given through the

Organization, provided a strong impetus to the implementation of programs.

Rabies. Among the various control activities, the greatest advances were undoubtedly those made in the diagnosis, reporting, and control of rabies (Table 21). One outstanding accomplishment was the organization of a national rabies control program by the Government of Colombia. Also, two of the major cities in South America launched large campaigns against canine rabies. Metropolitan São Paulo, during the first stage of a mass program, vaccinated 252,375 dogs, and immediately thereafter conducted a revaccination campaign, immunizing an average of 24,000 dogs per month. It was thus able to reduce canine rabies cases by 54 per cent in 1970. An even greater achievement was the sharp drop in human rabies, from 21 cases in 1969 to five in 1970. At the same time, human postexposure antirabies treatments were reduced by 5,000.

TABLE 21. REPORTED CASES OF RABIES IN MAN AND ANIMALS, 1969 AND 1970.^a

Country or other political unit	Man		Animals	
	1969	1970	1969	1970
Argentina.....	2	10	597 ^b	834
Bolivia.....	—	—	35 ^b	—
Brazil.....	120	111	58 ^b	3,528
Canada.....	—	1	2,295	1,652
Chile.....	1	—	28	8
Colombia.....	51 ^c	43	1,843 ^b	5,327
Costa Rica.....	3	1	133	66
Cuba.....	—	1	140	144
Dominican Republic...	14	6	289	187
Ecuador.....	12	24	195	321
El Salvador.....	8 ^d	6	118	—
Guatemala.....	1	1	97 ^b	227
Guyana.....	—	—	24 ^b	—
Haiti.....	—	4	12 ^b	55
Honduras.....	1 ^d	3	844	160
Mexico.....	35	60 ^c	1,253 ^b	5,852
Nicaragua.....	2	1	94 ^b	171
Panama.....	— ^e	—	—	5
Paraguay.....	4	2	181	181
Peru.....	5	13	427 ^b	1,175
Trinidad and Tobago...	—	—	8 ^b	37
United States of America.....	1	2	3,490	2,987
Venezuela.....	19	12	868	571
British Honduras.....	—	3	—	61
Canal Zone.....	—	—	6	—
Grenada.....	—	1	14 ^b	61
Puerto Rico.....	—	—	30	49

— None.

... Data not available.

^a Based on official reports received by PASB through 14 May 1971.

^b July–December 1969.

^c Data are incomplete for the year.

^d Reporting area.

In Peru, a pilot program against canine rabies was undertaken in the Lima-Callao Metropolitan Area through the joint efforts of the Government and the Organization, the objective being to achieve eradication by vaccinating 80 per cent of the dogs in the area. Initiated in the last week of October, the program succeeded in vaccinating 100,000 dogs by the year's end. In the districts covered, 92 per cent of the estimated canine population was vaccinated. For the first time in a program of this kind, use was made of an irremovable plastic collar making it possible at a glance to identify the date of the dog's vaccination.

An important contribution to the recognition of problem areas and the extent of the disease was being made by the Rabies Surveillance System for the Americas, which was developed by the Pan American Zoonoses Center in collaboration with the Governments. Although the reporting was not at the level considered optimum for exact measurement of the control of the disease, a more realistic approach was taken and considerable progress was made.

In Cuba, where the dog to inhabitant ratio was estimated to be 1:21, 83,000 dogs were eliminated out of the estimated total of 400,000 in the first half of the year. Conducted through the veterinary medical services, the campaign covered the entire country and was in the final stages of eradicating the disease. The reservoir of rabies appeared to be in the wildlife population, principally the mongoose.

In Curitiba, Brazil, a control program was being carried out with technical assistance from the Organization. Brazil's rabies epidemiological surveillance service was consolidated through the joint efforts of the Ministries of Health and Agriculture. It is expected that, with this system, by 1971, a full epidemiological investigation can be made of each human case of rabies.

Difficulties in regard to rabies control developed along the Venezuela-Colombia border, in the Zulia-Táchira area, which constitutes one of the foci of rabies in the Americas. In that area canine rabies incidence appeared to be following an upward trend, in spite of the fact that more than 900,000 dogs were vaccinated and 700,000 eliminated in the past five years. During the first nine months of 1970, 571 canine cases and 12 human cases were reported in Venezuela.

Rabies continued to be prevalent in Grenada, principally in the mongoose, the main reservoir of the disease, and the first human case since 1965 was diagnosed in 1970. A constant increase in the mongoose population was observed.

Large reductions in canine rabies had been achieved



Inhabitants of the border city of Reynosa in Mexico bring their dogs to a rabies vaccination post.

on both sides of the U.S.-Mexico border during 1967-1969, but the most significant change was in 1970. Thirty-three cases were reported, as compared to 167 in 1969. These results made it clear that only through the coordinated efforts of state, federal, and international health agencies is it possible to attain a real measure of rabies control in a frontier area.

Brucellosis. This continued to be the most important of the bacterial zoonoses in the Americas, although in certain small geographic areas programs for its control were bringing about some improvement. The data available on cases reported in 1969 and 1970 are shown in Table 22.

The program in Peru was achieving part of the original objective. Operating principally in the Departments of Lima and Ica and El Callao Province, from which 90 per cent of the human cases in the country are reported, it succeeded in reducing the cases from 2,286 in 1967 to approximately 500 in 1970, which represented the major gain in brucellosis control in South America.

In Brazil programs against bovine brucellosis were being carried out in various local areas with the cooperation of the Ministry of Agriculture and technical assistance from the Organization. A serologic survey of 8,000 cows over 2½ years of age in Bahia State revealed that 23 per cent were positive. Vaccination programs were conducted in this and other states, including Rio Grande do Sul, where 300,000 cows were immunized.

In Mexico brucellosis continued to have serious consequences, and was considered to be the zoonoses with the greatest impact on human and animal health.

Colombia prepared a loan request to the Inter-American Development Bank for financial assistance to conduct a

national bovine brucellosis control program, and Bolivia and Ecuador were formulating similar requests for programs against brucellosis as well as bovine rabies and foot-and-mouth disease. Also, the Dominican Republic requested the Organization's assistance to prepare a loan request for a bovine brucellosis program. The country has approximately 800,000 head of cattle and the annual losses of meat and milk due to this disease are estimated at \$7,808,000.

Venezuela, where the milk and meat losses due to brucellosis amount to \$9,800,000 yearly, prepared a national control program and was formulating a request for



The pierced ear identifies the animals immunized with Rev. 1 strain vaccine in a program of caprine brucellosis control.

financial assistance from the IDB, with the Organization's technical advice.

In accordance with Resolution VI adopted by the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, the Organization, through the efforts of the Pan American Zoonoses Center, drew up two documents for assisting the Governments to develop their programs: "Guide for the Preparation and Evaluation of Projects for the Control of Bovine Brucellosis" and "Criteria and Principles for the Analysis of the Programs to Control Bovine Brucellosis." Preparations were made to convene a meeting of an Advisory Study Group on Brucellosis, at PAHO Headquarters in February 1971, to evaluate these two documents and elaborate them in greater detail, so as to have available, as soon as possible,

a set of standard techniques that will serve as a guide to the various countries in formulating their control programs and in preparing loan requests to the IDB.

Bovine tuberculosis. This serious animal disease, which affects both the economy and public health, is endemic in Argentina, central and south Brazil, Chile, Colombia, Mexico, Peru, and Uruguay. Its prevalence varies between countries, rising as high as 20 per cent or more of the bovine population in some of them. The rate of infection in Cuba, Guyana, Jamaica, Trinidad and Tobago, Venezuela, and the West Indies is approximately 1 per cent. It is also present in Bolivia, Central America, Ecuador, French Guiana, northern Brazil, Paraguay, and Surinam, although the rate of prevalence is unknown.

TABLE 22. REPORTED CASES OF ANTHRAX, BRUCELLOSIS, HYDATIDOSIS, LEPTOSPIROSIS, TRICHINOSIS, TRY PANOSOMIASIS, AND TULAREMIA, 1969 AND 1970.^a

<i>Anthrax</i>	1969	1970	<i>Leptospirosis</i>	1969	1970
Argentina.....	75	67	Barbados.....	8	26
Canada.....	—	—	El Salvador ^c	—	...
Chile.....	74	78	Guadeloupe.....	1	3
El Salvador ^c	16	26 ^b	Haiti.....	...	15
Haiti.....	200	23	Jamaica.....	8	5
Jamaica.....	—	—	United States of		
Mexico.....	35	...	America.....	89	46
Peru.....	33	46 ^b	Venezuela ^c	3	...
United States of					
America.....	4	2	<i>Trichinosis</i>		
Uruguay.....	37	11 ^b	Argentina.....	—	53
<i>Brucellosis</i>			Canada.....	7	6
Argentina.....	1,129	1,071	United States of		
Canada.....	16	30	America.....	215	111
Colombia.....	17 ^b	34	Venezuela ^c	54	...
Cuba.....	15	12			
El Salvador ^c.....	...	—^b	<i>Trypanosomiasis</i>		
Guadeloupe.....	—	—	Argentina.....	1,594	2,296
Honduras ^c	9	5	El Salvador ^c	187	...
Jamaica.....	—	—	Peru.....	2	7 ^b
Mexico.....	672	527 ^b	Uruguay.....	2	1 ^b
Panama.....	...	1	Venezuela ^c	455	...
Peru.....	885	473 ^b			
United States of			<i>Tularemia</i>		
America.....	235	216	Canada.....	15	1
Uruguay.....	2	— ^b	El Salvador ^c	—	...
Venezuela ^c	3	...	United States of		
<i>Hydatidosis</i>			America.....	149	163
Argentina.....	222	104 ^b	Venezuela ^c	—	...
El Salvador ^c	—	...			
Peru.....	47	46 ^b			
Uruguay.....	366	203 ^b			

— None.

... Data not available.

^a Based on official reports received by PASB through 14 May 1971. Data only for countries reporting on these diseases.

^b Data are incomplete for the year.

^c Reporting area.

Control of the disease is made difficult by the fact that the veterinary medical services do not have the proper organization and administrative authority or the necessary numbers of specially trained veterinarians for this purpose. There is also a lack of understanding of the epidemiology of the disease.

To assist the countries with their programs, the Organization sponsored the First International Seminar on Bovine Tuberculosis Control in the Americas (Santiago, Chile, 21-26 September). Forty professionals from 18 countries attended.

Through the Zoonoses Center, Argentina was assisted in conducting a study to determine the distribution of *Mycobacteria* in swine. Of the 369 isolates of *Mycobacteria* made, more than 90 per cent were identified as *M. bovis*.

The disease continued to be a problem in the dairy herds in Peru, principally around Lima and Cajamarca and certain other cities, where prevalence ranged from 20 to 40 per cent. However, the average rate of infection for the country was estimated to be about 7 per cent. A control program conducted in the herds around Arequipa succeeded in reducing prevalence to the level of 1 per cent in the sampled population. The Zoonoses Center assigned an expert to assist Peru with the preparation and standardization of tuberculin, in the hope that PPD could be produced in the future.

Hydatidosis inflicts heavy losses on the countries of South America. Costs of patients' hospitalization are estimated at \$520,000, and unknown losses result from reduction in work effort and prolonged convalescence. The value of condemned viscera of affected ruminants amounts to approximately \$10,000,000, and additional immeasurable losses are due to the effect of heavy parasitism on growth rate of animals, reduced meat production, and curbed livestock development. Hydatidosis is difficult to combat because of the nature of the epidemiology, the inadequacy of facilities for diagnosing human infection, limited reporting of human and animal cases, and shortage of personnel trained in control of the disease.

In addition to Uruguay, which had the highest prevalence rate in the Americas, Peru continued to experience severe social and economic consequences of the disease. Of all the cattle examined in the country's slaughterhouses, 8 per cent had hydatid cysts. Sheep were infected at the rate of 12.8 per cent and goats at 7 per cent. Prevalence rates of more than 20 per cent were found in the Provinces of Huancayo, Puno, Pasco, and Cañete. Surveys of the population of dogs, which have close contact with human cases, revealed an infection rate approaching 30 per cent. The Organization was assisting

the Peruvian Government with studies to identify the areas of highest prevalence. A pilot program will be prepared to bring hydatidosis under control, particularly among the rural population of the mountain areas, where agrarian reform schemes are under way.

PAHO collaborated with WHO and FAO in the First Interregional Seminar on the Control of Hydatidosis, held in the Pan American Zoonoses Center (14-19 September) and attended by 47 participants from 21 countries of the world. The subjects of study included recent advances in the biology of the parasite, epidemiology of the infection, successful control programs in selected areas, and the principal considerations in the planning, conduct, and evaluation of programs.

Pan American Foot-and-Mouth Disease Center

An increase in its field and laboratory staff enabled the Center to provide the Governments of the Americas with more assistance in their efforts to curb foot-and-mouth disease in the affected areas and prevent its spread to free areas. The disease continued to be the animal health problem of greatest concern to the agriculture authorities in the affected countries, and in an endeavor to meet the growing number of requests for its cooperation the Center further strengthened its program of technical services, research, and training.

In spite of the efforts of the Governments and the Center, the disease spread for the first time in many years from an affected country to a disease-free country. The outbreak, caused by type O virus, was discovered in the first week of August in Curaçao in a herd of swine. Epidemiological investigations revealed that the disease



Method for eradicating a foot-and-mouth disease outbreak in a non-endemic area: slaughter of infected animals.

had entered the country with imported infected cattle, sheep, and goats consigned to a local slaughterhouse. Disbursal of the by-products from the slaughter processes distributed the infected tissues throughout the island, creating the outbreak of the disease. Conferences with the local health and agriculture authorities were held by a PAHO Zone I consultant; the necessary measures were set in motion and the outbreak was brought under control.

In Colombia, in the Amazon area near Leticia, there was an outbreak caused by type C virus, which prior to that time had not been reported in the area. The borders of Colombia, Brazil, and Peru converge in that area, a fact that underscores the importance of a multinational program for controlling the disease. The river and air traffic and movement of animals on foot across the frontiers of the three countries increased the risk of its spread. Colombia immediately imposed control measures, including sacrifice of all animals in infected herds, quarantine of all herds in the area, and vaccination of some 3,000 animals on 100 farms. The outbreak was thus brought under control.

The control campaign in Rio Grande do Sul, Brazil, considered by many investigators to be a model program, was faced with a severe epidemic, principally in the area of Bage, Dom Pedrito, and Uruguayana. Types O and C virus caused high incidence rates in the herds. The potency of the vaccines used in the area was never conclusively determined. Minimal use of efficient control procedures was made in the early stages, and the outbreak reached epidemic proportions. Consequently, the economy of the state suffered severe losses, and the foot-and-mouth disease control campaign came to a halt. The Ministry of Agriculture and the Foot-and-Mouth Disease Center are establishing a pilot training program, based on the animal health defense structure in the area.

The fight against the disease in South America has been transformed in recent years into a major continental effort for health protection of the livestock industry, which includes approximately 1,000,000 livestock owners, more than 1,000 professionals, and some 10,000,000 auxiliary workers. During the year approximately 98,000,000 cattle were vaccinated against foot-and-mouth disease, representing an expenditure of \$25,000,000 by the government sector alone.

Technical services. The Center's staff was reinforced by the appointment of a biostatistician, an epidemiologist, an administrative methods officer, and an area consultant, thus making it possible to expand the technical services to assist in the planning, conduct, and evaluation of national campaigns. Bolivia, Colombia, Ecuador, Peru, and Venezuela were assisted with the preparation of the docu-

ments supporting their loan requests to the IDB. Basic reference documents drawn up by the Center included the "Guide for the Creation and Development of Biostatistic Units in Animal Health Services" and the "Guide for the Planning and Administration of a Control Program for Foot-and-Mouth Disease."

The animal health authorities of Argentina, Brazil, and Paraguay received assistance in preparing legislation on the production and quality control of vaccines and in developing plans for the construction of quality control laboratories. Staff of the Center gave technical advice to the participants at the intercountry animal health meetings of Brazil-Venezuela-Guyana, Argentina-Chile-Peru, Colombia-Ecuador, and Colombia-Panama.

The Center's laboratory services completed the subtyping of 341 samples positive for foot-and-mouth disease virus from affected countries, and of 22 samples positive for vesicular stomatitis from the disease-free area. They detected four new subtypes of the foot-and-mouth disease virus (Tables 23 and 24). Vaccines were supplied to Brazil, Colombia, Guyana, and Paraguay and all of the affected countries received biological materials for diagnosis, research, and vaccine production and control, as well as hyperimmune foot-and-mouth disease serum in a quantity sufficient to conduct 360,000 complement fixation tests.

Education and training. The Center presented two international courses during 1970: one on evaluation of campaigns, held in Chile and attended by 14 participants from eight countries; and the other on control of vaccines, held in Uruguay for nine participants from nine countries. A national course on execution of campaigns was conducted in Paraguay, with 35 students, and another on preventive programs was given in Cuba, for 32 participants.

Individual instruction was provided at the Center for 18 fellows from eight countries.

Research. With its staff strengthened by the addition of a virologist and an immunologist, the Center carried forward the following research during the year.

Various subtypes of foot-and-mouth disease virus were adapted to the tissue-culture method. Research was begun on inactivated vaccines developed with virus produced in rabbits and on different methods of extraction and purification of this virus.

Experiments on inactivated vaccines with an oil adjuvant were continued in collaboration with the Plum Island Animal Disease Laboratory of the U.S. Department of Agriculture. The results to date indicate the possibility of utilizing this vaccine in two vaccinations per year in cattle. Polyions and polynucleotide complexes

I. PROTECTION OF HEALTH: DISEASES

TABLE 25. NATIONAL COURSES AND SEMINARS ORGANIZED OR ASSISTED BY THE PAN AMERICAN ZOOSES CENTER, 1970.

Country	Date	Subject	Number of participants
Argentina.....	April-Nov. April, May, June (one per month) 3-5 Sept.	Food microbiology	7
		Sanitary meat inspection	80
		Seminar on legislation and technical measures for rabies control	60
		23 Oct.	27
Brazil.....	9-20 March 11-22 May 20 Aug.-4 Sept.	19th course on sanitary meat inspection	16
		Control of vaccines and antigens for brucellosis	11
		Rabies vaccines for human use	21
Colombia.....	20 July-7 Aug. 30 Aug.-11 Sept. 14-26 Sept.	Breeding and care of laboratory animals	22
		Refresher course on food hygiene and microbiology	23
		Laboratory methods for rabies diagnosis	17
Cuba.....	26 Oct.-4 Nov.	Brucellosis diagnosis; vaccine production and control	30
Uruguay.....	11-15 May	Seminar on rabies	69
Venezuela.....	6-13 Sept.	Food hygiene and microbiology Serologic diagnosis of brucellosis	11

American Seminar on the Control of Bovine Tuberculosis was organized and carried out by the Organization in Santiago, Chile (21-25 September); there were 40 participants from 18 countries. The Center also organized or provided assistance to 15 national courses and seminars (Table 25).

Individual training was given at the Center to 30 fellows from 10 countries during the year.

Research. The Center continued the series of applied research studies on rabies to reduce the time necessary to perform the fluorescent-antibody test; examine the methods of human postexposure antirabies treatment and search for the cause of neuroparalytic accidents in persons receiving treatment; evaluate the efficacy of different systems for isolating street virus; and conduct epidemiological investigations of bovine paralytic rabies.

With regard to brucellosis, it was carrying out studies to determine the efficacy of a vaccine for female goats of reproductive age; develop a new rapid diagnostic test for *Brucella ovis* infection; and standardize diagnostic antigens used in *B. melitensis* infections.

Research on hydatidosis included studies for the improvement of diagnostic antigens and criteria for use in human and animal infections, and the investigation of drugs effective against *Echinococcus granulosus* in dogs.

Studies on tuberculosis were continued for the purpose of determining the distribution of mycobacterial species in swine in Argentina. Investigations were made to find the culture methods most advantageous for the isolation of the organism from raw and pasteurized milk.

In Argentina, in collaboration with the Secretariat of State for Agriculture and Livestock, a study was conducted on the prevalence of leptospirosis in domestic animals from different ecologic areas of the country. Studies for evidence of the infection were made on swine from the slaughterhouses of Buenos Aires.

In the field of food microbiology, a study was carried out, in collaboration with the U.S. Food and Drug Administration, on transferable drug resistance in enterobacteria isolated from workers, cattle, and horses in the Buenos Aires slaughterhouses.

Other activities. The fourth meeting of the Scientific Advisory Committee, held in August, evaluated the progress of the Center's activities and made recommendations for the next year's program.

The Center's *Quarterly Information Bulletin* was issued regularly, in an improved and expanded edition.

Staff of the Center participated in 15 international and national technical meetings during the year.

had entered the country with imported infected cattle, sheep, and goats consigned to a local slaughterhouse. Disbursal of the by-products from the slaughter processes distributed the infected tissues throughout the island, creating the outbreak of the disease. Conferences with the local health and agriculture authorities were held by a PAHO Zone I consultant; the necessary measures were set in motion and the outbreak was brought under control.

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TABLE 23. FIELD SAMPLES FROM AFFECTED AREA EXAMINED AT THE PAN AMERICAN FOOT-AND-MOUTH DISEASE CENTER, 1970.

Country	Foot-and-mouth disease virus subtypes													Negative	Total
	O ₁	A ₂₄	A ₂₅	A ₂₇	A Ven/ 70 ^a	A Bol/ 70 ^b	A Braz/ 70-1 ^b	A Braz/ 70-11 ^b	A Braz/ 70-111 ^b	C ₂	C Arg/ 69 ^a	C Leticia/ 70 ^b	C Parag/ 69 ^a		
Argentina.....	—	4	1	—	—	—	—	—	—	—	14	—	—	—	19
Bolivia.....	1	—	—	—	—	3	—	—	—	2	—	—	—	—	6
Brazil ^c	84	6	—	—	—	—	26	38	4	41	—	—	22	20	241
Chile.....	6	—	2	—	—	—	—	—	—	—	1	—	—	—	9
Colombia ^d	—	—	—	1	—	—	—	—	—	—	—	2	—	6	9
Guyana.....	3	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Paraguay.....	18	36	—	—	—	—	—	—	—	—	—	—	—	16	70
Peru ^e	—	5 ^f	—	—	—	—	—	—	—	5	2 ^f	—	—	—	12
Uruguay.....	1	2	2	—	—	—	—	—	—	—	—	—	—	—	5
Venezuela.....	—	—	—	—	9	—	—	—	—	—	—	—	—	—	9
Total.....	113	53	5	1	9	3	26	38	4	48	17	2	22	42	383

—None.

^a Subtypes sent to the World Reference Laboratory for assignment of new classification.^b Provisional denomination.^c Five suckling-mouse samples were received but not classified.^d One sample of vesicular stomatitis subtype Indiana₁ was received.^e Two samples of vesicular stomatitis subtype Indiana₁ were received.^f One sample of A₂₄ and 2 samples of C Arg/69 were taken from animals originating in Argentina.

TABLE 24. FIELD SAMPLES FROM THE AREA FREE OF FOOT-AND-MOUTH DISEASE, EXAMINED AT THE PAN AMERICAN FOOT-AND-MOUTH DISEASE CENTER, 1970.

Country	Vesicular stomatitis		Negative	Total
	New Jersey	Indiana ₁		
Costa Rica.....	4	—	—	4
El Salvador.....	5	—	3	8
Guatemala.....	—	1	1	2
Honduras.....	4	1	3	8
Nicaragua.....	3	—	1	4
Panama.....	—	4	3	7
Total.....	16	6	11	33

—None.

were studied as other possible adjuvants. Studies were also conducted on clones of the modified live virus in attenuation of various strains by chemical and physical mutations.

The Center continued its investigations to improve the quality control of vaccines. It was carrying out a statistical study of the serum protection indexes, and other studies on the susceptibility of different lines of tissue-culture cells to the virus of foot-and-mouth disease and on the production of interferon *in vitro* and *in vivo*.

Other activities. The Scientific Advisory Committee reviewed the activities of the Center and formulated recommendations for the conduct of the programs and the evaluation of their effectiveness.

With the appointment of a technical editor during the

year, the Center improved its series of technical bulletins and increased the number of scientific papers prepared by the professional staff.

Pan American Zoonoses Center

A special mission appointed by the Director of PASB visited all the Member Countries to obtain information on the zoonoses and on the possibility of establishing national control programs with the technical assistance of the Center. It gave special attention to the financing of programs, and particularly to the financial aid the Governments could furnish the Center for expanding its technical cooperation. The health and agriculture authorities of all the countries expressed great interest in initiating control programs and offered their financial assistance to help increase the Center's activities.

During the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, an additional budget was approved for the Center through direct contributions from the ministries of agriculture of the countries. Also, the Organization was requested to develop a project proposal to be presented to the United Nations Development Program with a request for assistance in order to place the Center on a regional basis. The XVIII Pan American Sanitary Conference concurred with the resolution passed by the III Inter-American Meeting and adopted its own Resolution XX to the same effect.

The Government of Argentina, with the support of various other Governments, presented the regional project of the Pan American Zoonoses Center to the UNDP. This

five-year project, when approved, would commence in January 1972.

The Inter-American Development Bank expressed its interest in granting financial aid to the countries for carrying out the zoonoses control programs, and requested the Organization to provide technical orientation and assistance for their development. Accordingly, the Center prepared the two basic documents on bovine brucellosis control mentioned earlier in this section.

The Center's program of technical services, training, and research was expanded considerably during 1970.

Technical services. The Center cooperated with Argentina's public health authorities in various phases of the rabies control program (epidemiological studies in the provinces, diagnostic methods, vaccine production and control, establishment of standards for human post-exposure treatments) and in a pilot project to control hydatidosis in Neuquén Province and epidemiological studies of this disease in Chubut and Río Negro Provinces. In collaboration with the Ministry of Agriculture, ecological studies of vampire bats were continued in northern Argentina, and field studies were begun for combating bovine rabies through control of the vampire bat population in Santiago del Estero Province. The animal health authorities were assisted with the evaluation of different types of vaccine for bovine rabies, and also with studies on the distribution of leptospirosis in cattle in different ecological zones.

Bolivia was given assistance in the revision of its rabies control program; in the formulation of recommendations on the use of vaccine prepared in suckling-mouse brain to replace the Semple vaccine for postexposure immunization; in epidemiological studies of hydatidosis in the highlands; and in the investigation of leptospirosis in man and animals in Santa Cruz and Cochabamba.

Cooperation was extended to Brazil in the rabies programs in São Paulo and Paraná; in the bovine brucellosis program in Bahia; in laboratory studies on animal medicine conducted in various universities; and in the design of a study on vampire bat ecology to be conducted by the Ministry of Agriculture.

Chile's program against canine rabies has been quite successful, and the Center was collaborating with the authorities to prepare for the final phase of eradication. Technical assistance was given in the planning of programs to combat bovine brucellosis, tuberculosis, and hydatidosis. In the project to control anthrax in Ñuble Province, a mass campaign for vaccination of cattle with the avirulent vaccine was proposed.

Specialists of the Center visited Colombia on various occasions to provide assistance in connection with bovine

tuberculosis, rabies, and brucellosis control and food microbiology. On the basis of a preliminary investigation, it was decided that a well-designed study was needed to establish the prevalence of other diseases in the country as well as the types of agents causing nonspecific tuberculin reactions. Colombia has the highest reported incidence of canine and human rabies in the Americas, and the agriculture and public health authorities, with the Center's cooperation, started a program to control canine rabies in the Department of Valle del Cauca. Hopefully, this will serve as a model to be used in the other regions of the country.

In Cuba, which has made significant advances in the control of bovine brucellosis and tuberculosis, the Center collaborated in the review of the status of these diseases and the planning of new means for achieving eradication.

In Peru there was an epidemic of bovine paralytic rabies in the Department of Madre de Dios, and an epidemiologist and mammologist from the Center gave assistance in conducting the epidemiological investigations. For the program to control goat brucellosis, Peru was supplied with 35,000 doses of Rev. 1 vaccine and with the Rev. 1 strain used for vaccine production. It was also assisted with the production and standardization of tuberculin for animal use, and with the programs to control hydatidosis in the highland communities and canine rabies in the Lima area.

Scientists from the Center and special consultants collaborated with Uruguay's Hydatidosis Control Commission in working out the technical aspects of a pilot project in the Department of Flores. Through this pilot project and the similar one in Neuquén, Argentina, it is hoped to establish techniques and methods applicable to programs for the control of hydatidosis throughout Latin America.

As a service to the Governments, the Center continued to provide reference biologicals, conduct quality control tests on vaccines and antigens, and identify and type microbiological strains. Reference strains for the production of vaccines and antigens, reference reagents, laboratory animals, and tissue-culture cells were supplied to 17 countries of the Americas and two countries outside the Region.

Education and training. The Center presented the first international course for the Americas on laboratory methods in hydatidosis; the 20 participants represented those countries with the highest prevalence of the disease. The Center also cooperated in the organization and conduct of the First WHO/FAO Interregional Seminar on the Control of Hydatidosis, held in Buenos Aires and attended by specialists from 21 countries. The First Inter-

TABLE 25. NATIONAL COURSES AND SEMINARS ORGANIZED OR ASSISTED BY THE PAN AMERICAN ZOOSES CENTER, 1970.

Country	Date	Subject	Number of participants
Argentina.....	April–Nov.	Food microbiology	7
	April, May, June (one per month)	Sanitary meat inspection	80
	3–5 Sept.	Seminar on legislation and technical measures for rabies control	60
Brazil.....	23 Oct.	19th course on sanitary meat inspection	27
	9–20 March	Control of vaccines and antigens for brucellosis	16
	11–22 May	Rabies vaccines for human use	11
Colombia.....	20 Aug.–4 Sept.	Breeding and care of laboratory animals	21
	20 July–7 Aug.	Refresher course on food hygiene and microbiology	22
	30 Aug.–11 Sept.	Laboratory methods for rabies diagnosis	23
Cuba.....	14–26 Sept.	Brucellosis diagnosis; vaccine production and control	17
	26 Oct.–4 Nov.	Seminar on rabies	30
Uruguay.....	11–15 May	Food hygiene and microbiology	69
Venezuela.....	6–13 Sept.	Serologic diagnosis of brucellosis	11

American Seminar on the Control of Bovine Tuberculosis was organized and carried out by the Organization in Santiago, Chile (21–25 September); there were 40 participants from 18 countries. The Center also organized or provided assistance to 15 national courses and seminars (Table 25).

Individual training was given at the Center to 30 fellows from 10 countries during the year.

Research. The Center continued the series of applied research studies on rabies to reduce the time necessary to perform the fluorescent-antibody test; examine the methods of human postexposure antirabies treatment and search for the cause of neuroparalytic accidents in persons receiving treatment; evaluate the efficacy of different systems for isolating street virus; and conduct epidemiological investigations of bovine paralytic rabies.

With regard to brucellosis, it was carrying out studies to determine the efficacy of a vaccine for female goats of reproductive age; develop a new rapid diagnostic test for *Brucella ovis* infection; and standardize diagnostic antigens used in *B. melitensis* infections.

Research on hydatidosis included studies for the improvement of diagnostic antigens and criteria for use in human and animal infections, and the investigation of drugs effective against *Echinococcus granulosus* in dogs.

Studies on tuberculosis were continued for the purpose of determining the distribution of mycobacterial species in swine in Argentina. Investigations were made to find the culture methods most advantageous for the isolation of the organism from raw and pasteurized milk.

In Argentina, in collaboration with the Secretariat of State for Agriculture and Livestock, a study was conducted on the prevalence of leptospirosis in domestic animals from different ecologic areas of the country. Studies for evidence of the infection were made on swine from the slaughterhouses of Buenos Aires.

In the field of food microbiology, a study was carried out, in collaboration with the U.S. Food and Drug Administration, on transferable drug resistance in enterobacteria isolated from workers, cattle, and horses in the Buenos Aires slaughterhouses.

Other activities. The fourth meeting of the Scientific Advisory Committee, held in August, evaluated the progress of the Center's activities and made recommendations for the next year's program.

The Center's *Quarterly Information Bulletin* was issued regularly, in an improved and expanded edition.

Staff of the Center participated in 15 international and national technical meetings during the year.

B. ENGINEERING AND ENVIRONMENTAL SCIENCES

The quality of the environment in which men live continued to be a major concern of the Governments and of the organizations responsible for programs designed to protect it from conditions that affect it adversely. The Organization has broadened its traditional environmental sanitation activities to include other fields encompassing the growing problems of pollution, in particular those related to the air, water, and soil. Among the developments in 1970, special mention should be made of the presentation to the XVIII Pan American Sanitary Conference of the report on "Man-Environment Relationships: A Challenge of the 1970's," together with Resolution XXXIV adopted by that meeting, and of the convening of the First Regional Symposium on Water Pollution Control, at which a series of important recommendations were approved by the participants representing all the countries of the Americas.

The Conference, in the resolution in question, asked the Director to "develop, for submission to the XX Meeting of the Directing Council, environmental health projections for the 1970 decade, including specific and realistic proposals with long-range goals and the design of programs that the Organization and the Governments might undertake to monitor pollution trends and to implement essential control and remedial measures." This recommendation will have a profound influence on environmental control activities during the current decade, which will see considerable changes in the living conditions of the peoples of the Hemisphere.

The participants in the Regional Symposium underscored the fact that water pollution is not just a potential or future problem but one that is already present in the countries of the Americas and not only has economic and social repercussions but affects the relationship between man and his environment. For this reason, they urged the Organization to actively promote programs involving collaboration with the various countries for the control and prevention of pollution of the water courses serving as sources for community water supply.

Among other important developments was the expansion of the Pan American Air Pollution Sampling Network, which in 1970 had a total of 29 stations situated in 13 countries. The information compiled thus far was

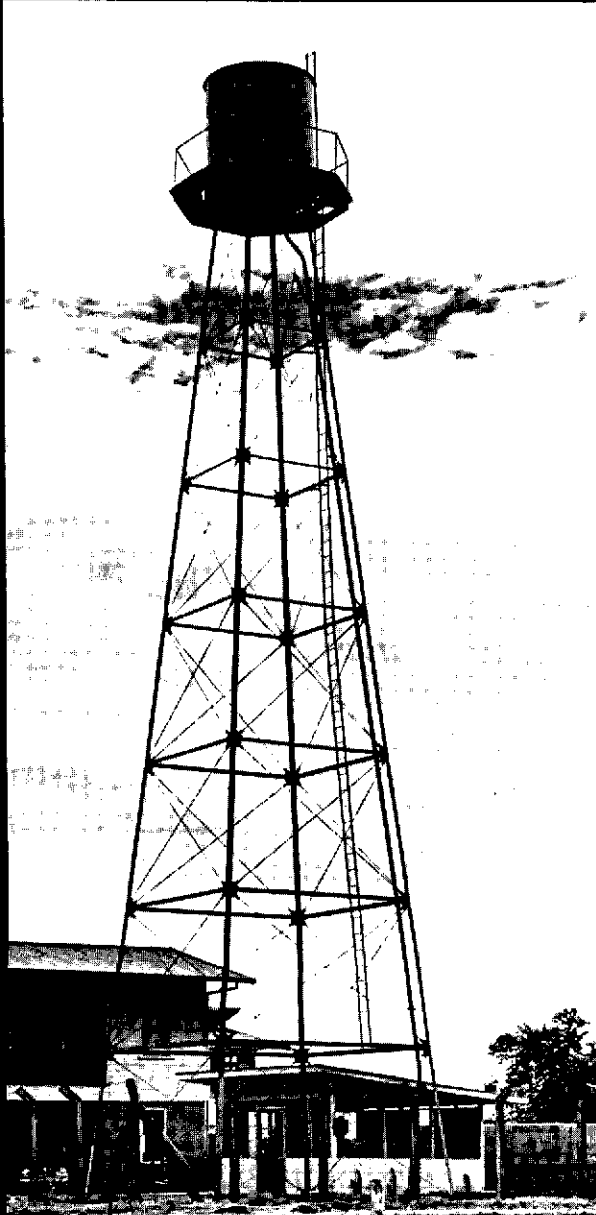
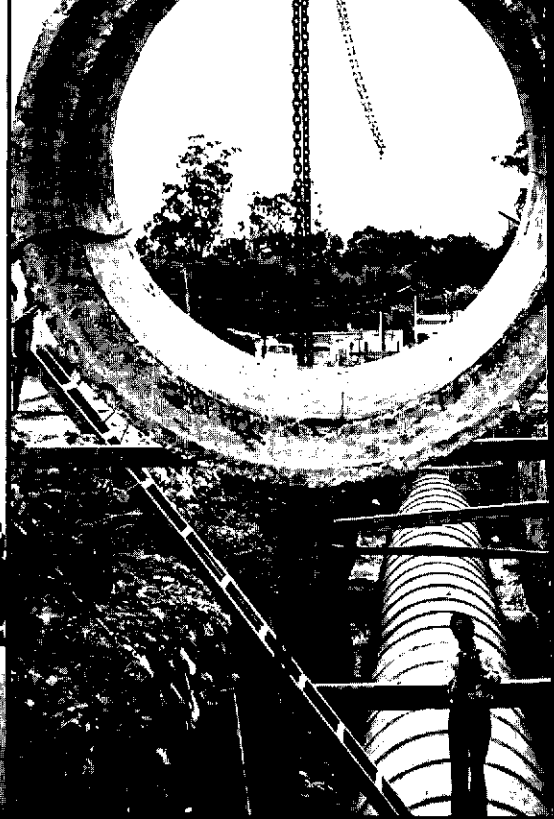
being analyzed and evaluated, and will be the subject of a special report in 1971. A large number of informational and teaching activities in this field were carried out during the year, and these should help to create a better understanding of the problem by the general public as well as by officials of health agencies.

The community water supply program in the Hemisphere continued to be accorded priority by the Governments and by international credit institutions. In 1970 the investments made by the latter were the highest since 1962, and the total investment figures (loans plus national funds) were the highest since the program began in 1961. Moreover the Governments—and the water and sewerage authorities in particular—stepped up their efforts to introduce structural, institutional, and administrative reforms, and they achieved significant results in these directions. With regard to sewerage systems, an increased effort has clearly been made by countries to improve the situation, and it seems evident that as time goes on the sewerage systems will be considerably expanded in urban districts.

The Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS), which was in its second year of operation, was proving to be an effective means of support for the technical assistance services furnished by the Organization to the various countries. In addition to activities in the fields of industrial hygiene, air pollution, housing and urbanization, and rural physical planning, 1970 saw an expansion in the direction of water treatment and the application of systems analysis to the problems of water resources. Important negotiations took place to define the arrangements for assistance by the Government of Peru to CEPIS during the next few years. As a result of this assistance, and with the recruitment of further technical personnel, the Center will begin to exert a considerable influence on the development of sanitation and environmental science programs in the Americas.

Other basic activities providing support for all programs were those of teaching, training, and research. During 1970 a total of 70 courses, six seminars, and one regional symposium were held at 44 universities and other national institutions in 19 countries, with a total of 2,784 persons attending. The personnel taking part in

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this work included 473 national instructors, 70 of the Organization's short-term consultants, and 56 permanent consultants. Research activities comprised 17 projects in six countries on various problems of regional interest. Chapters III and V give detailed information on these activities. A very important by-product of this work is the series of manuals and publications, which already constitute a valuable source of technical information not previously available in Spanish and Portuguese.

On the whole, the year 1970 was highly productive as regards activities in the field of sanitary engineering and environmental sciences, and the attention of the general public was brought sharply to bear on the problem of pollution of the environment and its effects on health. In the decade now beginning, this problem will take on considerable importance and will call for serious efforts by countries and by the Organization to prevent the establishment of irremediable situations such as have occurred in some of the more industrial countries through failure to take the necessary control measures in time.

WATER SUPPLY

At the close of the 1960's and the beginning of the new decade, water supply programs were among the most important factors in improving the health and well-being of the peoples of the Hemisphere. Since 1958, the Organization has received repeated directives from its Governing Bodies and from the Special Meetings of Ministers of Health and of the Presidents of the Americas to give the highest priority, under its technical assistance programs, to activities for the improvement and expansion of water supply services to urban and rural areas. The goals established in the Charter of Punta del Este continued to serve as guidelines for the activities of the countries and of the Organization in this field, and these have enjoyed more and more the decided support of the international credit institutions. At the beginning of the 1970's the countries found themselves in an excellent situation in regard to water supply programs, and it seems probable that in the next few years it will be possible for all of them, or at any rate the great majority, to exceed the targets laid down for urban areas and also to make important strides toward fulfilling those for rural zones (Figure 14).

In comparison with previous years, the participation of international credit agencies in water supply and sewerage programs increased considerably. In 1970, 15 loans totaling \$121.93 million were made to 12 coun-

tries—the highest level of investment since 1962 (\$137.74 million), and a great increase over the amount for 1969 (Tables 26 and 27 and Figures 15 and 16). Matching funds subscribed by countries amounted to \$102.81 million. Taking into account the number of projects under way or submitted to the credit institutions, it seems likely that this favorable trend will be maintained in 1971, which would mean a strong recovery in respect of investments over the past few years. With regard to total investments, that is, international loans and matching funds plus other national and local funds, the year 1970 recorded the highest figures since 1961, the amount committed being \$384.74 million for water supply and sewerage systems in urban and rural areas (Figure 15). It is significant to note that the increase in over-all annual investment was due mainly to additional contributions by the countries. Thus one of the basic objectives—namely, the increase in program funds by Governments and municipalities—was gradually being achieved.

With the amount invested during the year, it was estimated that another 7.2 million persons will be supplied with water through house connections, and that a further 345,000 will be served by means of public hydrants within easy access. Also, it was calculated that with part of the same funds improvements were made to the water services of an additional 7 million persons, most of them in urban zones. As in previous years, the percentage increase in the number of persons served by new water supply systems exceeded the annual growth rate of the population, thus narrowing still further the gap that existed when the program began in 1961.

By the end of 1970, some 111,255,000 persons in urban areas (75 per cent of the total urban population) had

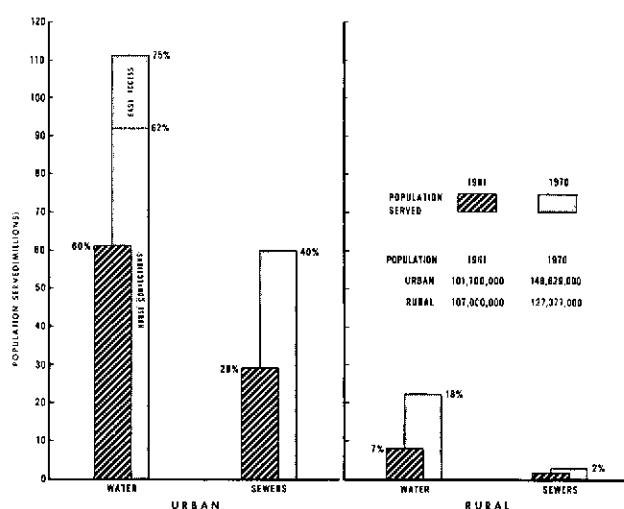


FIG. 14. Population served with water supply and sewerage systems in Latin America (1961 and 1970).

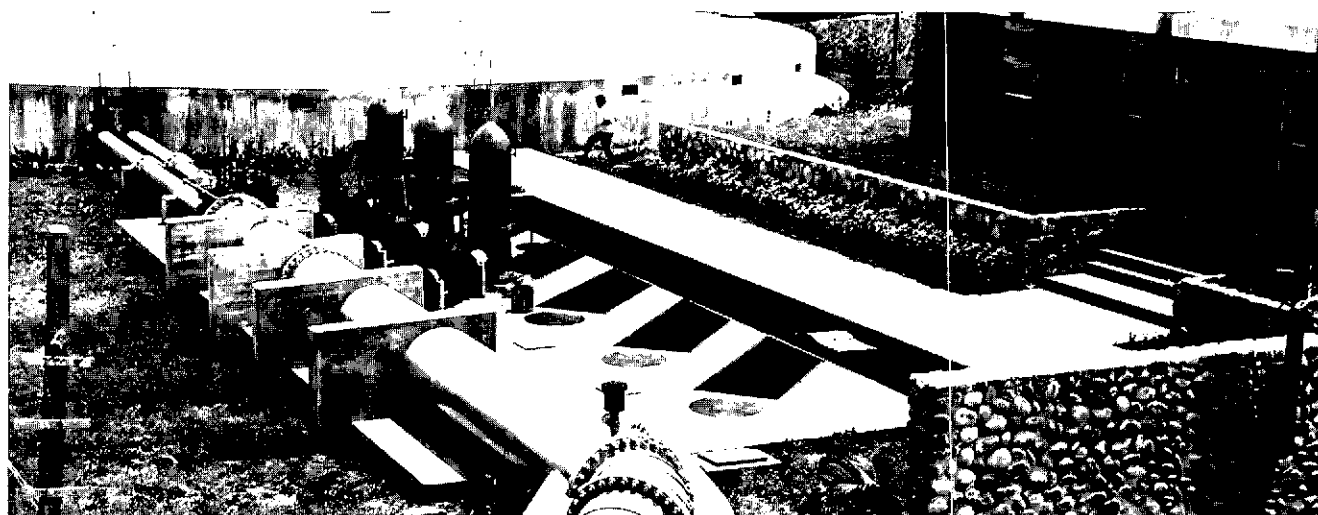
I. PROTECTION OF HEALTH: ENGINEERING AND ENVIRONMENTAL SCIENCES

TABLE 26. FUNDS ALLOCATED FOR CONSTRUCTION OF WATER SUPPLY AND SEWERAGE SYSTEMS IN LATIN AMERICA.

(January 1961–December 1970)
(Amounts in thousands of U.S. dollars)

Country	International loans								Estimated national matching funds
	IDB		IBRD		AID		EXIMBANK		
	Water	Sewerage	Water	Sewerage	Water	Sewerage	Water	Sewerage	
Argentina.....	33,730	2,270	—	—	1,400	—	—	—	43,030
Bolivia.....	10,600	4,800	—	—	1,145	—	—	—	9,397
Brazil.....	113,060	14,650	—	—	30,695	33,900	—	—	236,164
Chile.....	27,945	1,700	—	—	2,000	840	188	—	23,654
Colombia.....	36,751	7,233	30,000	2,500	3,800	9,600	1,261	—	82,600
Costa Rica.....	3,900	3,940	—	—	4,900	—	4,000	—	6,524
Dominican Republic..	9,060	1,090	—	—	3,000	—	—	—	5,925
Ecuador.....	17,200	11,168	—	—	—	—	—	—	13,423
El Salvador.....	7,680	1,520	—	—	75	—	—	—	4,540
Guatemala.....	21,718	2,000	—	—	1,369	—	—	—	13,305
Guyana.....	—	—	—	—	2,650	—	—	—	1,200
Haiti.....	7,510	88	—	—	—	—	—	—	1,600
Honduras.....	2,650	—	—	—	1,050	—	—	—	670
Jamaica.....	—	—	5,000	—	3,700	—	—	—	5,900
Mexico.....	25,974	550	—	—	—	—	36	—	18,296
Nicaragua.....	2,000	4,885	3,000	—	143	—	—	—	8,128
Panama.....	5,842	370	—	—	21,140	10,851	—	—	15,007
Paraguay.....	3,895	4,670	—	—	—	—	—	—	3,550
Peru.....	25,024	10,836	—	—	5,700	2,900	5,123	1,500	43,079
Trinidad and Tobago..	300	—	—	—	—	—	—	9,000	9,313
Uruguay.....	12,943	3,300	—	—	—	—	1,900	—	23,768
Venezuela.....	46,000	7,200	21,300	—	—	—	7,500	—	121,131
Total.....	413,782	82,270	59,300	2,500	82,767	58,091	20,008	10,500	690,204

International loans.....\$ 729,218
 Water.....\$575,857
 Sewerage.....153,361
 National matching funds.....690,204
 Other national funds.....606,520
 Total funds.....\$2,025,942



Repumping station: Papagayo River system, Acapulco, Mexico.



Maraval River dam, Port-of-Spain, Trinidad.

TABLE 27. INTERNATIONAL LOANS AND NATIONAL MATCHING FUNDS APPROVED OR SIGNED DURING 1970 FOR COMMUNITY WATER SUPPLY AND SEWERAGE SYSTEMS IN LATIN AMERICA.

(U.S. dollars)

Country	Lending agency	Purpose	International loan	National matching funds
Brazil.....	AID	Municipal water supply and sewerage loans through National Housing Bank.....	15,400,000	12,500,000
	AID	Municipal sewerage, principally for northeast and poorer sections of the country.....	25,000,000	37,500,000
Chile.....	IDB	Valparaíso and Viña del Mar—Water supply.....	3,000,000	2,550,000
Colombia.....	IBRD	Cali—Water supply and sewerage.....	18,500,000	14,500,000
Costa Rica.....	IDB	San José—1 st stage sewerage system; and water supply and sewerage for Limón, Liberia, Puntarenas, San Isidro del General.....	6,300,000	3,700,000
Dominican Republic....	IDB	100 small towns—2 nd stage water supply.....	4,100,000	2,625,000
Ecuador.....	IDB	Guayaquil—1 st stage sewerage system.....	7,600,000	5,000,000
Guatemala.....	IDB	Guatemala City—Improvement of water supply.....	15,500,000 ^a	8,500,000
	AID	82 water supply systems for small towns; also a few sewerage systems.....	1,345,000 ^a	620,000
Haiti.....	IDB	Port-au-Prince, and others—2 nd stage water supply....	5,100,000	1,250,000
	IDB	Technical assistance for sewerage systems.....	88,000	—
Honduras.....	IDB	San Pedro Sula—Technical assistance for water supply system and some storm sewers.....	100,000	20,000
Mexico.....	IDB	Monterrey—Water supply and sewerage system.....	12,500,000 ^a	9,000,000
Nicaragua.....	IDB	Managua—3 rd stage sewerage system.....	4,700,000	3,748,000
Peru.....	IDB	Emergency program, including water supply and sewerage, mostly for small towns.....	2,700,000	1,300,000
Total.....			121,933,000	102,813,000

^a Approved in 1969, signed in 1970.

TABLE 28. STATUS OF WATER SUPPLY AND SEWERAGE SYSTEM SERVICES IN LATIN AMERICA AT THE END OF 1970.
(Population in thousands)^a

Country or other political unit	Date of data	Water supply										Sewage disposal									
		Total					Urban					Rural					Urban	Rural	Total	%	
		Popu- lation	Population served			%	Popu- lation	Population served			%	Popu- lation	Population served			House con- nec- tions	Easy ac- cess	Total	%		
			House con- nec- tions	Easy ac- cess	Total			House con- nec- tions	Easy ac- cess	Total			House con- nec- tions	Easy ac- cess	Total						
Argentina.....	Oct. 70	23,450	12,454	1,100	13,554	58	17,800	11,800	66	900	12,700	71	5,660	654	290	854	15	6,200	—	6,200	26
Barbados.....	Dec. 70	254	130	124	254	100	116	103	80	13	116	100	138	27	111	138	100	—	—	—	26
Bolivia.....	Nov. 70	4,931	578	481	1,059	21	1,072	513	48	463	976	91	3,859	65	18	83	2	320	—	320	6
Brazil.....	Dec. 70	96,775	28,210	4,000	30,210	31	50,300	26,210	52	2,000	28,210	56	46,475	—	2,000	2,000	4	13,440	—	13,440	14
British Honduras.....	April 70	119	32	15	47	38	64	24	37	15	39	61	55	8	—	8	15	2	2	2	2
Chile.....	Nov. 70	9,270	4,370	1,830	6,200	67	6,400	4,250	66	1,700	5,950	93	2,870	120	130	250	9	2,430	185	2,615	28
Colombia.....	Dec. 69	20,619	9,300	6,500	15,800	77	12,002	7,800	65	3,900	11,700	97	8,617	1,500	2,600	4,100	48	8,600	1,800	10,400	50
Costa Rica.....	Sept. 70	1,753	1,157	203	1,360	78	859	789	93	60	859	100	884	358	143	501	56	206	—	206	12
Cuba.....	June 68	7,959	5,810	650	6,260	79	5,020	3,840	76	650	4,490	89	2,930	1,770	—	1,770	60	1,700	—	1,700	21
Dominican Republic.....	Oct. 70	4,012	1,040	466	1,496	37	1,604	934	58	291	1,225	76	2,408	108	165	271	11	258	—	258	6
Ecuador.....	Nov. 70	6,005 ^b	1,555	422	1,977	—	2,277	1,389	61	312	1,701	75	3,726	168	110	276	7	1,311	40	1,351	22
El Salvador.....	July 70	3,534	1,366	133	1,529	43	1,364	1,379	80	133	946	70	2,170	583	—	583	27	731	4	735	21
Guatemala.....	Dec. 70	5,160	772	1,250	2,022	38	1,779	725	41	872	1,597	90	3,381	47	378	425	13	728	—	728	14
Jamaica.....	Dec. 70	764	400	28	428	56	240	224	93	7	231	96	594	176	21	107	38	93	—	93	12
Japan.....	July 70	4,866	166	330	526	11	914	150	16	250	400	44	3,952	46	80	126	3	75	—	75	2
Honduras.....	Nov. 70	2,636	593	317	910	35	772	475	62	245	720	93	1,864	118	72	190	10	387	2	389	15
Indonesia.....	July 70	1,979	649	262	911	46	557	537	96	6	543	97	1,422	112	266	388	26	139	8	147	7
Mexico.....	Feb. 70	48,313	25,260	4,000	29,260	61	27,851	19,490	70	4,000	23,490	84	20,462	5,770	—	5,770	28	14,040	—	14,040	29
Nicaragua.....	Dec. 70	1,948	617	245	862	44	785	537	71	185	742	95	1,163	60	60	120	10	342	—	342	18
Panama.....	Oct. 70	1,425	660	55	715	50	676	611	90	37	648	96	740	49	18	67	9	460	4	464	33
Paraguay.....	Nov. 70	2,379	160	213	373	16	874	160	18	125	285	33	1,505	88	88	88	6	125	—	125	5
Peru.....	Sept. 70	12,852	2,980	2,060	5,040	38	5,831	2,900	50	1,300	4,200	72	7,021	50	760	840	12	3,700	12	3,712	29
Rumania.....	Dec. 70	410	145	30	175	43	140	140	100	—	140	100	270	5	30	35	13	83	—	83	20
Trinidad and Tobago.....	Dec. 70	1,060	562	460	1,022	96	358	297	83	59	355	92	732	265	401	666	95	181	2	183	17
Uruguay.....	Nov. 70	2,838	1,922	248	2,170	76	2,106	1,853	88	189	2,042	97	732	69	59	128	17	1,200	—	1,200	42
Venezuela.....	Sept. 70	10,400	7,206	1,397	9,103	88	6,900	5,300	77	1,520	6,820	99	3,500	1,906	377	2,283	65	3,272	100	3,272	32
Eastern Caribbean coun- tries and territories...	Dec. 70	504	131	232	363	72	168	74	44	55	129	77	336	57	177	234	70	14	—	14	3
Total.....		276,206	106,085	27,541	133,626	48	148,829	81,968	62	19,287	111,255	75	127,377	14,117	8,254	22,371	18	60,037	2,137	62,104	23

^a Current estimates of population and population served as received from countries by the Department of Engineering and Environmental Sciences, PASB.

Population estimate for December 1969, data for November 1970.

TABLE 29. COLLABORATION PROVIDED BY PAHO IN COMMUNITY WATER SUPPLY AND OTHER ENVIRONMENTAL ACTIVITIES
(STAFF AND SHORT-TERM CONSULTANTS), 1970.

Type of services	Zone I							Zone II			Zone III							Zone IV				Zone V	Zone VI				
	Barbados	Guyana	Jamaica	Surinam	Trinidad and Tobago	West Indies	Venezuela	Cuba	Dominican Republic	Haiti	Mexico	British Honduras	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panama	Bolivia	Colombia	Ecuador	Peru	Brazil	Argentina	Chile	Paraguay	Uruguay
COMMUNITY WATER SUPPLY																											
Water authorities—Organization or improvement.....							X		X								X					X					
Other agencies—Organization or improvement.....																											
Water supply system—Design.....									X				X	X			X		X								
Organization and management.....									X										X								
Problems.....																											
Planning—National or regional.....																											
Water rates—Establish or improve.....																											
Public relations.....																											
Rural community water supply.....																											
Groundwater exploration, drilling.....																											
Community development, self-help.....																											
Water quality control.....																											
Water resources, study.....																											
Revolving fund mechanism.....																											
Fluoridation.....																											
Laboratories—Installation, operation.....																											
Design standards, criteria—Development.....																											
UNICEF projects.....																											
Financing—Method or prepare loan request.....																											
OTHER ENVIRONMENTAL SANITATION ACTIVITIES																											
Ministry of health—Assistance.....																											
Sanitary engineering department—Assistance.....																											
Environmental sanitation (miscellaneous).....																											
Pollution control, sewage treatment, industrial waste.....																											
Privy program.....																											
Oxidation ponds—Design and use.....																											
Solid waste, sanitary landfill.....																											
Air pollution control.....																											
Industrial hygiene and radiation.....																											
Studies or surveys.....																											
UNDP projects—Supervise or develop.....																											
Sanitary engineering programs—Universities.....																											
Short courses—Organize or present.....																											
Courses—Sanitary inspectors.....																											
Seminars, symposia.....																											
Centers or institutes.....																											
Manuals—Preparation.....																											

water service through either house connections or public hydrants.

During the period 1961-1970, taking into account the progress described above, some 74 million persons, or approximately 27 per cent of the total population, have benefited by projects for the construction, expansion, or improvement of water supply systems in urban and rural localities in Latin America. The investment involved has amounted to more than \$2,025 million from national and external credit sources (Figure 15). Of great significance

is the fact that country contributions amounted to more than \$1.296 million, including counterpart funds to match loans and other national funds for the construction of new water supply and sewerage systems. On their side, the international credit institutions have provided sums amounting to \$729.22 million. Of this total, \$496.06 million represent loans by the Inter-American Development Bank and the rest loans by the International Bank for Reconstruction and Development (International Development Association), the Export-Import Bank, and the

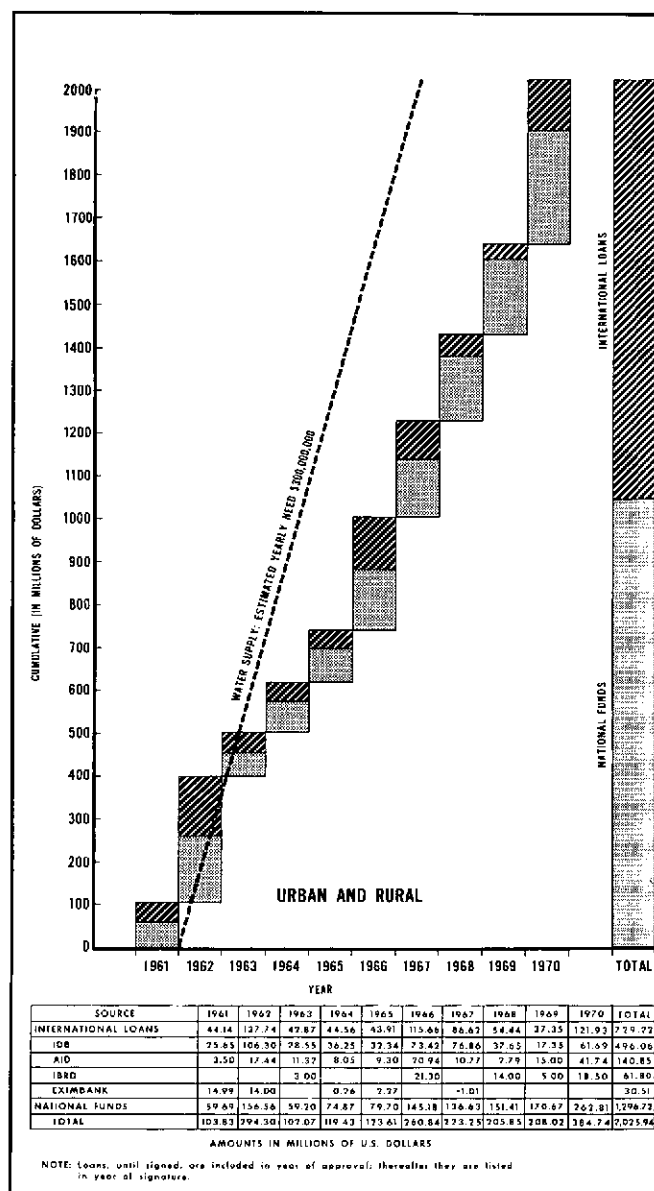


FIG. 15. National funds and international loans allocated for the construction of urban and rural water supply and sewerage systems in Latin America (January 1961-December 1970).

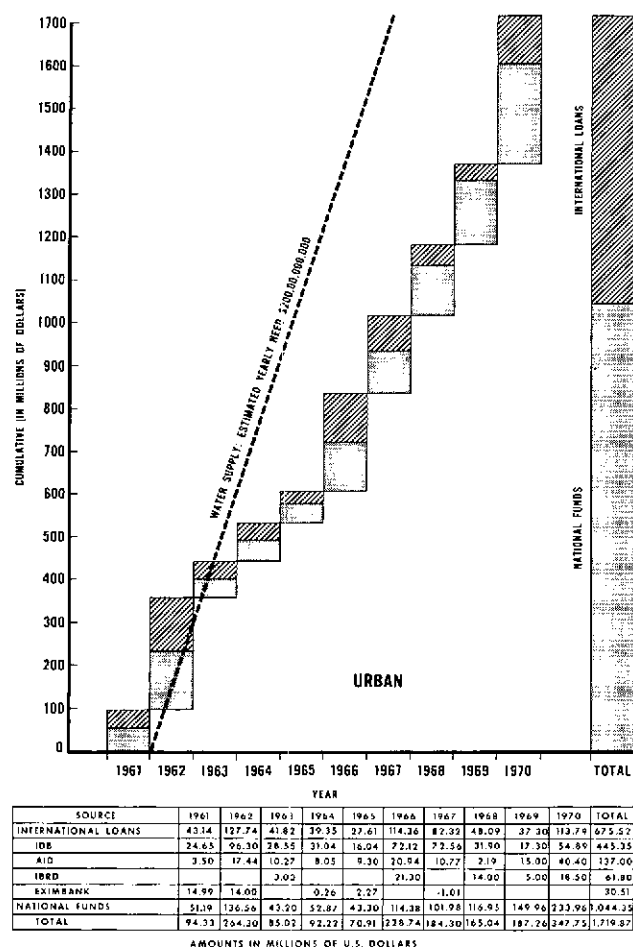


FIG. 16. National funds and international loans allocated for the construction of urban water supply and sewerage systems in Latin America (January 1961 to December 1970).

U.S. Agency for International Development. Some European countries and Canada contributed smaller amounts (the figures are not included in the tables in this *Report*).

The year 1970 was very important from the viewpoint of the number and size of the water supply and sewerage projects that were being prepared for presentation or had been submitted to the international credit institutions. By the year's end there were about 50 projects in various stages of preparation, most of them involving loans for partial financing. The Organization participated actively in promoting these projects and also in technical assistance work at the various stages of their development.

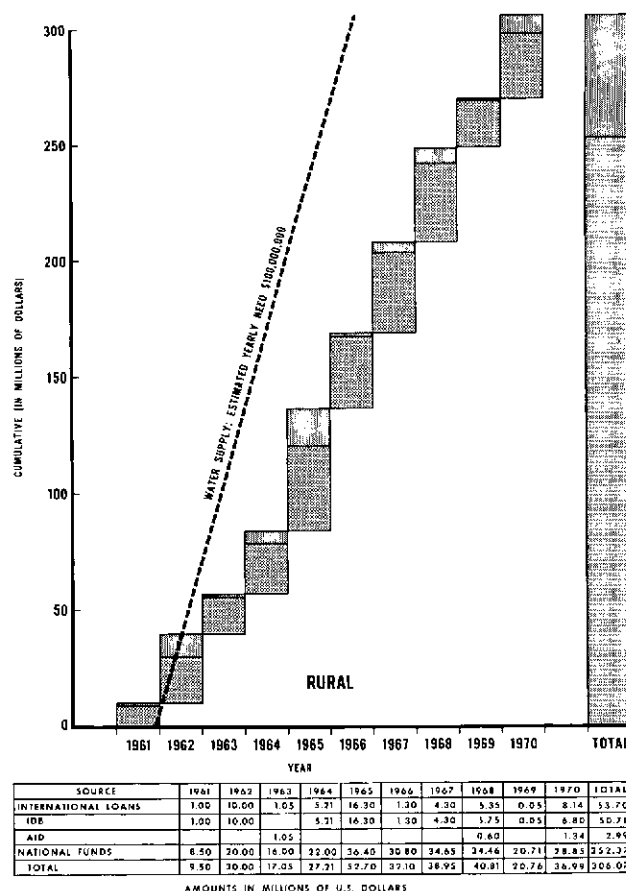
Of the 27 countries and areas from which information was received, 23 had reached or exceeded the target of bringing water supply services through house connections or public hydrants to 70 per cent of the urban population. Thus, all but four countries had complied with one of the most crucial goals of the Charter of Punta del Este (Table 28). These results demonstrate the effort made by countries over the past 10 years and indicate the ground to be covered during the 1970's to provide adequate water supplies to the inhabitants still lacking such services, and to meet the needs created by rapid population growth in the cities of Latin America.

The Organization continued to work in collaboration with all the countries on the promotion, planning, and implementation of national water supply programs through its permanent engineering personnel and by making use of a considerable number of short-term consultants (Table 29).

Rural Water Supply

In the rural water supply programs, special emphasis was placed on the development of revolving funds for their financing, on mass construction methods, and on community participation in the provision of manpower. The Organization also continued to stress the importance of simplicity of design, construction, and operation and the establishment of administrative structures at all levels adequate for the efficient conduct of activities.

The international credit institutions, in particular the Inter-American Development Bank, have contributed to the promotion of these programs in rural areas, and other bodies have likewise played a part, either by granting loans or by providing technical assistance—among them UNICEF, the World Food Program, the U.S. Agency for International Development, and in the past few years the Canadian International Development Agency. In the



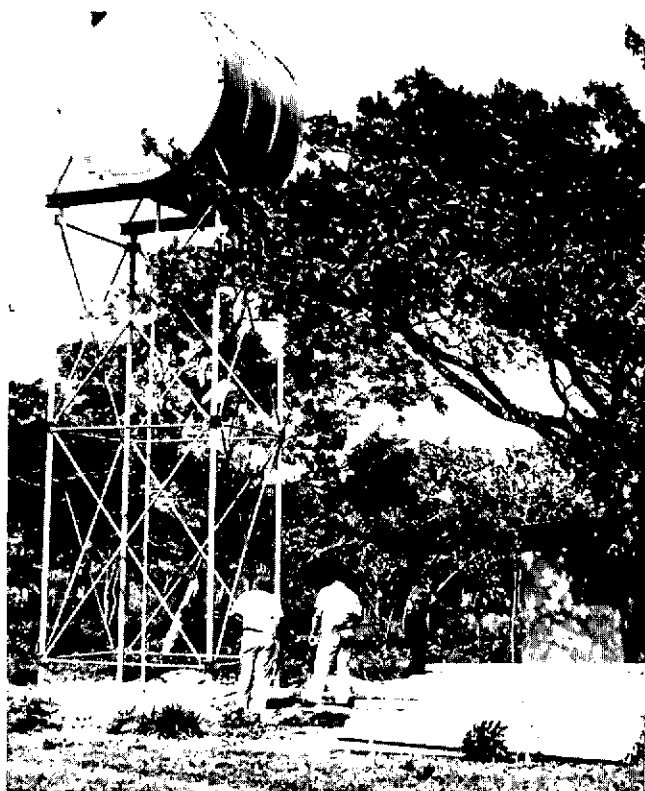
NOTE: Loans, until signed, are included in year of approval; thereafter they are listed in year of signature.

FIG. 17. National funds and international loans allocated for the construction of rural water supply and sewerage systems in Latin America (January 1961 to December 1970).

course of the year four loans were granted: three by IDB (to the Dominican Republic, Haiti, and Peru) and one by AID (to Guatemala). Between 1961 and 1970 the international credit agencies approved loans for rural programs amounting to \$53.7 million, and matching funds represented \$45.3 million (Table 30). Total investments, including all national funds, up to December 1970 amounted to \$306.07 million (Figure 17).

It is most significant that the countries are furnishing approximately 82 per cent of the funds invested in these rural programs. This would suggest that a higher level of participation of external capital and a more vigorous promotional effort on the part of the Organization will be required.

The rural inhabitants supplied with adequate water services, either through house connections or through easy access to public hydrants, numbered approximately 22 million, or 18 per cent of the rural population



Elevated tank and pump house of the water supply system of a rural village in Panama.

(Table 28 and Figure 14)—an increase of 2 per cent over the figure for 1969. In relation to the goals of the Charter of Punta del Este, six countries had reached or exceeded the target of providing service to at least 50 per cent of the rural population. There is no doubt that the

TABLE 30. INTERNATIONAL LOANS AND NATIONAL MATCHING FUNDS FOR RURAL COMMUNITY WATER SUPPLY AND SEWERAGE SYSTEMS IN LATIN AMERICA

(January 1961–December 1970)
(U.S. dollars)

Country	Leading agency	Year	Loan	National matching funds
Argentina.....	IDB	1965	5,000,000	5,000,000
Bolivia.....	IDB	1968	1,800,000	1,675,000
Chile.....	IDB	1964	2,500,000	2,500,000
Costa Rica.....	IDB	1965	1,300,000	1,000,000
Dominican Republic.....	IDB	1968	1,950,000	1,050,000
		1970	4,100,000	2,625,000
El Salvador.....	IDB	1961	1,000,000	420,000
		1964	1,060,000	480,000
Guatemala.....	IDB	1966	1,300,000	800,000
	AID	1970	1,345,000	620,000
Guyana.....	AID	1968	600,000	400,000
Haiti.....	IDB	1970	50,000	—
Honduras.....	AID	1963	1,050,000	—
Nicaragua.....	IDB	1968	2,000,000	1,330,000
Panama.....	IDB	1967	1,160,000	607,000
Peru.....	IDB	1964	1,650,000	1,450,000
		1967	3,135,000	4,044,000
		1970	2,700,000	1,300,000
Venezuela.....	IDB	1962	10,000,000	10,000,000
		1965	10,000,000	10,000,000
Total.....			53,700,000	45,301,000

progress of the rural programs has been slow, lagging far behind that achieved in the urban zones; but it must be recognized that in spite of the many difficulties of an economic and social nature they had to face, the programs have gone ahead at a steady pace.

Advice on water supply programs in rural areas was

TABLE 31. STATUS OF REVOLVING FUND PROGRAMS, 1970.

Country	Status of fund	Date	Fund data (U.S. dollars)			Purpose of funds
			Source of funds	National	Loan	
Argentina.....	In operation	1965	National/IDB	5,000,000	5,000,000	Financing rural water systems
Bolivia.....	In operation	1970	National/PAHO	—	4,500	Financing rural water and sanitation programs
Brazil.....	In operation	1965	National/AID	4,300,000	2,200,000	Financing rural water systems
Costa Rica.....	In operation	1965	National/IDB	1,300,000	1,000,000	Financing rural water systems
Dominican Republic..	In operation	1968	National/IDB	1,000,000	2,000,000	Financing rural water systems
	In operation	1970	National/PAHO	200,000	100,000	Financing rural sanitation programs
Peru.....	In operation	1966	National	75,000	—	Financing house connections
Colombia.....	Under study	—	—	—	—	Financing rural water systems
Ecuador.....	Under consideration	—	National	—	—	Financing rural water and sanitation programs
Haiti.....	Under consideration	—	National/PAHO	50,000	50,000	Financing rural sanitation programs
Paraguay.....	Under consideration	—	National/IDB	—	—	Financing rural water and sanitation programs

—None.

given to 19 countries and to community promotion and self-help projects in 10 countries (Table 29). In Paraguay, the Organization cooperated in the preparation of a project of vast scope in which UNICEF and the World Food Program will participate and for which a loan was to be requested from IDB. It also took part in drafting projects in Argentina (second stage), the Dominican Republic (second stage), Peru (third stage), and in the initial stage of projects in Guatemala, Honduras, and Panama. Emergency programs were completed with considerable success in El Salvador and Honduras for the construction and rehabilitation of a large number of rural services for water supply and other sanitary installations. In both countries the programs in question were continued with local funds, and it was proposed to request financial assistance from IDB to extend them to cover the whole of the national territory.

Particularly noteworthy is the community promotion project established in Central America and Panama over the past two years. It starts out from the basic premise that the integrating factor in local action is active participation by the particular community, which provides labor and local materials during the construction work on the site and cooperates in the operation and maintenance of services. In Honduras, where the project has been most active, 20 wells and six small water systems were constructed in the course of the year, and more than 2,000 latrines were installed. These activities will be increased in 1971 in the other countries of the Central American Isthmus.

The revolving fund mechanism was being used by six countries, in seven programs, for financing the construction of waterworks in rural areas (Table 31). Another four countries had projects for which this system was under consideration. The Organization continued its work of promoting revolving funds as one of the possible devices for financing sanitation projects and health operations in rural areas, where it is difficult to obtain repeated financing for programs from Governments or international credit agencies.

SEWERAGE AND WATER POLLUTION

Sewerage

Because of the priority given to the water supply programs, the Charter of Punta del Este target of providing sewerage services to at least 70 per cent of the urban and



Excavation of ditches for sewerage.

50 per cent of the rural population has not been achieved, and the statistical data available suggest that it is not likely to be reached by the end of the current decade. In the past few years, the countries have made a genuine effort to improve the situation as regards urban sewerage services, and this has been reflected in the submission of a number of projects to the international credit agencies.

At the end of 1970, according to information from the countries, 62.19 million persons (23 per cent of the total population of Latin America) had adequate sewerage and waste water disposal services in urban and rural areas (Table 28). Of this total, some 60 million were living in urban areas (40 per cent of the urban inhabitants), which means an increase of 1 per cent over the population served in 1969 (Figure 14). The rural inhabitants served numbered about 2.16 million (2 per cent of Latin America's rural population). Clearly this was far from reaching the goals laid down for the whole of the population. With regard to individual countries, only one exceeded the target for urban zones and two others

were approaching it. No country had come near the target set for rural areas.

During 1970 the international lending agencies approved loans (Table 27) for a number of sewerage projects: the IDB granted one for construction of the first-stage expansion and improvement of the system in Guayaquil, Ecuador, and another for the third-stage construction of the system in Managua, Nicaragua. AID approved a loan of \$25 million for sewerage projects in several localities in Brazil, chiefly in the northeast. Other loans granted for water supply included funds for the improvement of sewerage in the cities receiving the loans. The World Bank was still considering requests for loans for the cities of Kingston (Jamaica), São Paulo (Brazil), and Bucaramanga (Colombia). At the end of the year, the Government of Barbados submitted a request to IDB for a loan to undertake a technical study of the sewerage system at Bridgetown. It also requested technical advisory services from the Organization for this project, and these will be provided early in 1971.

As part of their rural sanitation schemes, most of the countries had programs, varying in scope, for the installation of latrines; but no statistical information was available to justify an approximate estimate of the status and progress of these programs.

Water Pollution

The First Regional Symposium on Water Pollution Control, held in Caracas, 16-21 August, will have a decided influence on future activities in this field. It was attended by 131 participants from all the countries of the Americas. The Organization prepared a document for the Symposium containing valuable information on the situation in Latin America, and a summary of the problems facing some of the countries and major cities. The participants recommended that as a first stage an evaluation should be made of the status of the problem in all the countries, using simple procedures, which would make it possible later on to undertake a thorough assessment on the basis of technical, epidemiological, and other studies, varying in complexity according to the extent of the water resources, their various uses, and the sources of pollution. To carry out the first stage, it was recommended that the Organization cooperate with the countries, mainly through the Pan American Center for Sanitary Engineering and Environmental Sciences, in formulating their operational plans and conducting other activities such as technical publicity, applied research, training, and organization of meetings.



Taking of water sample for river pollution control.

The Organization gave assistance to many of the countries in connection with problems of pollution of water courses. These activities included the study of the system of interceptor sewers to control pollution on the beaches in Montevideo, Uruguay; control of pollution of the Bogotá River in Colombia; organization of a sampling program for the Lerma River in Mexico; establishment of a national commission for environmental pollution control in Santiago, Chile; control of wastes from coffee-processing establishments in El Salvador and Guatemala; and participation in studies on the control of water pollution conducted by the Study Commission for the Guayas River in Ecuador. In Argentina research was continued on pollution of the Riachuelo, Reconquista, and Salí (Dulce) Rivers, in collaboration with the Secretariat of State for Public Health, the National Sanitation Works Administration, and the Institute of Sanitary Engineering of the National University of Buenos Aires. In Jamaica recommendations were drawn up for a study indicating ways and means of preventing pollution of beaches by sewage from the drainage systems of the main urban zones.

In the course of the year, technical assistance was provided to 17 countries for sewerage, water pollution, and industrial waste projects; to 16 countries in connection with problems of water quality; to 14 for rural latrine construction programs; and to 10 on the use of oxidation ponds for the treatment of waste water.

SOLID WASTE

There was growing concern among national and municipal authorities over pollution of the soil in cities by

the indiscriminate discharge of solid waste. As urban zones expand and become industrialized, the production of solid waste of domestic and industrial origin increases, and its collection and disposal give rise to serious problems.

The Organization continued to furnish advice and technical assistance to countries and cities for the study and solution of these problems, including the financing and administration of existing services. In 1970 it collaborated with 12 countries in this field. A consultant advised the Government of Cuba on problems connected with refuse collection and disposal in Havana, and arrangements were made to provide Argentina and Barbados with similar advisory services in early 1971.

Argentina's national refuse disposal program was continued, with financial backing from the National Revolving Sanitation Fund. The Fund granted loans to five provinces amounting to 1,233,100 pesos (US\$308,275), to purchase equipment for use in sanitary landfills, and the Secretariat of State for Public Health contributed the sum of 430,000 pesos (US\$107,500) for the organization and operation of landfills. In Chile a feasibility study for refuse collection, transport, and disposal in Greater Santiago was near completion, and consideration was being given to a national plan to deal with the problem of solid waste in cities of over 50,000 inhabitants.

Two countries of Central America requested loans from IDB to conduct feasibility and engineering studies, as a basis for subsequent loan applications for the purchase of equipment and machinery needed for the refuse collection and disposal operations. The contribution of external funds for such activities could be very important,

particularly in cases where considerable sums are required for the purchase of equipment and motor vehicles or the construction of large-capacity incinerators.

For the 1970's, the following objectives have been established for this program: installation of services for the regular collection and sanitary disposal of solid waste in all large and medium-sized towns, and regular collection of waste and systematic disposal schemes for other cities. Some of the chief activities the Organization will undertake in connection with these objectives are the following: (a) cooperation in the establishment of institutional and self-financing structures designed to provide waste collection and disposal services; (b) assistance in obtaining initial financing for such services; and (c) measures to make available to the countries the new technology of waste treatment.

ADMINISTRATION OF WATER SUPPLY AND SEWERAGE SERVICES

In 1970 experience again showed that management and administration problems are the main obstacles to the provision of public services (water, sewerage, solid waste disposal, pollution control, etc.) that are satisfactory in regard to quality and quantity as well as cost.

The Governments, and in particular the water supply and sewerage agencies, continued their efforts and intensified action designed to introduce structural changes, improve the institutional system, and effect administrative reforms. Considerable progress was made, and criteria and norms were established which consolidated or initiated the process of change in the majority of countries. The result was an improvement in returns, a breakup of stagnation, stricter fulfillment of investment plans, and the extension of services to a large sector of the urban and rural population.

New installations, ambitious future investment plans (approximately \$500 million a year), the entrepreneurial nature of the services, their complexity, and the degree of satisfaction they can give, have created a new dimension that calls for the use of new techniques and principles. Close attention has been paid by the countries to systems analysis, use of new programming and control techniques, application of economic criteria in decision-making, feasibility studies, and compilation and analysis of financial data required to demonstrate the economic capacity of the institutions concerned.

The Governments have also established norms and cri-



Sanitary landfill.

teria for the optimum use of their statistical services, the establishment of information systems designed to make the most of available resources, the application of rate schedules, accounting systems of the entrepreneurial type, and commercial services suited to the potentially self-financing nature of water supply and sewerage undertakings.

At the same time an impetus was given to planning processes, especially in regard to the application of operational policies and strategies, the strengthening of infrastructures, and plotting of the action needed to achieve the over-all development of the sector.

As a consequence, the technical assistance given by the Organization has been channeled not only toward operational and procedural matters but also toward the management and direction of institutions, with a view to collaborating with Governments in their efforts to find solutions to the vast problems created by rapid population growth, urban overcrowding, lack of operational capacity and shortage of resources, and to overcome the obstacles caused at times by certain traditional patterns of life.

Large-scale advisory services were furnished to water supply institutions in Brazil, Costa Rica, Peru, and Venezuela, and the Organization helped a number of undertakings in 12 countries to implement the recommendations made during advisory operations in past years. It gave the highest priority to this latter activity, devoting to it a considerable amount of the time of both its short-term consultant teams and its engineering project personnel in those countries.

The great interest shown by national authorities, combined with the contributions the Organization has been able to make, resulted in notable progress. Some countries reported considerable monetary savings (the Dominican Republic and Nicaragua), others an increase in income (in São Paulo, Lima, Montevideo, Kingston, and in Trinidad and Tobago), and all of them a sense of order in their operational machinery that enabled them to reach their targets and to obtain further credits for financing investment plans. Argentina, the Dominican Republic, Ecuador, and Uruguay among other countries stated that they had complied with as much as 90 per cent of the recommendations.

During 1970 agreements were concluded with five water supply authorities and the relevant advisory programs were begun. Country contributions for financing these services amounted to \$2.4 million by the year's end. Of the cost of the activities programmed for the next four years—\$1.5 million—the countries will furnish approximately \$1 million by means of special contributions to the

PAHO Community Water Supply Fund, and international lending agencies will finance up to 77 per cent of those contributions, the remaining 33 per cent representing the countries' own funds. During the year, closer contacts were made with IDB and the World Bank, and for the first time assistance was received from AID for financing two missions (in Panama and Peru). In addition, financial aid was obtained from the United Nations Development Program (for Surinam). At the same time, coordination was made more effective and programming brought more into line with the specific needs of the undertakings receiving advice and with the contract conditions laid down by credit institutions.

The results of the experience of the countries and the Organization alike in this field over the past few years have been gathered together in a number of manuals published in the technical series of the Department of Engineering and Environmental Sciences. These manuals constitute a valuable guide for water supply and sewerage activities, and are of great importance for the establishment of criteria and norms in fields where reference material is practically non-existent. For this reason, PAHO proposes to continue this program and to publish manuals covering other specific fields. Those published during 1968-1970 were as follows:

<i>Serial no.</i>	<i>Title</i>
1	Establishment and operation of revolving funds (in Spanish)
2	Administration and management of water supply and sewerage services (in Spanish)
3	Billing and collections in water and sewerage services (in Spanish)
4	Programming and control of sanitary engineering projects (in Spanish)
5	Community water supply and sewage disposal programs in Latin America and Caribbean countries (in English)
6	Latin American Seminar on Air Pollution (in Spanish)
7	Operation and maintenance of water supply installations and equipment (in Spanish)
8	Methods and alternatives for financing sewerage systems (in Spanish)
9	Personnel management for public water and sewerage services (in Spanish)

The techniques worked out by the Organization for the institutionalization and improvement of water supply and sewerage agencies could be applied to other institutions concerned with services related to the environment. Thus for example, two courses were organized on administration of solid waste disposal services, and in 1971 technical assistance will be furnished in this field, in response to requests from the countries.

PAN AMERICAN CENTER FOR SANITARY ENGINEERING AND ENVIRONMENTAL SCIENCES



The Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS), situated in Lima, was established in 1969 to meet the growing demands for advisory services in the various specialized fields devoted to preservation and improvement of the environment in the Latin American countries. In 1970, with a staff that was still limited in number, an endeavor was made to respond to the rapidly increasing number of requests in connection with industrial hygiene, air pollution, housing and urbanization, and rural physical planning, and the very important field of water treatment was added as a new activity. The staff visited 16 countries for these purposes. At the year's end, another opportunity of providing needed service was realized with the appointment of an engineer-scientist trained in systems analysis.

While the Center continued to occupy provisional quarters, negotiations were proceeding with the Peruvian Government toward the goal of constructing a modern building to provide office, conference, library, and laboratory space. A site was being considered for such a building. The Government has offered assistance for the operation of the Center.

Emergency Services

Immediately following the earthquake in Peru, at the end of May, emergency assistance to the Government of

Peru took precedence over all other activities. The Center advisers responded to requests from the Ministries of Housing, Agriculture, and Fisheries as well as from the National Office of Community Development and from international organizations such as the UN and OAS. Preparation of a master plan of urbanization and public services for the city of Chimbote, which had been badly damaged by the earthquake, was the subject of close contact with the national authorities. The main objective was to keep planning activities and expenses in a pragmatic and rational frame.

Air Pollution

Coordination of the Pan American Air Pollution Sampling Network continued to be a principal function of the Center. With the addition of seven new stations during the year, the Network comprised 29 stations in 13 countries. The data collected over the past three years was being compiled by the Center and a report evaluating the situation was in preparation. During 1970 a second edition of the manual of operations for stations of the Network was issued.

Air pollution programs were reviewed in Argentina, Colombia, Cuba, and Uruguay as well as in Chile, which received advisory services in connection with a loan request to AID to finance a feasibility study for the pollution control program in Santiago. Honduras was assisted with measures to control pollution caused by an industrial plant in San Pedro Sula, and the associated industrial hygiene problems were studied at the same time.

In Chimbote, Peru, an air pollution incident affecting more than 200 persons occurred in February, as a result of emissions from fishmeal factories. Technical advice and recommendations on control measures were given during several meetings held with officials of the Ministry of Health, the National Engineering University, and the Fishmeal Producers Association.

In Colombia consultations were held on the organization of departments of air pollution and occupational health at the Universities of Valle and Antioquia, and advice was given in regard to laboratories, teaching programs, equipment, and bibliographic materials.

During visits made in 1970, advisory services on air pollution were also rendered to Costa Rica, Guatemala, Mexico, and Venezuela.

Lectures on air pollution were presented during intensive short courses held in Colombia, Cuba, El Salvador, and Uruguay. Another short course on pollution by motor



Equipment of the air pollution surveillance station, El Salvador.

vehicles was prepared and given at the School of Engineering of the National University of Buenos Aires. The proceedings of the Air Pollution Seminar held in Rio de Janeiro in 1968 were published.

Industrial Hygiene

In spite of the fact that cooperative programs in industrial hygiene in Latin America have been in progress since late 1945—first under the auspices of the U.S. Bilateral Technical Assistance Program, which phased out at the beginning of the 1960's, and later under the guidance of the Organization, which commenced work in this field during 1961—the current programs in the Region do not have sufficient financial or staff resources to cope with the existing problems or with the many new ones that are rapidly emerging.

To stimulate improvement of the activities in industrial hygiene, 11 countries were visited during 1970: Argentina, Bolivia, Chile, Colombia, Cuba, Ecuador, El Salvador, Mexico, Peru, Uruguay, and Venezuela.

At the XII Congress of the Inter-American Association of Sanitary Engineering (AIDIS) a complete program was presented on industrial hygiene and related subjects, including radiological health protection, air pollution,

industrial safety, and pesticide exposure. CEPIS advisers participated in a first consultative meeting on the prevention of occupational hazards, held in Maracaibo, Venezuela, which was attended by 200 representatives from industry, labor, and government. The participants emphasized the need for a national policy on control of occupational hazards that would lead to coordination of the activities of all groups concerned. Stress was also laid on the need for including fields customarily excluded, such as agriculture and fishing, and for modernizing legislation on industrial hygiene with a view to producing real benefits for the workers.

Industrial hygiene services in Colombia were reviewed and recommendations for coordinating fragmented activities in this field were made. Discussions were held at the University of Valle concerning plans for the inclusion of industrial hygiene and allied topics in the curriculum of the Department of Sanitary Engineering.

The report of the preliminary survey of industrial hygiene problems in Ecuador was reviewed; a proposed collaborative project between the Government and the Organization was drawn up and was under consideration by the National Social Security Agency and the Ministry of Public Health.

Suggestions were made for the improvement of the programs in Uruguay and Cuba, and in the latter country recommendations for the correction of conditions in an electrochemical plant were formulated.

In Chile technical advice was given in the revision of regulations covering the Chilean law on toxic environment, in the conduct of a seminar on worker's protection, and in the review of the situation of professional staff of the Institute of Occupational Health and Air Pollution Research. The second section of the final report of the UNDP-supported project for that Institute was being prepared. It will include summaries of more than 30 research studies conducted at the Institute since the beginning of the project and other information of value to Latin American countries wishing to undertake a similar type of project.

Argentina, in prior years, had received assistance from the Organization in defining its industrial hygiene problems through surveys conducted in the Provinces of Buenos Aires, Córdoba, Tucumán, Santa Fe, and Mendoza. As the result of further consultations held in 1970 with the Ministry of Social Welfare, the School of Public Health of Buenos Aires University, and the health authorities of the Municipality and Province of Buenos Aires, a draft proposal was prepared by the Argentine authorities for a three-year program in industrial hygiene

and safety to be conducted in cooperation with the Organization, beginning in 1971.

Staff of the Center conducted a short course on industrial hygiene in Colombia; assisted in the preparation of a course on use of explosives and mine drainage in Bolivia; and presented lectures on occupational health during a course on the methodology of teaching sanitary engineering held in Mexico. At a two-week course conducted at the University of El Salvador, a CEPIS adviser prepared and presented 24 lectures, moderated three round-tables, and prepared the final evaluation. The course was attended by 30 engineers and students in their senior year. The Center devoted a considerable amount of time to the Interregional Seminar on Training and Education in Occupational Health for Developing Countries, which was financed by the United Nations and for which invitations were sent to 14 participants from 11 countries in the Region of the Americas and to six from the African Region.

Housing and Physical Planning

The activities in this field were increased substantially in 1970. Experts in physical planning and sanitary engineering were provided, at the request of the participating countries, as members of a technical mission that reviewed the rural housing pilot project in Colombia, Ecuador, and Venezuela. The project was initiated by the Inter-Agency Committee on Housing and Urban De-

velopment (OAS, UN, PAHO/WHO, IDB, AID), and the mission assisted the three countries to prepare a plan of operations and a timetable for its execution.

In Colombia assistance was rendered to the Regional Corporation of the Savanna of Bogotá (CAR), in the Valley of Ubaté and Chiquinquirá. Several visits were made to the area and a plan of operations for physical planning projects was outlined.

An adviser provided by CEPIS (January-March) formed part of the World Bank mission to Colombia that was studying the regional distribution of economic activities and other problems related to preinvestment planning. The adviser presented a report on urban development and housing as well as study-data sheets for suggested preinvestment programs.

In Cuenca, Ecuador, in connection with the preparation of the master plan for urban development, advisory services were rendered to the Municipal Division of Urban Planning.

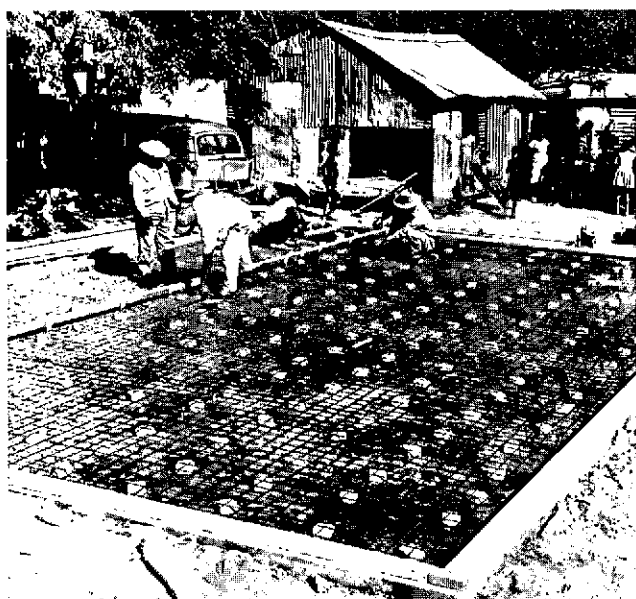
At the request of Peru's Ministry of Agriculture and National Office for Community Development, a CEPIS adviser, in collaboration with the local IDB representative, assisted with the planning of the rural settlement project in the jungle area of Tingo María, Tocache, Campanilla, and the Upper Huallaga, involving the settlement of 6,000 farming families. The physical pattern of settlement was restructured with a view to creating farmstead communities, so as to prevent dispersion of the population.

In connection with the UNDP/FAO project for development of the Huallaga River basin, CEPIS collaborated in the preparation of a general framework for physical planning of settlement areas. Detailed planning for the Cacatachi district and the central Huallaga irrigation scheme was under way.

Water Treatment

A major effort of the Center during the year was the start of a project in the water treatment field, aimed at promoting new, simpler, and less expensive approaches to plant design and expansion. A great deal of interest was expressed by AID, IDB, and the World Bank. An annotated bibliography of publications collected by CEPIS on this subject was being prepared. Study visits were made to several treatment plants in the United States of America where new methods were in operation.

Pilot-scale experimentation was being conducted in Colombia and further practical studies were planned for Ecuador and Peru. Visits were made also to Brazil and



Preparation of a slab foundation for a rural house in Venezuela.

Venezuela in connection with new developments in water treatment.

The PAHO Regional Adviser in water supply presented papers on advances in water treatment technology at two international meetings. Considerable progress was made in the development of a manual on new concepts of water treatment plant design for Latin America.

RIVER BASIN DEVELOPMENT

The Organization continued to participate in the *Huallaga River basin development project* in Peru and in the *River Plate basin development project*. Assistance was provided in connection with engineering aspects, including water needs for domestic and industrial use and water quality control.

The *Santa Lucia River basin* study was completed during the year and a draft final report prepared. As a result of the study, several important recommendations on specific projects to be considered were made to the Government of Uruguay. Among these were: provision of municipal and industrial water supply for the Santa Lucia basin and the Metropolitan Montevideo area; hy-

draulic structures for both irrigation and municipal and industrial water supply; water treatment facilities; conduits for raw and treated water supply; recreation; and water pollution control. The consequences, costs, and benefits to health of the hydraulic improvements recommended were analyzed. Programs for preservation of water quality were suggested and the health implications of settlement or resettlement of population assessed. The report is expected to be available for distribution in the first half of 1971.

The use of mathematical modeling along with conventional cost-benefit analysis afforded an opportunity to compare conventional and new approaches to project analyses. The study also provided valuable experience in joint participation by two international agencies and a number of Governments in a cooperative project.

Further assistance was rendered to the *Guayas River basin* development project in Ecuador. A program covering the health and water quality aspects of this project was outlined. Short-term consultants were provided in the fields of housing, physical planning, and systems engineering. The systems engineer outlined tentative plans for developing a mathematical model for analysis of potential projects in the basin.

Pollution of surface and ground water in Jamaica was reviewed by an Organization consultant. A plan for the studies required to develop a water quality management program for the country was prepared.

With respect to the *Lempa River* in El Salvador, the problems created by the coffee processing industry were discussed with the national authorities.

Further discussions were held with Mexican authorities in regard to a pollution control program for the *Lerma River*. Arrangements were completed to assign an engineer to the Economic Commission for Latin America in order to provide sanitary engineering services in connection with the water resources studies conducted by ECLA.

Assistance was rendered to the *Bogotá River basin* project in Colombia with respect to both water quality management and rural and urban physical planning.

OTHER ACTIVITIES

UNDP Activities in Environmental Health

Significant assistance to environmental health programs was provided during the year through the United Nations



Taking of samples for pollution control in the Lerma River, Mexico.



Well logging operation at a test hole in Surinam.

Development Program. The Organization served as the executing agency for four Special Fund projects and as a collaborating agency in a fifth one, and provided advisory services to a number of other projects executed by other international agencies. The following Special Fund projects were in operation during the year:

Institute of Sanitary Engineering, Rio de Janeiro, Brazil. The Institute continued to provide teaching staff to the Engineering University of Guanabara. Several short-term technical courses were conducted, the most important being those on new water treatment technology, in which methods of designing low-cost modifications to increase the capacity of treatment plants were demonstrated. Brazil's national water authorities were applying these new techniques to municipal plants. As the outcome of a course held at the principal plant in Rio de Janeiro, consultants were employed by the state water authorities to complete detailed studies and designs for increasing the plant capacity. Estimates showed that the capacity could be doubled, at a fraction of the cost of constructing new plant facilities.

Studies on pollution of Guanabara Bay and of fresh water bodies in Guanabara State were providing data that will serve as a basis for designing the necessary control programs. Air pollution and radiation protection activities at the Institute were expanded.

Sanitary engineering teaching, Venezuela. The teaching project was completed during 1970 and the final report was prepared and submitted to UNDP. With regard to the new three-year project submitted by the Government in 1969, several conferences were held with UNDP officials and additional documentation was pre-

pared. It was expected that this project, directed primarily to research, would be approved for initiation early in 1971. The new sanitary engineering building, including laboratories and the nearby pilot plant on the campus of the Central University in Caracas, should be available for the project activities. The research studies will be closely related to national development plans.

Water supply and sewerage, Surinam. The project made excellent progress, and was proving to be a very practical means of providing basic water supplies and sewerage services to communities of Surinam where development programs were in operation. The hydrologist and well-drilling superintendent provided by UN reported for duty and exploratory and developmental drilling proceeded in several locations. Designs were prepared for a number of water supply projects, and collection of hydrological data in the lower Surinam River basin was progressing well. The international water supply consultant was assisting national personnel with the design of systems. Consultants in management and in pollution control completed their assignments and rendered their reports. Vehicles and other equipment and supplies were received in substantial quantities.

Air and water pollution research and control, São Paulo. The consultant assigned to the Inter-Municipal Commission for Air and Water Pollution Control gave assistance in the operation of the project in São Paulo and in the preparation of the request for Special Fund support which the Government submitted to UNDP. The state government enacted new air and water pollution legislation, and provided new laboratories for water pollution control.

The two state agencies primarily concerned—the Ministry of Public Works and the Ministry of Health—worked jointly in drawing up the request to UNDP and in outlining the proposed organization of the project. This is the first such project in the Region and should provide valuable experience in solving the major environmental problems of metropolitan areas.

Bilateral assistance. The Governments of Switzerland and Guatemala and the Organization signed the agreement covering bilateral assistance to the University of San Carlos in Guatemala and also to the engineering universities that were participating in the regional sanitary engineering program in the Central American Isthmus. Arrangements were being made for the assignment of expert consultants from Switzerland and it was expected that the project would be in full operation in 1971. This is the first bilateral assistance project in environmental sciences and engineering involving aid from outside the Hemisphere.



XII Congress of AIDIS.

Congress, which examined the subject of urban sanitation. Papers on that topic were presented by eight distinguished engineers and scientists from the Americas, and the meeting adopted important recommendations on various aspects of the problem that will provide the countries and international agencies with excellent guidelines for programming activities in this expanding field of action.

The board of directors of AIDIS accepted the offer of cooperation from the Ministry of Health and Social Welfare of Venezuela for the establishment of the Permanent Secretariat of the Association in Caracas.

Inter-American Association of Sanitary Engineering (AIDIS)

The XII Congress of AIDIS was held at Caracas from 23 to 29 August. There were 716 participants: 231 official delegates, 343 active members of AIDIS, 58 specially-invited guests, and 84 observers. The Organization assisted in the preparation and conduct of the

II. PROMOTION OF HEALTH

A. GENERAL SERVICES

HEALTH SERVICES

The action taken by the countries, with the Organization's assistance, to improve and extend the coverage of the general health services is described below, with special reference to the outstanding events in 1970.

Fifty general health services projects were under way at the beginning of the year, and 57 by the end of 1970, in 26 countries and 14 territories. Thirty-one were national in scope; eight were at the state, province, or region level; seven were concerned with the expansion and improvement of services in rural areas; seven provided advisory services in specific fields; and four embraced several countries. Detailed information on the work accomplished in each project will be found in Chapter IX.

With the help of new techniques for the study and improvement of information systems, the complexity and variety of the factors that habitually make it difficult to expand and develop general health services systems can be analyzed more and more fully. In 1970, 21 countries carried out a comprehensive analysis of their health situation, covering levels of health, structure of the sector, and a series of conditioning factors, including the situation of the sector's infrastructure from the viewpoint of resources and administration.

The findings of these analyses—which formed part of the PAHO/WHO system of quadrennial projections—illustrated once again the main defects in the structure of resources which account for their relative scarcity, especially in the rural areas. They also revealed that, in addition to the inadequacy of these resources, the problems of organization, planning, coordination, and information with which the sector is confronted condition to a great extent the output, productivity, and prospects of greater coverage of the general health services.

The reforms and changes that took place during the year in the organization of the health sector in various

countries clearly reflected the need to overcome the problems in question and to adapt the structure of the sector to the requirements of the plans and programs for extending the health services. The majority of the reforms were carried out in the ministries of health, since these are the bodies responsible for national health policies and in many instances for their implementation. In all instances the aim was to strengthen the decision-making and regulatory function at the central level, to achieve greater decentralization of authority, and to obtain more resources at the operational level.

Argentina continued to put into effect the organization established for the central level of the Secretariat of State for Public Health and for the eight Operations Coordina-

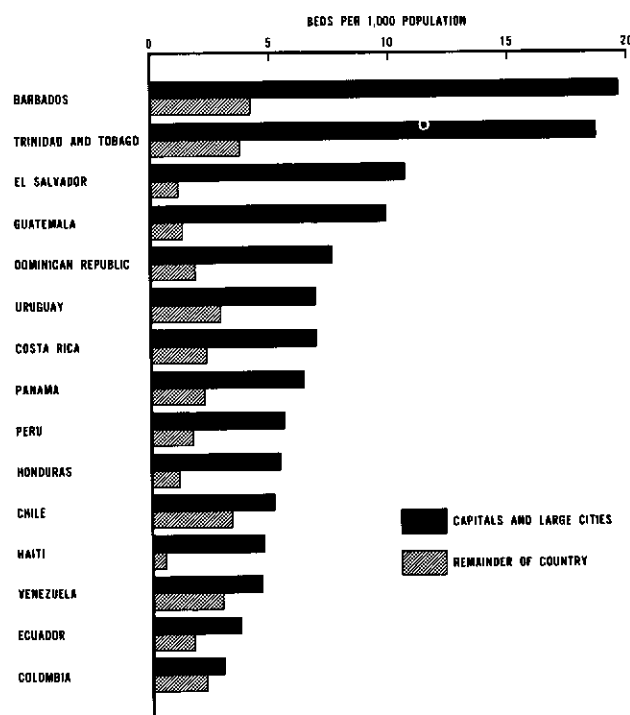


FIG. 18. Hospital beds per 1,000 population in capitals and large cities and in remainder of country, 1968.

II. PROMOTION OF HEALTH: GENERAL SERVICES



Some of the activities conducted through the general health services projects.

tion Offices, each of which already had a medical coordinator for its particular health zone. At the same time, the process of decentralization continued with the transfer of responsibility, authority, property, and resources from the national level to the provincial and municipal health agencies.

In Brazil the administrative reorganization undertaken by the Ministry of Health in 1969 was carried further in 1970. The Ministry's organizational structure was arranged in line with the seven basic functions coming within its responsibility. At the same time, the States of Bahia, Maranhão, and Rio Grande do Norte reorganized their Ministries of Health; plans for similar reorganizations were being considered by the state authorities of Ceará, Paraíba, and Sergipe; and Pernambuco began a study with a view to planning reforms. In the State of São Paulo, the reorganization of the Health Ministry continued; and in Santa Catarina, Paraná, and Rio Grande do Sul studies were begun on the same lines as

those in Pernambuco. An outcome of those efforts was the establishment in the macroregion of the northeast of 35 health regions, constituting the administrative and program units into which the states have been divided to facilitate decentralized administration of the health service programs.

In Guatemala the over-all structural reform of the Ministry of Public Health and Social Welfare began to be put into practice in one of the five health regions into which the country was divided: Region V (Quezaltenango), on the west coast. The program started with the intensive training of officials at regional and local levels. The activities were being coordinated with various projects for the socioeconomic development of this region, and the experience gained will be applied to the other four regions.

In Paraguay, where a regional system of services under the Ministry of Public Health and Social Welfare has been in operation for several years, a number of reforms were

carried out at the central level, the Department of Epidemiology being restructured and tuberculosis control and venereal disease sections being set up. At the same time, the six health regions were reorganized and new jurisdictional units were established in response to the opening up of new highways and the settlement of population in new communities, reflecting the rural agricultural colonization programs under the national development plan.

The new organic structure proposed for the Ministry of Health of Peru comprises high-level governing bodies, consultative or supporting agencies, advisory bodies, and executive organs. The latter in turn include the National Department of Integrated Health Services, the National Department of Special Health Services, and the National Department of Social Welfare. Decentralization is done through the executive organs, especially the National Department of Integrated Health Services, which has charge of the 12 health zones and the 60 hospital areas constituting the program and operationing units of the health services. Both these and the health zones have respected the provincial jurisdiction structure of the country, in delimiting their respective geographic spheres.

The modifications in the organizational structure of ministries, cited as an example of the process of reform being carried out in the countries of the Region, were accompanied by other measures, above all the endowment of the intermediate and local levels with resources of all types—human, material, technical, and financial—designed to prevent in part their concentration in the urban centers and the relative shortage often affecting vast rural zones.

The major efforts were directed toward extending the network of establishments serving the rural zones and increasing the capacity of their basic services. Examples were: the projects in Brazil for cooperation in the rural areas of the northeast and south with the Brazilian Rural Credit and Welfare Association (ABCAR); the project under way in Valdivia and Osorno in Chile; those of Cochabamba, Tarija, Beni, Santa Cruz, and Pando in Bolivia; those of San Martín, Loreto, Piura, and Tumbes in Peru; the Manabí project and the Rural Medicine Plan in Ecuador; the projects of La Guajira in Colombia and Venezuela; the emergency rehabilitation schemes in El Salvador and Honduras; the project of Les Cayes in Haiti; and that of Chimaltenango in Guatemala. In all these programs, the provision of personnel for the services involved is the activity that calls for the most imagination and dedication, not only because of the shortage of skilled manpower, but because of the habitually poor response to this work outside the urban centers. Nicaragua made a successful start with the pro-

gram of rural social service for final-year medical students, dentists, and medical technicians; 38 rural communities reaped the benefit of this project, which in the next few years will be extended to nurses and other health personnel. In Ecuador, health subcenters were organized in 100 additional communities, each of them staffed by a newly-graduated doctor, as part of the Rural Medicine Plan.

During the year the Ministry of Health of Peru began a study in conjunction with the University, to establish rural internships for young doctors as a service and education program. This type of rural service program, forming part of the education of physicians and other health personnel, has existed in a number of other countries for years and has helped to extend the medical services to zones remote from the urban centers. Nevertheless, it has not sufficed to reach the areas of low population density. For the organization of this system at the periphery, recourse was being had to the services of paramedical technical-auxiliary and voluntary personnel at the local level.

Studies were carried out in a number of countries—such as Brazil, Costa Rica, the Dominican Republic, Paraguay, and others—to explore the possibility of using the field staff and voluntary personnel of the malaria services to carry out duties in connection with other basic health services, in those areas where the malaria program has reached the consolidation phase.

The construction, extension, or rehabilitation of hos-

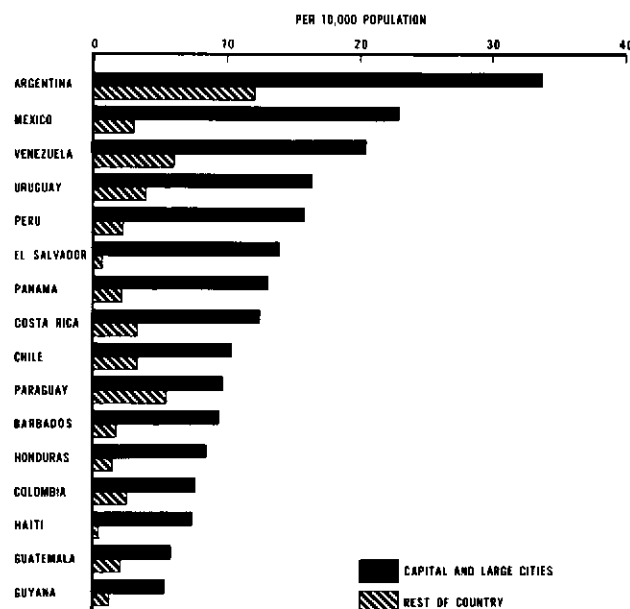


FIG. 19. Physicians per 10,000 population in capitals and large cities and in remainder of country, 1968.

pitals, health centers, subcenters and posts, and other supplementary and supporting installations such as laboratories, radiodiagnosis and radiotherapy units, and equipment and building maintenance units, likewise formed part of the action to improve the efficiency of services and increase their coverage. Significant advances were made through projects concerned with investment planning and the programming of adjustments required in regard to equipping of new installations, administrative organization, and personnel training. Among the more important hospitals that benefited by this type of action were the Queen Elizabeth Hospital in Barbados, the Georgetown Hospital in Guyana, the Victoria Jubilee Hospital in Jamaica, those of Port-of-Spain in Trinidad and Barbuda in Antigua, the Bloom Hospital in El Salvador, the Maternal and Child Hospital of Tegucigalpa in Honduras, the Retiro Hospital of Managua in Nicaragua, and the Santo Tomás Hospital in Panama. In Colombia, the study of levels of medical care, regionalization system, and the national hospital plan was completed during the year, and in accordance with the norms established a review of structural designs and programs for establishments included in the plan was undertaken. In Honduras, the review embraced all the investment projects within the health sector.

In the countries that were modifying the structure of their health ministries at all levels, as well as in those that maintained the existing structure, interest and emphasis continued to be centered on the improvement of health administration procedures, in most instances at the central level and invariably as part of the health planning process being developed in the Region. Virtually all the health plans under way or in the process of formulation or revision comprised programs not only of health services investment but also of improvement and modernization of administrative methods and practices. During the year, programs for training in this field were particularly noteworthy, and some countries also carried out extremely thorough administrative diagnostic studies on the sector and the ministries. Among the countries carrying out such training programs were Argentina, Brazil (northeastern states), Chile, Colombia, as well as several Caribbean countries and territories. Diagnostic studies were undertaken by some of the countries of Central American area such as Costa Rica and Panama, as well as by Brazil (southern states).

The effects of improved planning, structural reforms in the health ministries, and more efficient administrative management were reflected likewise in better coordination and/or integration of the services of the ministries and especially in better leadership in the task of coordinating

with other bodies within the health sector in countries where a number of agencies are responsible for important aspects of the health system.

The establishment of national councils or committees at the highest level continued to be the most generally accepted method for facilitating dialogue and negotiation both in formulating national plans and in implementing the coordinated services programs of the various agencies comprising the sector.

In Mexico, with the advent of the new Administration, studies were begun on the establishment of a national planning council that would coordinate the sectoral plans and integrate the health and social welfare sectors, so as to harmonize the activities of the Ministry of Health and Welfare, the Mexican Social Security Institute, the State Workers' Social Security and Services Institute, and other agencies or autonomous institutions providing health services. In Guatemala, the coordination of preventive and curative medical services was facilitated with the establishment of a single National Department of Health Services and the development of Health Region V (Quezaltenango). In Costa Rica and Panama, studies were carried out and recommendations made for the coordination of the services of the ministries of health and the social security agencies. In Costa Rica, the constitutional provision for universal social security coverage, scheduled to be put into effect in 1971, led the new Government to give preferential attention to the development of coordination machinery and procedures. The Bolivian Government defined a strategy for the gradual coordination of all organs with responsibility for health services as part of its general health services scheme. In Colombia the Health Sector Planning Committee began to function on a regular basis as a coordinating body.

The process of coordination extends beyond the sectoral sphere to other socioeconomic sectors, especially education and more specifically the university schools that train health personnel. The areas of coordination are generally those related to health manpower studies, such as the one carried out in Chile and completed in 1970. Another important field is the utilization of the ministries' health services and establishments as practice grounds for students and graduates, such as were being offered by most of the teaching hospitals in the countries. A new area of coordination—developed by such countries as Argentina and Brazil—was the cooperation which the health ministries, through their health education units, established with the ministries of education in regard to revision of health education programs in the primary and secondary schools.

An activity that awakened particular interest was the undertaking of river basin development projects—such

as those of the River Plate in Argentina, Bolivia, Brazil, Paraguay, and Uruguay; the Santa Lucía River in Uruguay, the preliminary study for which was completed in 1970; the Guayas River project in Ecuador, and others, where more and more emphasis has been placed on the coordination of the health sector with the development of natural resources at the national and multinational level.

Pilot projects for integrated action at the control level of the general health services were continued in Bolivia, Colombia, Costa Rica, Nicaragua, Peru, and Trinidad and Tobago in restricted areas. Noteworthy in this respect was the effort being made in several Central American countries to integrate the programs of tuberculosis control, leprosy control, and applied nutrition.

All of the aforementioned factors have led to greater coordination or integration of programs and services within the health ministries, between them and other agencies in the sector, and among the different sectors. In addition, however, it is evident that the planning process and consequent formulation of plans or strategies for the over-all development of the countries has been the single factor of greatest influence in this regard, especially in those countries where there are projects for multisectoral action, in most of which various international bodies such as UNDP, FAO, UNESCO, ILO, the World Food Program, OAS, and IDB regularly participate. The immediate results achieved through these projects are best seen in the evaluation reports furnished by the countries each year; but the medium- and long-term results stand out still more significantly if we analyze the reports on health conditions in the Americas, and particularly looking at each country as a whole, in successive years.

NURSING

For the first time, both the Executive Committee (at its 64th Meeting) and the XVIII Pan American Sanitary Conference adopted resolutions on nursing.

The Conference in Resolution XXI recommended to the Governments that they "initiate action that will lead to the prompt establishment of a nursing system in which areas of responsibility and quantity and category of personnel required are defined and which is compatible with local health program objectives and the type and level of medical care to be provided . . ." At the same time, it requested the Director of PASB to take the

necessary steps to provide assistance required by countries in determining their system of nursing and to report to the XX Meeting of the Directing Council on the action taken and progress made by countries.

The resolution also included a recommendation to Governments to establish a permanent mechanism for participation by nurses in the planning and evaluation processes and for keeping information on existing nursing resources current and available.

The critical situation with respect to nursing services is reflected in Table 32, which gives the numbers of physicians, nurses, and auxiliaries and the figures per 10,000 inhabitants and per 100 hospital beds in the countries of the Americas.

Technical assistance. A total of 41 full-time consultants and 46 short-term consultants worked with countries during the year on 65 nursing projects, or projects with a nursing component (Table 33).

The basic purpose of the projects is to raise the standard of nursing care by improving the organization and administration of services and the training of personnel.

In spite of the interest shown by nurses in all the countries in helping to draw up health plans and to program nursing activities, the nursing sector participates in planning in only three of the countries. This shortcoming explains why so little attention is paid in health plans to the definition of the nursing function, the numbers and type of personnel needed, and the various levels of nursing training required to attain the goals of health plans.

With a view to promoting participation by nurses in the planning process, the Organization sponsored a workshop in Peru on planning of nursing services; it was attended by 28 nurses from eight Latin American countries. In Colombia arrangements were being made for a short course on planning to be held in 1971.

Organization of nursing services and practices. To meet the growing demand for services and to cope with the inadequacy of the organizational and administrative resources for the purpose, four countries—Brazil, Costa Rica, Guatemala, and Peru—were in the process of reorganizing their health services, including the nursing sector. In the Bahamas, Ecuador, Jamaica, and Nicaragua the nursing services were being restructured, and in Bolivia the services in one hospital were reorganized.

There was greater emphasis also on programs to strengthen continuing education and inservice training for nurses and auxiliaries. Such programs were being sponsored by ministries of health, schools of nursing, or nurses associations. The Organization cooperated with the various countries in these activities (see Chapter III).

II. PROMOTION OF HEALTH: GENERAL SERVICES

TABLE 32. NUMBER OF PHYSICIANS, NURSES, AND NURSING AUXILIARIES, WITH RATIOS PER 10,000 INHABITANTS AND PER 100 BEDS IN THE AMERICAS, 1968.^a

Country	Number			Ratio per 10,000 inhabitants				Ratio per 100 beds				Ratio per physician			Ratio auxiliary nurse
	Physician	Nurse	Nursing auxiliaries	Physician	Nurse	Auxiliaries	Total nursing personnel	Physician	Nurse	Auxiliaries	Total nursing personnel	Nurse	Auxiliaries	Total nursing personnel	
Argentina.....	45,340	13,737	24,444	18.9	5.7	10.2	15.9	32	10	17	27	0.3	0.5	0.8	1.8
Barbados.....	121	429	172	4.8	17.0	6.8	23.8	5	16	7	23	3.5	1.4	4.9	0.4
Bolivia.....	1,702	612	1,549	3.6	1.3	3.2	4.5	17	6	15	21	0.4	0.9	1.3	2.5
Brazil.....	34,251	8,212	55,664	4.4	1.0	7.3	8.3	12	3	19	22	0.2	1.6	1.8	6.8
Canada.....	28,163	80,975	37,705	13.6	39.0	18.2	57.2	13	39	18	57	2.9	1.3	4.2	0.5
Chile.....	5,170	2,325	16,891	5.5	2.5	18.1	26.6	14	6	46	52	0.4	3.3	3.7	7.3
Colombia.....	8,654	1,810	20,307	4.5	1.0	10.6	11.6	19	4	44	48	0.2	2.3	2.5	11.0
Costa Rica.....	879	974	2,400	5.4	5.7	11.2	19.9	14	16	39	55	1.1	2.7	3.8	2.5
Cuba.....	7,000	4,373	7,650	8.7	5.4	9.5	14.9	18	11	20	31	0.6	1.1	1.7	1.7
Dominican Republic.....	2,000	183	2,172	5.0	0.5	5.6	6.1	19	2	20	22	0.1	1.1	1.2	11.9
Ecuador.....	1,991	511	2,429	3.6	0.9	4.1	5.0	16	4	19	23	0.3	1.2	1.5	4.8
El Salvador.....	726	783	1,645	2.3	2.4	5.0	7.4	10	11	23	34	1.1	2.3	3.4	2.1
Guatemala.....	1,005	686	3,004	2.2	1.4	6.0	7.4	9	6	28	34	0.7	3.0	3.7	4.4
Guyana.....	163	744	227	2.3	10.0	3.1	13.1	5	22	7	29	4.6	1.4	6.0	0.3
Haiti.....	348	416	806	0.7	0.9	1.7	2.6	10	12	24	36	1.2	2.3	3.5	1.9
Honduras.....	641	318	1,417	2.7	1.3	5.9	7.2	15	8	34	42	0.5	2.2	2.7	4.5
Jamaica.....	1,259	4,869	959	6.7	26.0	5.1	31.1	18	70	14	84	3.9	0.8	4.7	0.2
Mexico.....	25,602	9,000	40,000	5.4	2.0	8.8	10.8	30	10	46	56	0.4	1.6	2.0	4.4
Nicaragua.....	933	447	2,132	5.1	2.3	11.1	13.4	22	11	51	62	0.5	2.3	2.8	4.8
Panama.....	696	1,028	1,700	5.1	7.3	12.4	19.7	15	23	37	60	1.5	2.4	3.9	1.7
Paraguay.....	1,386	286	1,518	6.2	1.3	6.8	8.1	31	6	31	40	0.2	1.1	1.3	5.3
Peru.....	6,550	4,110	9,965	5.1	3.1	7.8	10.9	22	14	31	48	0.6	1.5	2.1	2.4
Trinidad and Tobago.....	441	1,440	657	4.3	13.8	6.3	20.1	8	28	13	51	3.3	1.5	4.8	0.5
United States of America.....	305,453	659,000	1,095,000	15.3	33.1	55.0	88.1	18	40	66	106	2.2	3.6	5.8	1.7
Uruguay.....	2,677	755	3,905	9.6	2.7	14.0	16.7	15	4	22	26	0.3	1.5	1.8	5.2
Venezuela.....	8,620	5,714	14,105	8.9	5.7	14.1	19.8	28	18	45	53	0.7	1.6	2.3	2.5
Total for the three Regions ^b															
Northern America.....	333,686	740,200	1,132,833	15.2	33.7	51.5	85.2	18	40	60	100	2.2	3.4	5.6	1.5
Middle America.....	45,264	31,799	72,926	5.2	3.7	8.6	12.3	21	15	34	49	0.7	1.6	2.3	2.3
South America.....	116,675	39,265	151,530	6.9	2.2	9.0	11.2	19	6	24	30	0.3	1.3	1.6	3.9

^a Data from *Health Conditions in the Americas 1965-1968* (Scientific Publication PAHO 207).

^b Including personnel from territories.

A start was made during the year on the compilation of a manual for health auxiliaries in rural areas.

The quality of nursing care furnished to patients continued to be a source of concern to the nursing profession. More than 70 per cent of this care is given by nursing auxiliaries, most of whom have not received formal training. The efforts made by the countries to improve nursing care have revealed not only the deficiency of that care, but also the extent to which it is dependent on other hospital departments such as pharmaceuticals, dietetics, sterilization center, procurement, medical records, and laundry and cleaning services. Clearly it is difficult to improve nursing care unless such other essential hospital services are improved as well.

If the goal of improving nursing care is to be achieved, it is essential also to train clinical and specialist nurses

in the organization and administration of services. The administrative specialist must have a knowledge of the methods and techniques for making changes and be capable of bringing about such revisions as are necessary in the organization and functions performed by the existing personnel. At the same time she must have the skill to institute new functions that will help to achieve a more effective utilization of clinical resources. The Organization worked actively with countries to strengthen the training in this field, as described in Chapter III.

A number of countries (Brazil, Chile, Colombia, Peru, Uruguay, and Venezuela) took steps during the year to organize nursing services for intensive care units or to improve those already in operation. Others devoted increasing attention to strengthening the nursing component in the clinical specialties: medical and surgical nursing



This first year student-nurse was responsible for feeding this 15-month-old boy, who weighed 7 lbs at the time of the first two pictures (typical case of marasmus). Right: Same child after four weeks of care.

(Brazil), psychiatric nursing (Costa Rica, Grenada, Jamaica, Mexico, Peru, and Venezuela), tuberculosis patient nursing (Bolivia), and nursing care in the field of maternal and child health (Brazil, Cuba, Honduras, Nicaragua, Trinidad and Tobago, West Indies). These and other activities were assisted by the Organization through specific projects, which are described in detail in Chapter IX of this *Report*.

TABLE 33. NUMBER OF NURSING ADVISERS ACCORDING TO TYPE OF APPOINTMENT AND AREA OF WORK, 1970.

Area	Full-time personnel		Short-term consultants	
	No.	Months	No.	Months
Teaching institutions				
Basic.....	6	51	12	38
Advanced.....	2	9	1	2½
Auxiliary.....	1	12	—	—
Continuing education.....	1	12	4	6½
Maternal and child health ^a	1	12	8	14½
Nursing services				
General.....	14	151	1	3
Hospitals.....	2	24	11	14
Intensive care unit.....	1	1	2	4
Psychiatry.....	1	12	3	5
General nursing ^b	10	115	—	—
Research.....	—	—	4	2¾
At Headquarters.....	2	24	—	—
Total.....	41	423	46	90¼

— None.

^a Includes family planning.

^b Includes both service and education.

VETERINARY PUBLIC HEALTH

As the countries continued to expand their activities in the veterinary public health field, the number and variety of their requests for assistance increased. The Organization broadened its program of technical services to assist them in coping with long-standing problems and with new ones related to recently emerging disease patterns.

Several Governments were preparing requests to the Inter-American Development Bank for financial assistance to implement programs for the control of zoonoses and foot-and-mouth disease, and an increasing amount of assistance in these activities was being provided by the Organization's consultants. As the disease reporting systems improved, a clearer picture was gained of the economic and public health importance of brucellosis, canine and bovine rabies, animal tuberculosis, and hydatidosis and more attention was given to the activities against those diseases.

The stationing of a Zone I veterinary public health consultant in Caracas enabled the Organization to give more assistance to both Venezuela and the countries and territories of the Caribbean area, where the large rural population (numbering more than half the total) comes into close contact with domestic and wild animals and is thus constantly exposed to the zoonoses. Most Governments of the area are anxious to develop new programs that will

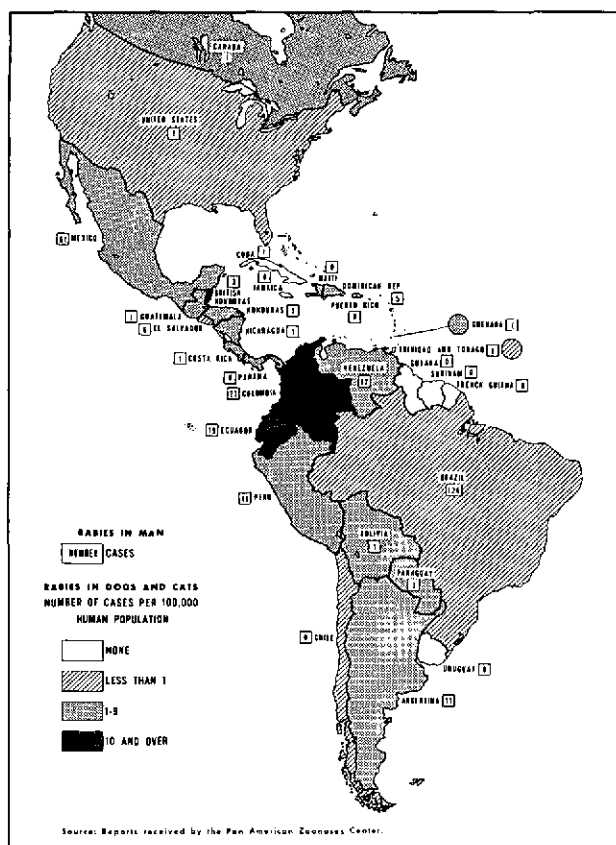


FIG. 20. Ratio of reported cases of rabies in dogs and cats to human population, and reported human cases, by country, 1970 (provisional data).

increase the supply of animal protein and reduce protein-deficiency malnutrition. They wish to help the agricultural economy by controlling animal diseases, and to prevent their spread to the human population. The Organization has promoted and helped to evaluate the national programs and met a large number of requests for assistance in their implementation. Rabies transmitted by wildlife and domestic animals was a problem of considerable concern in this area. Canine rabies caused great difficulties on the Venezuela-Colombia frontier, and bovine paralytic rabies was a serious problem in Venezuela, where approximately 500 cases were being reported annually, as well as in the dairy herds in Guyana, Surinam, and Trinidad and Tobago.

The Ministry of Agriculture of Brazil, with the Organization's collaboration, established a national reference laboratory that will distribute biological reagents to other official laboratories for diagnosis and research, offer training in animal health procedures, and carry on

a zoonoses epidemiological surveillance service.

The PAHO Zone IV veterinarian gave assistance to Peru in its program against brucellosis in the Callao-Ica-Lima area, which made rapid progress in 1970 after adding to its staff two veterinarians from the Ministry of Agriculture, two from the Ministry of Health, and several auxiliary workers. Three vehicles fully equipped for rural use were provided by the Organization. The Zone consultant also rendered assistance in the canine rabies program in the Lima area.

The canine rabies program in the 12 cities along the U.S.-Mexico border made record progress in 1970; only 33 cases were reported (14 of them from one city), as compared with 258 in 1967, when the program began. The Government of Mexico was helped with preliminary studies on the prevalence of brucellosis, cysticercosis, and leptospirosis in man and animals in the same area, and a limited survey was conducted to determine the number of veterinarians working in public health on both sides of the border.

With the assistance of Organization consultants, Bolivia, Brazil, Colombia, Cuba, Mexico, Peru, Venezuela, as well as many of the countries of Central America and Panama, further strengthened their veterinary public health services and thus gave impetus to their programs.

Headquarters staff participated in many national and international courses, seminars, and congresses during the year and presented several papers on technical subjects, including international movement of animals, food hygiene, and epidemiology of the zoonoses.

HEALTH LABORATORY SERVICES

The Organization continued to assist the countries to obtain from other sources, in addition to PAHO/WHO, the support needed to develop more effectively their health laboratory resources. It collaborated with Cuba in the preparation of a request to the UNDP Special Fund for assistance in strengthening the Institute of Hygiene, Microbiology, and Epidemiology, and in conjunction with that application it was decided to also request the assistance of UNICEF in providing equipment for the production of biologicals. A tripartite agreement was being drawn up for that purpose.

The request submitted to UNDP by the Government of Mexico for assistance in modernizing the national laboratories was approved on 1 June. The project was approved for a total of \$1,115,100, and a short-term con-

sultant was assigned to assist the Government in formulating the plan of operations. An advance of funds was made for the project and equipment was ordered to assist in its initiation. Steps were taken for the selection of a project manager.

Peru, with the assistance of a PAHO/WHO adviser, completed a revision of the feasibility study to support a loan application to the Inter-American Development Bank for construction of a new building complex to house the recently established National Institutes of Health.

The application to the Central American Bank for Economic Integration for a loan to construct a building for the Biological Institute in Guatemala was completed.

Short-term consultants gave technical assistance during the year to Chile, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, and Venezuela.

The Organization supplied information upon request from the countries as well as reagents—particularly biological reagents—and standards for use in the production and control of biologicals and in diagnosis and research. Forty-four requests were received from nine countries and 511 items were furnished.

Fellowships for training in laboratory disciplines were awarded to 17 countries. Special emphasis was placed on training to improve the laboratory support for tuberculosis control in the Central American Isthmus. At the fourth meeting of the Working Group on Tuberculosis, held in April in Managua, Nicaragua, a plan for a control program was agreed upon by the six countries of the area. The program will include case-finding through screening of all symptomatic patients in health centers and hospitals; confirmation of diagnosis by direct microscopic

examination of sputum; treatment control based on decreasing numbers of organisms appearing in the sputum during therapy; and services by the central laboratory of each country in connection with culture facilities and antibiotic resistance testing for problem cases.

A training program was planned in order to provide the laboratory services required to implement this control plan, and a short-term consultant was assigned for three months to assist in conducting those activities. Training in culture techniques and antibiotic resistance testing was carried out in each central laboratory, and a total of 12 two-day courses were held in five countries to foster uniformity in staining and identification of mycobacteria and in the technique of quantitating organisms. More than 180 laboratory personnel received training through both types of courses.

Although follow-up training and evaluation are needed in the coming year, this program represents an important step in the campaign against tuberculosis in the Central American area, taken jointly by the tuberculosis control authorities and the laboratory directors of each country.

Food Hygiene

Recent information gathered by the Organization reveals that adequate hygiene procedures can be applied to foods of animal origin only after a complete revision takes place in the basic infrastructure of services related to the preparation, processing, transportation, storage, and distribution of such foods.

A resolution adopted by the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control recommended that the Organization provide the Governments with additional assistance in the fields of microbiology and food hygiene and coordinate the activities undertaken by national agencies; and suggested to the countries that they prepare and enforce codes of sanitary procedures governing food production, processing, transportation, storage, and distribution.

An important activity sponsored by the Organization was the VI Seminar on Food and Drug Control for Central America and Panama, held in Panama City, 11-16 May, with the collaboration of the Ministry of Health. At the University of Panama, a course on microscopy of food and another on food technology were held for participants from the Central America area.

The Food Reference Laboratory at the Institute of Nutrition of Central America and Panama (INCAP) completed its first full year of activity. Using gas chromatography equipment to examine food for the presence



Construction of the central public health laboratory on the third floor of the "Alonso Suazo" Health Center, Tegucigalpa, Honduras.



Killing floor of a slaughterhouse.

of pesticide residues and an auto-analyzer for making biochemical determinations, the Laboratory conducted analyses on 7,341 specimens. A preliminary study was made on the incidence of pesticide residues in Guatemalan food.

The Organization rendered technical assistance to the Government of Bolivia in developing plans for a national program of regional slaughterhouses; to Colombia in the preparation of a course on food microbiology and hygiene, held at the School of Veterinary Medicine of the National University in Bogotá; to the Dominican Republic in the preparation of a set of standards to be used in a food hygiene program in the country; and to Mexico in the analysis of health problems related to the production of fishmeal in Sonora State. In Peru, the Zone IV consultant and a short-term consultant assisted the Ministry of Health with an evaluation of the food hygiene problems, especially in Lima and Callao, as a basis for preparing a control program.

It is significant to point out the information recently released by the U.S. Department of Agriculture concerning the importation of meat and meat products from Latin American countries.¹ During 1970, Latin American countries had the following quantities of meat and meat food products passed for entry:

Caribbean, Central America and Panama,	
Mexico	246,084,085 lbs
South America	226,982,247

During the same period, the following quantities were refused entry and/or condemned:

¹ U.S. Department of Agriculture. Statistical Summary for 1970, Consumer and Marketing Service: Federal Meat and Poultry Inspection.

Caribbean, Central America and Panama,	
Mexico	1,092,490 lbs
South America	1,648,283

As can be seen, only a very small proportion of the meat and meat products destined for the U.S. market do not pass. This information reveals that when countries are not affected by foot-and-mouth disease and meet the U.S. import standards, a major export market is available to them, representing a sizable amount of funds.

Drug Control

Because complex, newly-developed drugs play such an important role in modern medicine, the Organization devotes much effort to strengthening the countries' systems for assuring the efficacy, safety, and high quality of drugs distributed in the Region.

In July 1970, the Organization conducted a survey to ascertain the current drug control problems of the Americas. The data obtained in the survey can be summarized as follows:

There are approximately 2,000 drug manufacturing establishments of significant size in the Latin American and Caribbean countries, and their annual production is valued at \$1,234,000,000 at the manufacturer's price level. The volume of drugs imported into the area exceeds the amount exported by \$116,000,000 per year, thus raising the volume consumed per year to \$1,350,000,000 at the manufacturer's price. Based on estimates of the "mark-up" factor in the different countries, it is calculated that the final retail cost to the consumer of the drugs used per year in the area is approximately \$1,950,000,000.

Government expenditures for drug control in the Latin American and Caribbean countries total \$3,371,500, representing an average expenditure of \$1.7 per \$1,000 of drugs consumed (for comparison purposes, it is noted that government expenditures for drug quality control in the United States of America and in Canada are \$4.8 and \$5.9, respectively, per \$1,000 of drugs consumed).

The countries of the area employ a total of 1,192 persons in their national drug control agencies, including 250 inspectors and 314 scientists performing drug analyses. However, a large number of those workers spend only a fraction of the workday on drug control activities and many of the analysts devote their time to testing registration samples submitted by the drug firms rather than testing market samples selected by government inspectors from drug stocks in distribution channels. Only eight of the countries analyze a significant number of samples taken from stocks in distribution channels.



Senior drug officials from 24 countries of the Hemisphere attended the First Seminar on Drug Control in the Americas (Maracay, Venezuela, 15-20 November).

Twenty of the Latin American and Caribbean countries require registration of drugs, but in only 12 of them are the registration applications reviewed by a medical evaluation board.

The above data were reported to the first Seminar on Drug Control in the Americas, held in Maracay, Venezuela, 15-20 November. Sponsored by the Organization, with the collaboration of the Venezuelan Government, the Seminar was attended by 29 senior drug control officials from 24 countries of the Region.

The participants prepared a final report containing 11 valuable recommendations for the improvement of the drug control situation. It is significant that the report begins with the following recommendation:

"That the Governments of the Region give the highest priority, within the planning of public health services, to the solution of the problem of drug quality control, *including adequate financing to obtain the necessary physical resources and the employment of qualified technical personnel.*"

This recommendation of the countries' drug control officials is entirely in accord with the views of the Organization's advisers, who believe that lack of sufficient funds for drug control activities is the Region's most serious handicap in assuring the efficacy, safety, and quality of the drugs consumed.

The Organization sponsored a five-week intensive training course for drug analysts which was attended by nine participants from the national drug control agencies of Latin America and the Caribbean area. The instruction was provided by the U.S. Food and Drug Administration at its Washington laboratory.

A study was made of the drug control situation in the

English-speaking countries of the Caribbean and a report on the subject was presented at the Second Conference of the Health Ministers of the Caribbean, held in Barbados in April.

Technical assistance was rendered to the Government of Peru regarding a proposed rearrangement of the national drug control organization.

A model drug control law was developed and presented by an Organization consultant at the VI Seminar on Food and Drug Control for Central America and Panama (Panama City, 11-16 May). This model law was also presented at the Drug Control Seminar in Maracay.

A short-term consultant was provided to advise the Government of Chile on the curriculum of the Pharmacy School at the University of Chile.

The Organization's project for establishing a Pan American Drug Quality Institute in Uruguay remained in the planning stage. Funds were being sought for financing the project.

The Organization responded to a variety of requests from the Governments for information and other assistance relating to drug control. A number of fellowships were awarded for training personnel from the national drug control agencies.

HEALTH EDUCATION

The Organization continued to cooperate with the Governments in order to promote the development of health

education services as an essential component of health programs.

During 1970 it convened an interdisciplinary Study Group, which designed a methodological model for evaluating the extent to which the educational objectives of health programs are fulfilled, as expressed in terms of changes in individuals' behavior in regard to health. Although theoretically the model has been produced, the proof of its operational feasibility in the field, which was needed in order to perfect it, was still awaited. A number of Governments expressed their interest in taking part in this activity, and the WHO Regional Office for Africa was studying the model with a view to developing a project on the lines of the PAHO proposal.

In the course of the year new impetus was given to the health education programs in many countries of the Americas; it was reflected in the slow realignment of those activities, in accordance with the recommendations emanating from the seminars convened by PAHO in 1969 in Buenos Aires and in Paracas (Peru).

Argentina was assisted in developing a new approach to its health education services involving the motivation, training, and equipping of the community so as to secure its active participation in the preservation of individual and collective health. The Health Education Department of the Secretariat of State for Public Health had a multi-disciplinary team of 19 full-time professionals and 26 technicians that enabled it to carry out activities in research and standardization, promotion of community education, and development of educational media. Another important activity was promotion of the training of various voluntary groups and their participation in health programs.

The Argentine Government signed an agreement with PAHO/WHO to carry out a project for health education

in the schools. The establishment of the National Joint Advisory Commission on Health Education, comprising representatives of the health and education sectors, helped to give impetus to those activities. With the exception of Jujuy, all the provinces already had joint education and health commissions in various stages of development. During 1970 an exploratory survey on health knowledge, opinions, and attitudes was carried out among 9,639 teachers, 5,290 schoolchildren, and 9,804 mothers in eight provinces and the Greater Buenos Aires area; the findings will serve as a basis for reviewing health education programs in general education and in teacher-training schools.

In Brazil, the Federal Government accorded health education high priority within the health sector. A National Division of Health Education was set up within the Ministry of Health, with a professional educator appointed as chief. With the Organization's assistance, the First Brazilian Health Education Seminar was held in São Paulo. The six-day meeting was attended by 50 executives or educators from the federal services and from programs in 12 states. Similarly, four one-week seminars on educational supervision techniques were held, for a total of 216 teacher-supervisors from the Schools of Public Health and health agencies in the States of Guanabara and São Paulo.

Cooperation was extended to a number of health education technical units in their efforts to seek a new approach to the activities in Brasília, Bahia, Minas Gerais, São Paulo, Pernambuco, and Rio Grande do Sul. One example of this aid was that given to the São Paulo State Health Ministry through its Health Education Service, with a view to demonstrating the educator's contribution to campaigns for smallpox eradication, immunization against poliomyelitis and measles, control of Chagas'



A health educator presents a class in a suburban school in Quito, Ecuador.

disease, leprosy and schistosomiasis, and basic sanitation. For the first time, effective coordination was achieved in the educational activities of various health bodies in São Paulo and there was widespread acceptance and cooperation by the various community groups. There was also effective coordination of activities with the preventive medicine department of the state's six principal medical schools.

Great interest was aroused in revising the teaching of health education in the general education programs in São Paulo, Minas Gerais, Pernambuco, and Rio Grande do Sul. Minas Gerais set up a joint commission of education and health authorities to be responsible for planning, directing, and coordinating health education teaching in the state educational system. In São Paulo a School Health Education Week was held, to establish bases for a revision of the health aspects of the school curriculum; it was attended by 48 officials from four states. A six-day National Seminar on School Health Education was organized in Recife under the sponsorship of the Regional Center for Research and Teaching in Hygiene and Public Health (CRIEHSP), the Superintendency of Development of the Northeast (SUDENE), and the Ministries of Health and Education of Pernambuco, with PAHO providing four consultants. A technical guidebook was produced containing the theoretical bases for integrating the health component within the general education system of Brazil. This guide will be tried out in three pilot projects (Recife, Belo Horizonte, and São Paulo) before it is progressively applied in other states.

In Chile, the Health Education Section of the National Health Service began to make use of experts attached to universities to compile baseline sociocultural and educational data for use in health programs and to initiate preparations for evaluating the educational component of those programs, taking as a reference point the evaluation model proposed by PAHO. The Section takes part in the programs for supplying milk to the child population and preventing summer diarrhea in children, and also participates in the national plan for workers' education which incorporates health ideas and practices in the various tasks aimed at social change.

In Paraguay, with the incorporation of seven health education assistants trained in a local eight-month course, education activities received a new impetus in health centers. Educational programs were set up in applied nutrition, maternal and child care, personal hygiene, basic sanitation, and communicable disease control, through health posts and centers throughout the country. Educators took part in socioeconomic surveys carried out by

the National Environmental Sanitation Service in the localities of Capiatá and Nemby, with a view to compiling information on the population's attitude toward the program and assessing its capacity-to-pay under the projected plan for rural water supply services.

In the countries of the Central American Isthmus, three experts from PAHO made an exhaustive study of the educational needs of general health services, with special reference to maternal and child health protection and family planning programs. The study served as a basis for the establishment of an educational plan for comprehensive maternal and child health services in the countries of the area. The plan will be applied experimentally in one country and will gradually be extended to the others. The Government of El Salvador was negotiating with PAHO to put the plan into operation there in 1971.

A short-term consultant continued to collaborate with the Government of Colombia, and another with the Government of Trinidad and Tobago, in the educational activities forming part of maternal and child protection and family welfare services.

The First Conference on Health Education in Puerto Rico, held in San Juan, 2-4 December, was attended by 120 educators from various government and private agencies. The Organization cooperated in the planning and conduct of the meeting, which was sponsored by the Association of Health Educators of Puerto Rico. The participants recognized the urgency of reviewing the present functions of the health educator as well as the study programs in that discipline at the School of Public Health of the University of Puerto Rico.

In Panama, the IX Seminar on Health Education in the Central American Isthmus (14-17 July) took as its main theme "Evaluation of the Educational Component of Health Programs: Model Proposed by the Pan American Health Organization." PAHO staff members took part in the presentation and discussion of the agenda items. In all, 40 educators from the six countries of the Isthmus, three guests from Brazil and Ecuador, and eight observers from the Organization of Central American States, the U.S. Agency for International Development, and Panamanian organizations attended the meeting.

Assistance was rendered to the Governments of Ecuador, Guyana, Jamaica, and Trinidad and Tobago in the study of their educational needs and the formulation of plans for strengthening and extending the health education services. Short-term consultants worked with the authorities of Guyana and Trinidad and Tobago on the implementation of some of the activities recommended.

Further impetus was given to the work of community promotion in the rural water supply programs in Latin



In Chile local residents assist with ditch-digging in a rural sanitation project in difficult terrain.

America. It was estimated that community participation in the construction of rural water systems represented between 15 and 20 per cent of the project costs, and reached 25 per cent in one case. This community contribution was particularly noteworthy in Argentina, Chile, the Dominican Republic, Nicaragua, and Peru.

Continuing assistance was given in planning and developing the educational component of malaria eradication programs in Latin America, and especially in Surinam. Excellent results were being achieved through the use of volunteers for collecting blood smears, distributing antimalaria drugs, and educating the public. It was estimated that in El Salvador, Guatemala, and Honduras, for example, the network of information posts manned by voluntary workers accounted for 40 per cent of the total number of smears collected by the National Malaria Eradication Service, and for 50 per cent of those found positive during 1970. Ecuador was another example: during the year 5,898 information posts were functioning in the country, 5,671 manned by volunteers and 227 installed in official or private health services. The volunteers collected 233,046 smears, or 80.9 per cent of all those collected. Of that number, 23,884 were positive (96.3 per cent of all the cases registered between January and September).

The Government of Barbados established a Health Education Committee to direct and coordinate community activities in this field. Within the Ministry of Health, a candidate was selected to fill the new post of

health educator. Educational activities in connection with the demonstration project for *Aedes aegypti* eradication were further intensified, and there was a significant reduction in the number of houses "closed" to the project personnel. The Organization cooperated in the dental health aspects of the applied nutrition program by designing two educational programs for television.

In Grenada, a candidate was chosen to occupy the health educator post set up in the Ministry of Health. A two-day seminar on leadership, held with the cooperation of agricultural extension and community development personnel, was attended by 50 officials from the Departments of Health, Education, and Agriculture and by representatives of various religious groups.

In St. Lucia, community education activities were continued as part of the *A. aegypti* eradication project. Assistance was also given to the Schistosomiasis Research and Control Unit of the Rockefeller Foundation, in designing and developing educational material based on local folklore. Consideration was being given to the establishment of a technical health education unit for the island.

HEALTH STATISTICS

The first year of the new decade saw a greater emphasis on the utilization of health statistics and, as a result, greater recognition of the need for improving them in both quantity and quality. Without adequate and reliable statistical information, the planning and evaluating of health programs has been difficult. Throughout the Region, action in health statistics was centered on training larger numbers of statistical workers, on extending coverage of morbidity reporting systems, and on providing adequate supervision of statistical personnel in health departments. Committees of vital and health statistics were strengthened in several countries, and national meetings on health statistics were held.

The first plans were made for developing Regional proposals for the Ninth Revision (1975) of the *International Classification of Diseases*, including the review of current terminology and study of methods of analyzing multiple conditions causing mortality and morbidity. Collection of data for the Inter-American Investigation of Mortality in Childhood, initiated in 1968, was near completion in 13 field projects in Latin America, and the processing and analysis of the data were under way. The results of this extensive study will establish a basis for

preventive actions to reduce child mortality and morbidity. The first meeting of the Regional Advisory Committee on Computers in Health, held during the year, outlined the potential role of the Organization in strengthening computer use in Latin America. The publication *Health Conditions in the Americas, 1965-1968* was prepared for the XVIII Pan American Sanitary Conference in September 1970.

Collection, publication, and analysis of statistical data. Current information on the quarantinable diseases as well as on other selected infective and parasitic diseases was published regularly in the *Weekly Epidemiological Report*, together with epidemiological notes of general interest on outbreaks of diseases and periodic summaries of the status of *Aedes aegypti* eradication in the Americas. Table 34 compares the cases of the quarantinable diseases reported in 1969 and in 1970; the considerable progress made in the program for eradication of smallpox in Brazil stands out clearly. The issue of *Reported Cases of Notifiable Diseases in the Americas* covering the year 1967 was published, and in its introductory chapter special attention was devoted to the epidemiology of the quarantinable diseases and of selected zoonoses in the Americas.

The report on *Health Conditions in the Americas, 1965-1968* was prepared on the basis of the completed annual PAHO/WHO questionnaires received from the countries, on replies received to the WHO questionnaire for the Fourth Report on the World Health Situation, and on national publications and yearbooks. This report, the fifth of a series covering the period 1950-1968, follows the plan of the previous reports, with chapters on popula-

tion, vital statistics, communicable diseases, health services, hospitals, environmental health, and health manpower. From these data acquired over two decades, the evolution of health problems, the distribution and use of resources to solve them, and the need for changes in priorities can be seen. Progress, as measured by the availability of vital and health statistics, can be discerned, as can the pressing need to improve the completeness, quality, and accuracy of the data.

Three papers based on preliminary data from the Inter-American Investigation of Mortality in Childhood were prepared: one for *War on Hunger*, a publication of the U.S. Agency for International Development; one for the meeting of the PAHO Advisory Committee on Medical Research; and one for a UNICEF publication. In addition, a paper using data on multiple conditions as recorded on death certificates, autopsies, and hospital and clinical records, drawn from the Inter-American Investigation of Mortality in Adults, was published in the *Boletín* of the Pan American Sanitary Bureau.

Computer sciences. In November 1969 a Computer Science Section was created in the Department of Health Statistics by consolidating into a single unit all the staff engaged in computer activities and all the equipment resources available. The Section renders advisory services to Governments and national institutions and is responsible for systems analyses and technical assistance to both Headquarters and field staff of the Regional Office. Besides managing the computer resources currently in use in PAHO, the Section is also responsible for foreseeing and planning for future needs.

TABLE 34. REPORTED CASES OF QUARANTINABLE DISEASES IN THE AMERICAS, BY COUNTRY, 1969-1970.

Country or other political unit	1969				1970 ^a			
	Smallpox	Plague	Louse-borne typhus	Jungle yellow fever	Smallpox	Plague	Louse-borne typhus	Jungle yellow fever
Argentina.....	1	—	—	—	24 ^b	—	—	—
Bolivia.....	—	95	23	8	—	41	22	2
Brazil.....	7,377	293	—	4	1,771	101	—	2
Colombia.....	—	—	—	7	—	—	—	7
Ecuador.....	—	23	27	—	—	31	59	—
Mexico.....	—	—	8	—	—	—	—	—
Peru.....	—	8	28	28	—	128	23	75
United States of America...	—	5	—	—	—	13	—	—
Uruguay.....	3 ^c	—	—	—	—	—	—	—
Surinam.....	—	—	—	1	—	—	—	—
Total.....	7,381	424	86	48	1,795	314	101	86

— None.

^a Based on official reports received at PASB through 16 June 1971.

^b Including one imported case.

^c Two imported cases.

The Section enlarged its sphere of action during 1970, providing data processing services for both the technical and the administrative departments of the Organization. In the area of administration and management, the operating budget and finance and accounts were entirely computer supported. Important improvements were made to the existing system for personnel and payroll transactions, and an Integrated Personnel and Payroll System (IPAPS) was in the design phase. Computer systems were developed for inventory control, mailing lists, and the telephone directory, and those for the accounting and distribution operations of the medical textbook program were under consideration. In December an IBM360 computer system was installed.

A short course on use of the computer in health services administration was conducted at Headquarters for a limited number of field staff, and more such courses were planned to be held at the field offices and at Headquarters. In the second half of the year, scientific computer programming training was provided for PAHO's technical personnel; these courses will be offered twice yearly.

Regional Advisory Committee on Computers in Health. This Regional Advisory Committee held its first meeting in Buenos Aires (13-17 April), with 10 participants from eight countries. It recommended that the Organization take immediate steps to establish a training program in computer science and provide this service to Member Countries, utilizing both the facilities of PAHO in Washington and those of other centers in the Region. It also recommended that annual meetings of the Regional Advisory Committee be held, that fellowships be provided



On a key punch machine at PAHO Headquarters, information is taken from documents and put on cards to be fed into a computer.

for training, that guidelines be prepared on the installation of electronic equipment for use in various phases of health sector activities, and that an information exchange service be established in the Washington Office. The report of the meeting was published as *Scientific Publication PAHO 211*.

Latin American Center for Classification of Diseases.

As in previous years, staff of the Latin American Center in Caracas and of PAHO collaborated in activities related to the *International Classification of Diseases*. Volume II (Index) of the *Classification* in Spanish was issued and a wide distribution was made. Also made available during 1970 was Volume I in Portuguese. Through a contract between the Organization and the School of Medicine of Ribeirão Preto, Brazil, Volume II was translated into Portuguese and will be ready for publication in early 1971.

A Spanish edition of the *International Classification of Diseases—Application to Dentistry and Stomatology* (*Scientific Publication PAHO 206*) was published. Other training material prepared in Spanish included the adaptation of the *Hospital Coding Instruction Manual for the Eighth Revision of the Classification*, and of *Programmed Instruction in the Use of the Classification*.

Three courses on the *International Classification* were given by staff of the Latin American Center: one in Colombia for 30 students, one in Bolivia for 25, and one in Venezuela for 40. A short-term consultant taught two courses in Argentina for 50 students. In other countries instruction was provided by national professors, previously trained in international courses. Following the distribution of Volume I in Portuguese, a special introductory course was given in Brazil at the School of Hygiene and Public Health of the University of São Paulo.

To formulate plans for Regional activities in preparing proposals for the Ninth Revision of the *Classification*, a study group met in Caracas in December. The participants from eight countries, together with staff of the Center and of PAHO, developed a program of work for 1971 and 1972. The terminology in selected chapters of the Eighth Revision was to be reviewed in various countries, and a study on the analysis of multiple conditions of morbidity and mortality from hospital records and death certificates was designed.

Recommendations on the organization of national activities relating to the *Classification* and training programs for its use were also made.

The replies to a questionnaire, received from all but one country in the Americas, showed that great progress

has been made in use of the *International Classification*. All the countries use it for mortality statistics, and of those that process data on hospitalized patients, all use it for morbidity data.

The first annual meeting of Directors of the four WHO Centers for Classification of Diseases (London, Paris, Moscow, and Caracas) was held in Moscow in 1970 to coordinate activities for the Ninth Revision and related reference services.

Field services. Consultants were stationed throughout the Region to provide advisory services on statistical systems in ministries of health and on education and training programs. A statistician was assigned to each of the six Zones, and others were provided in five countries or areas: West Indies (Barbados), Bolivia, Brazil, Haiti, and Paraguay. Two statisticians in smallpox eradication projects and those in seven of the Pan American centers (nutrition, planning, zoonoses, foot-and-mouth disease, perinatology, and classification of diseases) further augmented the advisory teams. During 1970, four medical records librarians gave advice to hospitals on the organization of records departments and on training in this speciality and in hospital statistics. Five short-term consultants advised on statistical methodology, design of experiments, sampling, operations research, and non-parametric statistics in courses on biostatistics in schools of medicine and public health. Three short-term consultants rendered assistance in the development of medical records training courses at various educational levels.

The activities carried out by the countries during the year reflected the progress that was being made in their statistics programs.

The Permanent Central Committee on Health Statistics of Central America and Panama, at its third annual meeting held in Quezaltenango, Guatemala, stressed the need for establishing national committees of health statistics; for placing the statistical department under direct responsibility of the Minister or Director of Health; for organizing statistical systems coordinated at the local, regional, and central levels; for reorganizing the functions of hospital statistical services to include responsibilities related to admission of patients and filing; and for establishing civil registry offices in hospitals to ensure the registration of all births and deaths occurring in those institutions.

In Argentina, the Fifth National Meeting on Health Statistics, held in Tucumán, reviewed the national program of vital and hospital statistics and studied the medical records in use, proposing a new model form. Training plans and the program of supervision were analyzed;

underregistration was studied and methods for correction proposed; and methods to maintain the inventory of institutional resources on a current basis were discussed.

In the restructuring of the Ministry of Health in Brazil, a Division of Epidemiology and Health Statistics was created, incorporating both the former Health Statistics Services and the Statistical Service of the National Childrens' Department.

In Colombia the National Committee on Health Statistics drew up a provisional plan for coordination of activities of the Public Health Ministry and of the National Administrative Office of Statistics.

Haiti's National Committee for Development of Statistics held 14 meetings to discuss demographic, public health, and housing statistics.

Censuses. Population censuses were conducted by 12 countries (Argentina, Barbados, Brazil, Chile, Cuba, Dominican Republic, Guyana, Jamaica, Mexico, Panama, Trinidad and Tobago, the United States of America) and by most of the territories of the Region. Other censuses are planned for the period 1971-1973. Most of the countries conduct censuses at 10-year intervals, and some have a long record of census-taking, dating back to the eighteenth century (Cuba, Honduras, Nicaragua, and the United States of America).

Preliminary results of a few of the censuses were reported. These population data are essential to the planning of health and other services.

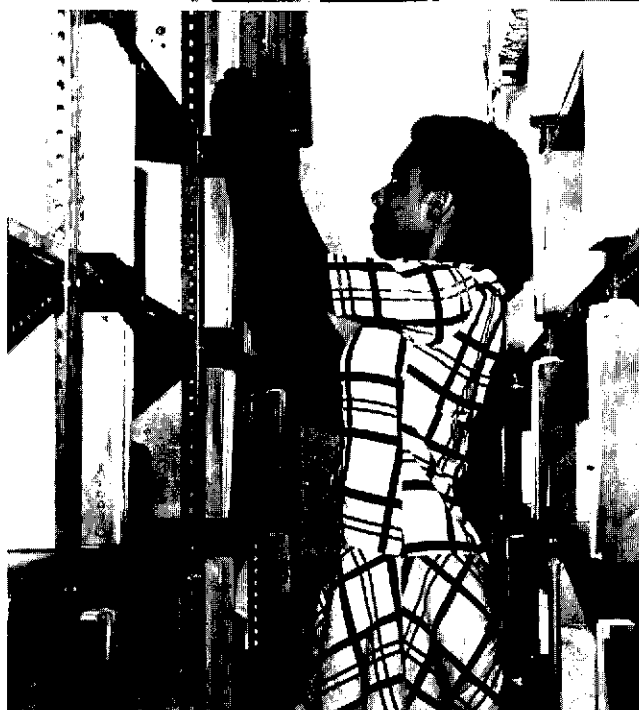
Vital statistics. The system for vital statistics in Bolivia was revised, and forms for births and deaths and instruction manuals were approved. The system will be applied first in La Paz and provincial capitals and later extended to the rest of the country.

In Brazil the Regional Health Statistics Center for the Northeast (CRESNE) published mortality data by cause and age for municipal capitals.

In Honduras the section of the Sanitary Code on medical certification of causes of death, conforming to WHO recommendations and approved by a 1966 law, was put into effect in two areas: Tegucigalpa and San Pedro Sula. A consultant on civil registration from the United Nations served as adviser.

As noted above, one of the recommendations of the Central American Committee on Health Statistics was that civil registry offices be set up in hospitals to improve the recording of births and deaths.

Following the printing and distribution of sufficient registration books in Paraguay, the number of births recorded increased by 45 per cent. Also contributing to this improvement was the establishment of additional



Medical Records Department at the Victoria Hospital, St. Lucia. Top: Records Office before its reorganization. Center: New shelving provides for even distribution of records for all units. Bottom: Hospital administrator is shown with medical records staff.

civil registry offices. Registration of deaths was increased by 30 per cent. Vital statistics for the country were published for the years 1967-1969.

In Peru statistical technicians in the health services were given a two-week course to prepare them as instructors for training civil registrars.

Uruguay published mortality data for 1969.

Communicable diseases. In Argentina a new law on notifiable diseases was under study; the weekly bulletin was revised; and analyses of disease problems were presented in a monthly bulletin. The revised statistical system in Bolivia led to a 50 per cent improvement in the reporting of communicable diseases, measured by the number of establishment-months for which reports were made. Haiti's reporting system was reorganized. A list of diseases to be reported by public and private institutions was prepared in Paraguay.

Medical records and hospital statistics. Activities directed toward improvement of these systems were reported from many countries, indicating a growing recognition of the value of good-quality medical records for care of the patient, administration of the hospital, and health planning.

Three of the hospitals included in a study of progressive patient care received special advisory services both to improve the medical records departments throughout the hospital and to collect information on utilization of the intensive care unit and on its contribution to improved patient care. Data received from three of the units were being processed and analyzed.

At the José de San Martín Teaching Hospital in Buenos Aires the transition from a decentralized records system to a centralized one was initiated. The Computer Center located in the Hospital was being used in the system. Plans were being made to have this Hospital serve as a demonstration area for the advanced training of medical records personnel.

In Brazil a multidisciplinary team including a medical records consultant and a statistician among its members was participating in the reorganization of four university hospitals. Also, the Hospital Foundation of Brasília was evaluated to determine the feasibility of establishing a centralized records system to serve four hospitals.

Advisory services on reorganization of systems were rendered to the National Thoracic Institute in La Paz, Bolivia; the University Hospital in Cali and San Juan de Dios Hospital in Bogotá, Colombia; the Social Security Hospital and Luis Veranza Hospital in Guayaquil, Ecuador; and the newly constructed Air Force Hospital in Lima, Peru.

Many different national agencies providing medical care participated in the preparation of standardized medical records for use in all hospitals in Bolivia. One institution was selected for a trial of the proposed forms. The semi-annual report of activities and resources of the Ministry of Social Welfare and Public Health (January-July 1970) included information on almost 60 per cent of the Ministry's hospitals.

In the Caribbean area, medical records systems were surveyed in 36 hospitals—in the Bahamas, Bermuda, eastern Caribbean, Grenada, Jamaica, Surinam, and Trinidad and Tobago. Reorganization was initiated in 15 and completed in two of the hospitals, and inservice training was being carried on in five.

In Haiti the medical records forms in use in the University Hospital were modified and their use was being extended to the rest of the country. The reorganization of medical records in Panama was initiated in the Children's Hospital and Santo Tomás Hospital.

In Uruguay morbidity statistics were processed for 1969 for a 10 per cent sample of discharges; all hospitals of the Ministry of Public Health were included in the hospital statistical system. In Argentina data on utilization of hospitals in the various regions of the country were published, and in Paraguay hospital statistics were issued for the period 1967-1969.

As hospital records systems were being evaluated and reorganized throughout the Region, medical records personnel were being trained to maintain those systems (see Chapter III).

Computers. The Computer Center for Health, inaugurated in April at the José de San Martín Teaching Hospital in Buenos Aires, was established through a cooperative agreement between the Secretariat of State for Public Health, the School of Medicine of the National University of Buenos Aires, and the Organization. A proposal was presented for UNDP Special Fund support, which will be provided beginning in 1971. A new computer with nine terminals was installed and the program was functioning well. Analysis and programming were being carried out for the Secretariat for Public Health, the School of Medicine, San Martín Hospital, and for many other national groups. Courses on use of the computer were provided at the Hospital for students and staff of the School of Medicine and other schools.

A computer obtained by the School of Medicine of the University of Chile was being used by the biostatistics unit of the School of Public Health for its research and teaching program. The General Statistics Office of Costa Rica also acquired a new computer. The Permanent Statistics Committee in Peru prepared a proposal for the

processing of health statistics by computer.

Among other field activities for which the computers in the PAHO Headquarters Office were used were several large linear programming problems for mathematical modeling for the Santa Lucía River basin project in Uruguay. Analyses were made of a large serological data bank.

At the year's end, PAHO's Computer Science Section was expanding its support in the scientific areas, and plans were made to increase its consultation services to Member Governments during 1971.

ADMINISTRATIVE METHODS AND PRACTICES

As part of its collaboration with Governments in their efforts to improve administration in the health sector, the Organization provided technical assistance during 1970 through 18 administrative methods consultants stationed in the various countries, two in the Headquarters Office, three short-term consultants, and the award of fellowships.

Comprehensive studies of health administration were carried out in Costa Rica, El Salvador, Guatemala, Jamaica, and Paraguay and general recommendations were made concerning needed changes, including revision of current legislation. In three of the countries action programs were begun.

In Argentina, advice was given to the Organization and Methods Office of the Secretariat of State for Public Health, and assistance was furnished to the School of Public Health of the National University in the preparation of the fifth intensive course in health administration.

Barbados was assisted with studies on the organization of the Queen Elizabeth Hospital and the district hospitals.

In Brazil the Organization collaborated in a course on administration of health services given in Pôrto Alegre.

Chile continued to receive advice on the improvement of the personnel system in the National Health Service. It was also assisted with the coding and cataloguing of stocks, the zoning of supply depots, and the establishment of a Studies and Programs Office, staffed by four professionals. An evaluation was made of the program budgeting system, and recommendations were drawn up for improving it. Recommendations on the financial organization of the Bacteriological Institute were also prepared.

In the Dominican Republic methods were designed for conducting cost analyses in 25 hospitals and nine medical



A student receives her certificate after completing the course on administration of health services (Pôrto Alegre, Brazil).

care establishments, and a manual was prepared on the subject. A hospital supply department was organized to serve as a model for other such services. Standards for administrative control, registration, and information sections were established in six medical care establishments.

In Guatemala a general study was made and recommendations were formulated on the organization of the General Hospital of Occidente.

The Government of Guyana accepted the recommendations that were made concerning the adoption of a budgetary cycle.

Advice was furnished to the Government of Paraguay on the preparation of draft legislation establishing the National Environmental Sanitation Service.

In Surinam a preliminary report was made on the administrative situation.

The Organization continued to assist Trinidad and Tobago with the implementation of the recommendations made earlier on administrative rationalization.

Uruguay continued to receive advice on administrative rationalization in the Ministry of Public Health, especially in regard to budget, accounts, and personnel matters. It was also assisted with the organization and conduct of a seminar on supplies, for hospital administrators.

A study was made and recommendations were submitted on the administration of the School of Medicine of the West-Central University of Venezuela. At the National Institute of Sanitary Works an over-all adminis-

trative reform project was established, and a permanent consultant was assigned to it.

Two consultants in Brazil and two in the countries of the Central American Isthmus continued to give assistance on administrative activities connected with the malaria eradication campaign.

The Sixth Latin American Course on Administrative Training for Public Health Officials was held at the Institute of Organization and Administration (INSORA) at the University of Chile, with 28 participants attending.

EVALUATION

This *Report*, when compared with those of past years, shows one important change in regard to data reported. The entire document, and particularly Chapter IX describing the project activities, contains more quantified data and even percentages of accomplishment of annual targets. This change is an indication of the extent to which those in charge of projects were appraising the effectiveness of their work.

In 1970, 85 per cent of the projects applied the evaluation procedure, as compared with 81 per cent in 1969 and 65 per cent in 1968. Of the projects from which reports were received, the procedure was satisfactorily applied in 73 per cent, compared with 64 per cent in 1969 and 43 in 1968.

One of the factors that helped to implant the evaluation procedure firmly in the work of the Organization was its inclusion as an integral part of the final instructions on the quadrennial projections, which were issued in February.

Another factor was no doubt the program of field visits conducted by the Department of Evaluation. Twelve countries were visited during the year to review certain projects with Zone and country staff and improve the utilization of the evaluation process as a working tool at all operational levels.

In certain of the specialized fields, evaluation was approached in greater depth. From a meeting of Regional and Zone Advisers in nutrition there emerged a guide for the evaluation of nutrition projects and nutrition components of general health services projects. A group of experts on health education prepared guidelines on the evaluation of work in this field. Specialists of the Pan American Foot-and-Mouth Disease Center produced draft instructions on the evaluation of projects for the control of that disease, and the document was presented at a meeting in Buenos Aires in April.

Resolution XXVI passed at the XIX Meeting of the Directing Council had called upon Member Governments to ensure the participation of their staff in project evaluation. Shortly afterward the Organization began to incorporate in all project agreements a new section that

provided for the joint evaluation of projects by national and international staff. Those in charge of projects have now been requested to show separately on the evaluation sheets the extent to which the national staff participated in the evaluation process.

B. SPECIFIC PROGRAMS

MEDICAL CARE ADMINISTRATION

Medical care policy. The concept of a national health system continues to be the basic measure advocated by the Organization for providing health services to the community. Such a system requires the participation of all public and private institutions that serve various population groups, without duplication of services or overlapping of activities. The health system must function with sufficient human resources and installed physical capacity, organized and structured in such a way as to provide services adequate in quality and quantity to satisfy public demand at a cost compatible with the financial capacity of the community.

At the same time, the health of the community demands that the services rendered should be comprehensive in character, encompassing prevention, cure, and rehabilita-

tion and also the social and educational aspects inherent in community health.

From the administrative standpoint, services need to be regionalized with a view to establishing a self-sufficient regional system in which the human resources and the facilities for diagnosis and specialized treatment are centralized and the regular health care services are given in a decentralized form through a network of peripheral services located as close as possible to the places where the members of the community live, work, or study.

The national health system as thus conceived requires the backing of centralized institutions which understand, assist, and support this type of organization, as well as coordinating machinery at both the ministry of health and the regional levels.

To complement the foregoing, it is essential to have an investment plan covering a program for construction and equipping of hospitals and other health services, an educational plan to meet the need for training human



Discussion with officials of the Ministry of Public Health of Costa Rica on the restructuring of the Ministry and the bases for coordination with the Social Security Institute.

II. PROMOTION OF HEALTH: SPECIFIC PROGRAMS

resources, and a program for strengthening administrative services so as to increase efficiency and raise the productivity of available manpower.

Most countries of the Americas are aware of these needs and are gradually taking steps to develop systematically, and as part of a continuing and methodical process, national health systems meeting the requirements of national health plans and of programs at the local level. The Organization's task has been to stimulate interest and mobilize resources, national and international, to satisfy the needs of this vast program.

Thus, the W. K. Kellogg Foundation has supported the educational side and the improvement of the quality of services; the United Nations Development Program has helped to promote hospital maintenance and engineering; and the Inter-American Development Bank has made it possible to finance a number of hospital construction and equipment programs. To all this must be added the fruitful association of PAHO with the Organization of American States, the International Labour Organisation, and the Permanent Inter-American Social Security Committee, which has given impetus to the program for coordination of medical services, and the collaboration of PAHO in the planning, execution, and evaluation phases of national health programs.

Coordination of medical care services. During 1970 the Organization published¹ the final report and working documents of the Study Group on the Coordination of Medical Care Services of Ministries of Health, Social

¹ *Scientific Publication PAHO 201.*

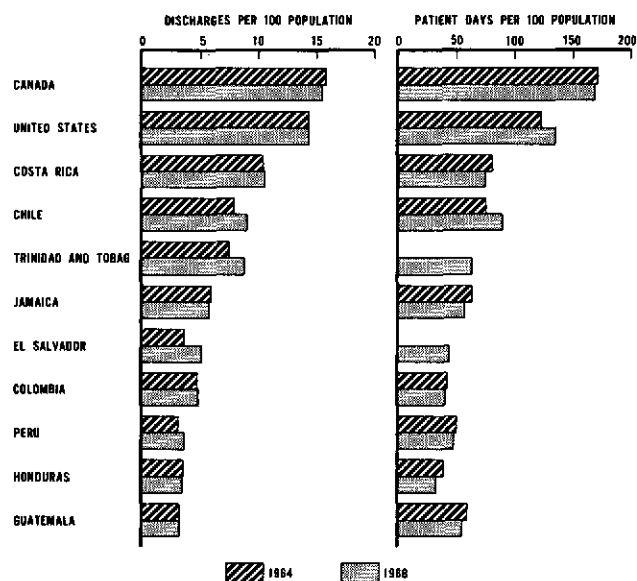


FIG. 21. Use of general hospitals per 100 population in 11 countries of the Americas, in 1964 and 1968.

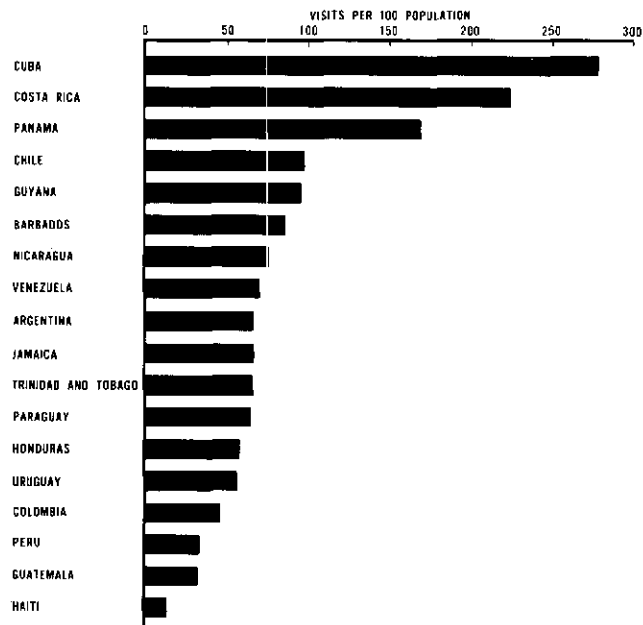


FIG. 22. Visits per 100 population to health establishments with outpatient services, in 18 countries of the Americas, 1968.

Security Institutes, and Universities, convened by PAHO in collaboration with the OAS in August 1969. This document was widely distributed to all Governments, institutions, and individuals interested in the topic, and has had an excellent reception as a theoretical, conceptual basis for coordination of the various public and private bodies concerned with medical care services.

In June the Second American Congress on Social Security Medicine, sponsored by the Permanent Inter-American Social Security Committee in collaboration with the Pan American Federation of Associations of Medical Schools and the Colombian Institute of Social Security, took place in Bogotá. It was attended by delegations from practically all countries of the Americas, and one of the basic items of discussion was the coordination of the medical care services of ministries with those of social security agencies and the possibility of making use of the latter for teaching medicine. The Congress gave its wholehearted backing to the aforementioned publication and strongly endorsed the proposals for promoting coordination between medical schools and the social security agencies, which should endeavor to place their hospitals and other health establishments at the disposal of medical students and professors for teaching purposes. In this way, students will have an opportunity to make contact with the community, and by the study of social psychology, behavioral sciences, and community organization will acquire knowledge, techniques, and skills that will better

equip them to exercise their profession. It is gratifying to note that PAHO's participation in this Congress was most effective and highly appreciated by the organizers. Subsequent events have demonstrated the growing interest that was aroused among teaching circles in participating in the process of coordination of medical care services of health ministries with those of the social security agencies.

In a new effort to assist Governments to progress toward the goal of coordination, the Organization prepared a guide for coordination of medical care, compiling all the decisions and recommendations of the PAHO Governing Bodies and of the expert groups convened jointly by the OAS and PAHO. This guide, to be printed in 1971, will be widely distributed to health ministries and social security agencies in order to provide them with further assistance in developing a system that will avoid the dispersal, and often duplication, of services resulting from the lack of unified command in the handling of problems in the health sector.

During the year, advisory services were rendered to Panama in the preparation of a project to integrate the Social Security Fund medical services with those of the Ministry of Health so as to create a national health service; to Guatemala in the drafting of legislation for the structural and technical reorganization of the Ministry of Public Health and Social Welfare and the establishment of a National Health Council attached to the Ministry and charged with coordinating the operation of the various health institutions; to Brazil in the drafting of a decree laying the foundations for a national health system under the auspices of the Secretariat for Medical Care, attached to the Ministry of Health; and to Costa Rica in the preparation of foundations for a national health system, the establishment of a National Health Council at the Presidential level, and the administrative reform of the Ministry of Health, which will henceforth act as executive secretariat of the National Health Council.

Planning and administration of hospitals and other health establishments. The improvement of functional and physical planning and administration of hospitals has been of particular interest to the Organization. Better hospital administration has been one of the targets of the progressive patient care project (AMRO-4816), which has succeeded in establishing in six hospitals a new administrative structure at the patient-unit level making for optimum use of resources and improved quality of services.

Timely plans for hospital facilities and structures designed to foster the introduction of new medical technology and its proper application to patient care are

feasible only on the basis of adequate architectural programs. Toward this end, the Organization has cooperated with the countries in a number of activities. In Ecuador a complete review was made of the preliminary architectural plans for the University Hospital in Guayaquil, begun the previous year. In Honduras further assistance was given with the plans for the Teaching Hospital in Tegucigalpa; the project was drawn up and submitted to the IDB with an application for financing. Uruguay was assisted with the preliminary study of a project to complete and equip the Northern Hospital and the pediatrics wing of the Pereira Rossell Hospital. Peru was assisted with arrangements for putting the Central Air Force Hospital into operation. In Nicaragua a review was made of a hospital project prepared by the National University and due to be submitted to the IDB for future financing. In Colombia PAHO staff helped to prepare a preliminary study on a proposed teaching hospital at the National University in Bogotá, and a report was submitted to the Government on the feasibility of constructing a neurological institute. In Paraguay the Organization assisted with the installation of a special care unit at the Casualty Hospital in Asunción.

The Organization continued to cooperate with the six university hospitals participating in the progressive patient care project. The intensive care units in four of the hospitals were assisted in strengthening their operations, and in two units which for local reasons had not developed as quickly as planned, further technical advisory services were rendered. Through the Pan American Health and Education Foundation, a donation was ob-

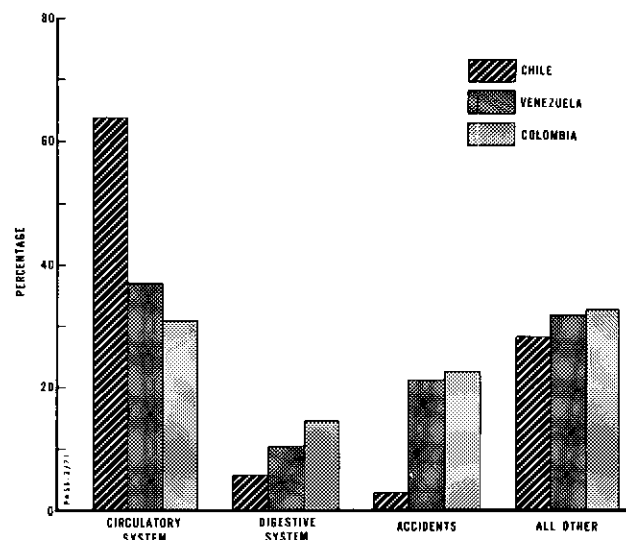


FIG. 23. Percentage of patients treated in intensive care units of three hospitals for diseases of circulatory and digestive systems and for injuries from accidents.



Hospital Maintenance and Engineering Center, Venezuela.

tained in 1970 from the W. K. Kellogg Foundation to continue the implementation of other phases of progressive patient care over the next three years.

With regard to hospital maintenance and engineering, there was clear evidence of the countries' growing interest in this aspect of hospital administration, which until a few years ago had been neglected. There was quite obviously a greater understanding of the key importance of a hospital maintenance program in safeguarding the capital invested in installations and equipment, a factor which in turn helps to raise the standard of medical care given to patients.

The Hospital Maintenance and Engineering Center in Venezuela continued to carry out its programs of training and services. The Maracay Hospital, which was due to begin functioning, was chosen as the pilot hospital for the Center, where efforts will concentrate on determining the optimum conditions for development of maintenance programs.

Publications were prepared on the planning and operation of intensive care units as part of the progressive patient care project, and PAHO staff participated in a seminar on teaching hospitals held in Trujillo, Peru.

Information on the programs of training in medical care and hospital administration is presented in Chapter III.

Rehabilitation. There is increasing awareness in the countries of the need for public health programs to include physical rehabilitation services, and also to provide, or at least promote the development of, social and vocational rehabilitation services. Thus there is a growing demand for training programs to prepare medical and paramedical personnel to render such services.

In 1969 an international study group met in Chile to discuss the training of physical medicine and rehabilitation specialists, and in 1970 the Latin American Conference on Rehabilitation of the Disabled took place in Mexico. Here a multidisciplinary group dealt with the training of physical and occupational therapists, social workers, psychologists, and rehabilitation program administrators, as a means of providing efficient rehabilitation services in Latin America. It is hoped that the implementation of the Conference recommendations will lead to greater uniformity in the rehabilitation methods and services in all countries of the Americas.

The projects in this field were continued in Argentina (School of Prosthetics and Orthotics) and Chile (training of teachers for the rehabilitation of deaf-mute children); technical assistance was given in Cuba, Peru, and Venezuela for the training of physiotherapists, and in Colombia and Cuba in connection with the manufacture of prosthetic devices.

Plans were discussed for the training of physiotherapists for the English-speaking countries of the Caribbean, and it was expected that the programs would begin in 1972.

A visit was paid to Costa Rica to discuss the plans for the proposed National Center for Traumatology, Orthopedics, and Rehabilitation.

The Organization took part in the Sixth International Congress on Physical Medicine, held in Amsterdam, Holland, and in a national seminar on prosthetics in Bogotá.

It continued to cooperate with the Department of Social Affairs of the United Nations, the International Society

for Rehabilitation of the Disabled, and the World Rehabilitation Fund.

MATERNAL AND CHILD HEALTH AND FAMILY PLANNING

The goal of the Organization in its health and population dynamics program is to assist Governments in coping with problems caused by population changes, especially rapid growth, and their effects on human health and well-being, particularly in relation to maternal and child health. Thus, the Organization has increased its support of programs whose goals relate to direct effects on the health of children and mothers consequent to repeated, frequent pregnancy and the complications thereof, and to the secondary health effects resulting from economic imbalances that influence nutrition, housing, sanitation, and the provision of adequate health and medical resources. This has meant a high degree of integration within the Organization's structure of the activities of maternal and child health and population dynamics. Moreover, the programs in these fields have been designed in close cooperation with other sections of the Organization, especially those concerned with nutrition, health education, cancer control, health statistics, nursing, and human resources.

Governments were giving increased attention to improvements in their programs, and were requesting advisory services in relation to the strengthening of maternal and child health departments within the ministries of health. These services were rendered by PAHO personnel in Zones I, III, IV, and VI. Various consultants assisted

in the analysis of health problems of mothers and children and in the strengthening of teaching and research in that field.

Assistance was also provided in national family planning programs with the goal of ensuring the utilization of optimal health techniques and encouraging the integration of family planning activities within the regular maternal and child health services.

Additional activities were carried out in the areas of biology of human reproduction, family-life education, demographic analysis, and other related disciplines.

The Organization provided support for the establishment of the Latin American Center for Perinatology and Human Development (CLAP) in Montevideo, which was continuing the work previously carried out by the Obstetric Physiology Service and the Obstetrics Clinic of the School of Medicine at the University in Montevideo. The Center's major responsibilities will be in research and teaching.

Notable progress was made in the maternal and child health and family welfare program in Colombia, where the Organization has provided assistance since 1968. By mid-1970 the program had been extended to 386 clinics and a total of 2,386 medical personnel had been trained.

In Trinidad and Tobago assistance was given in the integration of the national family planning program within the maternal and child health services. Significant progress was achieved in the community education component of the program, including the training of community aides and the organization of a National Family Planning Week and a National Family Planning Conference.

Advisory services were rendered in the development of a comprehensive maternal and child health and family planning program for Haiti and a postpartum program for Costa Rica. Additional technical assistance was provided in 12 other countries of the Region.

Permanent advisers in health and population dynamics were assigned to Colombia, Ecuador, Guyana and the eastern Caribbean, Haiti, Zone III, and Zone VI. During the year PAHO staff participated in various study groups, such as the United Nations mission that made an in-depth review of Costa Rica's family planning program and the World Bank mission that reviewed Trinidad's program.

The PAHO Advisory Committee on Health and Population Dynamics, created during the year, held its first meeting from 1 to 3 June in Washington, D.C. The Committee members—experts in family planning, demography, research in reproductive biology, sex education,

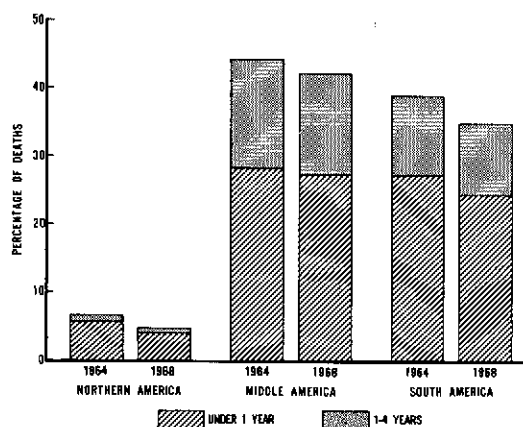


FIG. 24. Percentage of deaths under 5 years of age in three regions of the Americas, 1964 and 1968.



The First Seminar on Maternal and Child Health and Family Welfare in Central America and Panama (San José, Costa Rica, 1-5 September) established the bases for the planning of activities in this field in the light of current conditions in the countries.

human resources, and evaluation—made recommendations for program priorities in this field. General standards for the planning of programs in maternal and child health were also prepared.

The Organization sponsored the First Seminar on Maternal and Child Health and Family Welfare in Central America and Panama (San José, Costa Rica, 1-5 September), in accordance with a recommendation made

by the Second Meeting of the Central American Public Health Council (Tegucigalpa, 1968). The Seminar, attended by 24 executives of the health services of the area, recognized the need for program coordination of maternal and child health and family welfare services, and also the need for holding similar seminars at the national level. These and other conclusions were referred to in resolutions of the Fourth Meeting of the Public Health Council (Managua, 1970).

In cooperation with the Latin American Center for Demography (CELADE) and the School of Public Health of the University of Chile, the Organization also sponsored a Conference of Schools of Public Health of Latin America on Health and Population (Santiago, Chile, 8-14 November). Participants included members of the faculties of the Schools in Buenos Aires, São Paulo, Santiago, Medellín, Havana, Lima, San Juan (Puerto Rico), and Caracas.

High priority was assigned to the activities in education and training. Progress in this area is discussed in Chapter III.

Research plans were formulated and emphasis was placed on studying the health aspects of family planning. The PAHO-supported Latin American Center for Perinatology and Human Development began elements

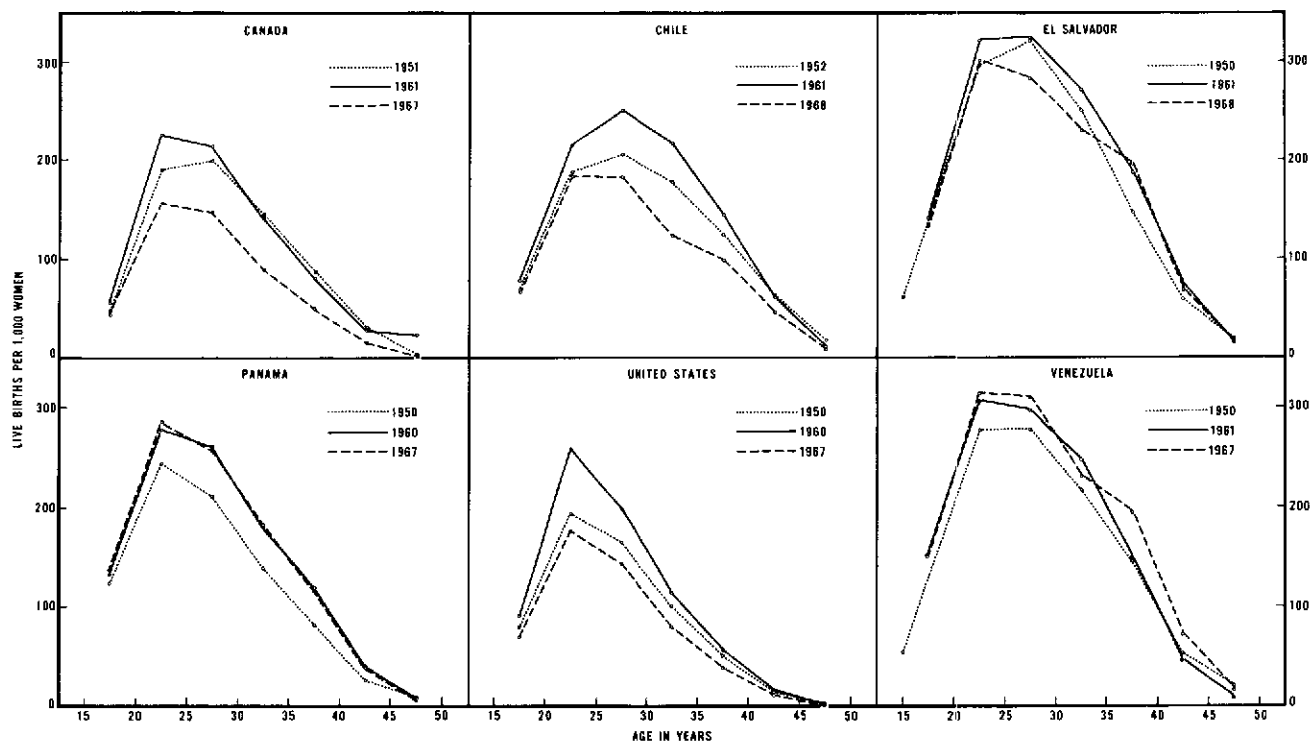


FIG. 25. Fertility rates per 1,000 women, by age, in six countries around 1950, 1960, and 1968.

of this research during the year. Other research activities are described in Chapter V.

The PAHO professional staff was increased to meet the greatly increased workload in population activities. An additional medical officer was appointed at Headquarters, and three additional medical officers took assignments in the field.

Increased financial commitments were granted by the U.S. Agency for International Development and arrangements were made for future financial support from the United Nations Fund for Population Activities, among other institutions.

NUTRITION

The Organization has assigned high priority to its program of technical assistance to nutrition programs in Latin America and the Caribbean area, both for the development of human resources and the promotion of research and for the inclusion of nutrition activities in the health services. It also continued to develop a region-wide program for interagency cooperation in regard to national food and nutrition policies.

To examine the current status of food and nutrition problems in the Region and identify the problems hindering the progress of country programs in this field, a meeting of all of the Organization's nutrition advisers and nutritionists-dietitians, as well as medical officers

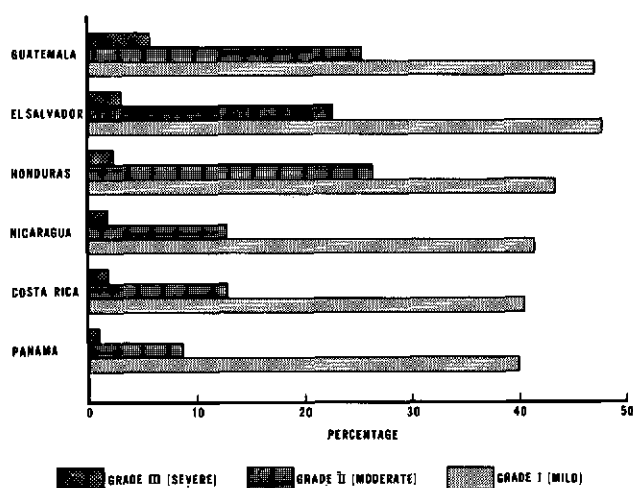


Surveys on the prevalence of protein-calorie malnutrition in Brazil include height measurements of schoolchildren.

involved in nutrition activities, was held at Headquarters in March. The standards for the planning and evaluation of PAHO/WHO programs were revised and completed during the meeting and a general guide was developed for the planning and evaluation of nutrition projects and of nutrition activities included in general health services projects, the purpose being to achieve uniformity in the Organization's programs of advisory services while at the same time adapting them to conditions and resources in each country.

The Third Meeting of the PAHO Technical Advisory Committee on Nutrition was held in 1970, as were meetings of the advisory bodies of the Institute of Nutrition of Central America and Panama and the Caribbean Food and Nutrition Institute, during which the performance of the programs was reviewed and guidelines were adopted for the conduct of future programs.

Nutrition problems, because of the multiple causative factors involved, require simultaneous and concerted action by the health, education, agriculture, and economic sectors, directed toward improvement of the nutritional status of the population. This makes it necessary for each country to formulate and implement a well-defined food and nutrition policy forming part of its economic and social development plans. The Governing Bodies



Survey data from *Evaluación nutricional de la población de Centro América y Panamá*. Institute of Nutrition of Central America and Panama, International Research Office of the National Institutes of Health (USA), and Ministries of Health of the countries.

FIG. 26. Percentage of children under 5 years of age with malnutrition of grades I, II, and III, based on the Gómez Classification in countries of Central America and Panama.

of PAHO have made the furtherance of this goal, in collaboration with the countries, a policy of the Organization. In a basic document presented at the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, held in Buenos Aires in April, the Organization defined the responsibilities of the health sector for the planning and development of national food and nutrition policies. PAHO participated jointly with FAO, UNICEF, and ECLA in arrangements for the organization and holding of a series of subregional conferences to foster the formulation and implementation of biologically oriented food and nutrition policies in all the Latin American countries. An Interagency Working Group was established, with headquarters in Santiago, and UNICEF, in agreement with the other cooperating organizations, appointed a general coordinator for this regional plan.

The programs of applied nutrition, which received assistance from PAHO, FAO, and UNICEF, have achieved varying degrees of success, after almost 10 years of operation in some cases. In order to review the status of these programs and reorient their future activities, a joint meeting of officials from the three organizations was held at Headquarters in October.

The epidemiology of protein-calorie malnutrition in young children indicates the importance of devoting attention to breast-feeding practices and to weaning foods in the programs for the prevention of this public health problem. In November a meeting of pediatricians and representatives of children's food manufacturers was held in Bogotá to examine the problem and establish mechanisms for cooperation of the private sector with

public health groups active in maternal and child health and nutrition programs.

The Organization continued to extend advisory services to the Governments for the strengthening of their nutrition programs, through its permanent advisers (three regional advisers, four Zone advisers, six country advisers, and two assigned to special projects at the University of Puerto Rico and the Federal University of Pernambuco, Brazil) and through short-term consultants, as well as through the Institute of Nutrition of Central America and Panama and the Caribbean Food and Nutrition Institute.

Active cooperation was rendered during the year to the schools of nutrition and dietetics in their efforts to train personnel in this field (see Chapter III).

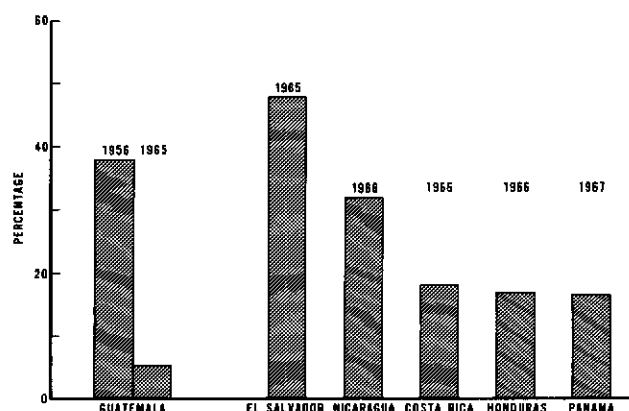
The activities in the field of nutrition research are discussed below and in Chapter V.

Institute of Nutrition of Central America and Panama

The activities carried out by the Institute of Nutrition of Central America and Panama (INCAP) in furtherance of its essential goal of assisting the Governments of the area in their efforts to solve the nutrition problems of their peoples can be grouped under four major headings: advisory services, education, research, and information. The salient accomplishments in each of these fields during 1970 are summarized below.

Advisory services. INCAP was in the process of reorganizing and strengthening its Division of Applied Nutrition with the aim of increasing its direct services to the countries. Meanwhile, it continued to collaborate with its member countries for the prime purpose of bringing about the definition and implementation of a *national food and nutrition policy* in each of them. Multisectoral seminars at a high technical and political level were held in Costa Rica and Nicaragua to lay the groundwork for the development of such a policy. Similar activities were being organized in the other countries.

The nutrition surveys conducted in previous years by INCAP in its member countries provided detailed information on the food habits of the population and on the availability and cost of foods. On the basis of this information, and to enable the Governments to make use of the findings in order to develop a food and nutrition policy, a series of *minimum-cost adequate diets* meeting the nutritional needs of the various age groups in the



Survey data from *Evaluación nutricional de la población de Centro América y Panamá*, Institute of Nutrition of Central America and Panama, International Research Office of the National Institutes of Health (USA), and Ministries of Health of the countries.

FIG. 27. Decrease in percentage of population with endemic goiter in Guatemala between 1956 and 1965 and levels in other countries in Central America and Panama in surveys between 1965 and 1967.

population were prepared for each of the countries. In preparing these diets, the food habits and the local availability of foods were taken into account. The diets were issued in special booklets, one for each country, and were distributed to all of them. It is hoped that, in addition to accomplishing their primary purpose of defining the nutritional needs at the national level and guiding the policy on food production and trade, these diets will serve as a basis for the development of effective education and nutrition programs for the various population sectors.

The program for *eradication of endemic goiter through the distribution of iodized salt*, which has yielded such good results in Guatemala and was put into practice in El Salvador and Honduras in 1968, was initiated in Panama in 1970. In addition, legal and other arrangements were made to begin the program in Costa Rica and Nicaragua in 1971. When this is done, all six countries of the Central American area will have adopted the relevant recommendation of INCAP, with beneficial results for their population.

Commercial distribution of Incaparina began in Costa Rica, where, with the authorization and assistance of the Institute and full support of the Government, a private firm was marketing the product through regular commercial channels. Incaparina was also being used in official programs of supplementary feeding. Sales continued at a very satisfactory level in Colombia and Guatemala.

Programs for the *care of slightly or moderately undernourished preschool-age children* continued in full activity in five countries of the area, but with greatest impetus in Costa Rica and Guatemala. These programs are carried out through education and nutrition rehabilitation services or similar programs responsible for supplementary feeding activities. They are bolstered by a strong educational component addressed to the mothers.

Education. The academic programs established by INCAP in cooperation with San Carlos University in Guatemala were yielding satisfactory results.

A total of 13 students—two from Costa Rica, three from El Salvador, four from Guatemala, two from Nicaragua, and two from Panama—formed the second graduating class of the School of Nutrition and Dietetics in 1970, and 42 students were continuing their studies in the first, second, and third years. Thus, through the School, the Institute was helping to meet the urgent need of its member countries for professional services in this field.

The curriculum of the postgraduate course in public



A Costa Rican student at the INCAP School of Nutrition and Dietetics presents a class on personal hygiene to Guatemalan schoolchildren.

health, with specialization in nutrition and maternal and child health, was carefully reviewed and, on the basis of past experience and in response to the countries' requests, was reduced to one year's duration. Six physicians—one from El Salvador, two from Guatemala, and one each from Honduras, Colombia, and Peru—formed the second graduating class in 1970, receiving the degree of Master of Science, awarded jointly by INCAP and San Carlos University of Guatemala. The members of the first graduating class, who completed a two-year program, were occupying key posts in the ministries of health or schools of medicine of their respective countries, where they were in charge of service or educational programs in the fields of maternal and child health and nutrition.

The other educational programs of the Institute carried on their regular activities during the year. In all, there were 132 students: 96 from INCAP member countries, 3 from other Latin American countries, 30 from the United States of America and Canada, and 3 from other Regions (Table 35).

Research. The Institute continued the studies on the *enrichment of corn*. This cereal is known to supply up to 70 per cent of the proteins consumed by the bulk of the population in the Central American area. However, as shown by INCAP studies, the proteins derived from corn have a very low nutritional value because of their low lysine and tryptophan content. Enrichment of corn with these two amino acids is not yet practical because of the high cost of tryptophan. Moreover, enrichment of this cereal, which in rural areas is processed in small mills driven by gasoline motors, presents logistic problems.

II. PROMOTION OF HEALTH: SPECIFIC PROGRAMS

In view of these and other factors, a process of enrichment was developed in which the triptophan is supplied by a protein concentrate (soybean protein) and synthetic lysine is added. The formula also contains all the vitamins and minerals considered necessary. Biological evaluation of this means of enrichment has shown very satisfactory results. Consideration has also been given to adapting this formula to the enrichment of corn under a number of conditions, that is, industrial processing of corn or its preparation in the various ways customary in urban and rural areas. In certain cases the process can be used immediately and action has already been taken to this end; in others, methods must first be tested in the field and plans for this purpose have been developed.

Enrichment of sugar. Vitamin A deficiency is a serious public health problem in the Central American countries. The food sources of preformed vitamin A (retinol), which is the form most readily assimilable by the body, are scarce and costly and therefore not consumed in sufficient quantity by most of the population. Vegetables and green and yellow fruit, which are sources of carotene,

are more accessible and less expensive but still consumed in only limited amounts, perhaps for cultural reasons. Moreover, carotene is much less effective than retinol as a source of vitamin A.

A radical change in this pattern of production and consumption through socioeconomic, agricultural, and educational development in the countries of the area, which would be the ideal and lasting solution to the problem, would obviously take many years. Because of the magnitude of the problem, and the fact that this deficiency damages the eyesight of many children and even results in permanent blindness, emergency measures are called for.

In the light of these considerations, it was thought that a possible solution to the problem might lie in adding an appropriate amount of vitamin A to the diet of the population, using a suitable source for this purpose. A practical, low-cost method was developed in which sugar is used as the vehicle for this vitamin. Sugar has proven to have the necessary properties and characteristics for the purpose, and the method has been shown to be technically and economically feasible and acceptable to

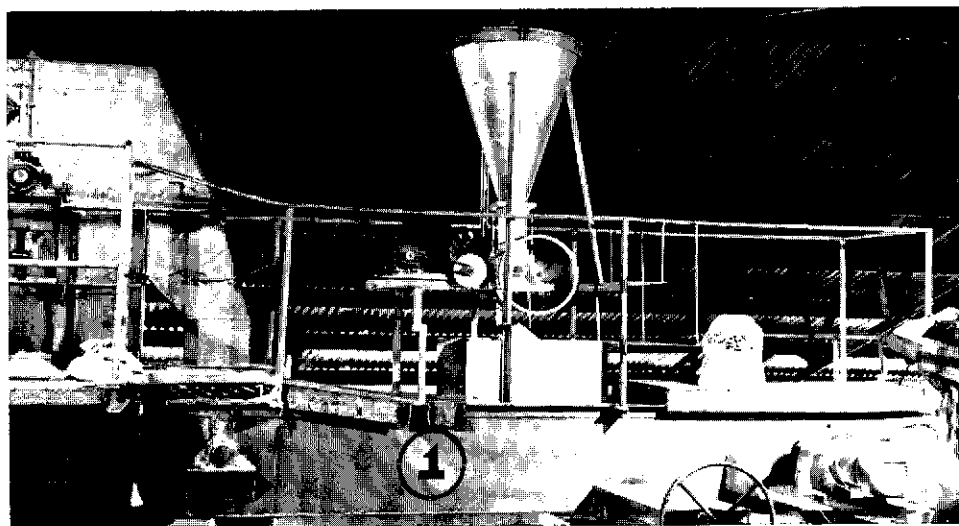
TABLE 35. NUMBER OF PARTICIPANTS IN THE INCAP TEACHING PROGRAMS, BY COUNTRY OF ORIGIN, REGION, AND TYPE OF TRAINING, 1970.

Country	School of Nutrition and Dietetics	Postgraduate course (Master's)	Short course	Tutorial training ^a	Total
Costa Rica.....	6	—	—	1	7
El Salvador.....	9	1	—	—	10
Guatemala.....	14	2	—	31	47
Honduras.....	4	1	—	3	8
Nicaragua.....	8	—	—	2	10
Panama.....	13	—	—	1	14
<i>Total from INCAP member countries.....</i>	<i>54</i>	<i>4</i>	<i>—</i>	<i>38</i>	<i>96</i>
Argentina.....	1	—	—	—	1
Colombia.....	—	1	—	—	1
Peru.....	—	1	—	—	1
<i>Total from other countries of Latin America.....</i>	<i>1</i>	<i>2</i>	<i>—</i>	<i>—</i>	<i>3</i>
Canada.....	—	—	3	—	3
United States of America.....	—	—	7	20	27
<i>Total from Northern America.....</i>	<i>—</i>	<i>—</i>	<i>10</i>	<i>20</i>	<i>30</i>
India.....	—	—	1	—	1
Malaysia.....	—	—	1	—	1
Thailand.....	—	—	1	—	1
<i>Total from other Regions.....</i>	<i>—</i>	<i>—</i>	<i>3</i>	<i>—</i>	<i>3</i>
Grand total.....	55	6	13	58	132

— None.

^a Excluding 5 persons who visited INCAP to observe its over-all program.

Equipment for pilot tests on the enrichment of sugar with vitamin A, at a sugar mill in Guatemala.



the public. Pilot tests have already been made at the industrial level; and sugar, thus enriched, has been studied from the standpoint of stability, biological effectiveness, and acceptability. All of these studies have yielded promising results, and have led to negotiations for putting the method into use in the member countries of INCAP.

Other studies. Other research projects of the Institute progressed satisfactorily. Worthy of mention is the *longitudinal study on intestinal colonization in children*, which consists in making very detailed observations of a group of children in a rural community, from the time of their birth. The purpose is to study the interrelationship of the diet and environmental factors, particularly infections, on the one hand, and general health, especially child growth and development, on the other. This research project was successfully carried to the end of the scheduled period when the youngest children in the group reached 5 years of age. While a great deal of very useful data for health programs have already been obtained through this program, the final analysis—already begun—of the considerable body of information collected was expected to provide even more important knowledge, both from the immediate and practical standpoint and from the scientific point of view.

The other large-scale longitudinal study in progress at INCAP is designed to determine the possible effect of malnutrition on the mental development of children. Following satisfactory completion of the stages of planning, development and evaluation of methodology, and pilot activities, work was begun on the final study in four rural communities of Guatemala.

Information. A total of 141 scientific articles (78 in

Spanish and 63 in English) prepared by INCAP staff were published in 1970 in widely distributed journals. In addition, at the request of the *International Encyclopedia of Food and Nutrition*, INCAP prepared three chapters for inclusion in this three-volume publication. A monograph on protein-calorie malnutrition in the Central American area, designed to serve as a reference work for physicians and medical students and for public health and nutrition experts, was also prepared during the year and was in process of publication.

The Conference on Protein Resources in Latin America, held at INCAP in February under the joint sponsorship of UNICEF and the Research Corporation of New York, was an outstanding event during the year. Attended by leading figures of the Latin American scientific community, the meeting examined the advantages and shortcomings of various proposed possibilities for increasing the supply of adequate sources of protein for human consumption. Prior to the meeting, INCAP prepared a printed volume containing summaries of the papers to be discussed, which was distributed to all participants. A special publication including the 30 scientific articles presented during the Conference was in the final stages of preparation.

Caribbean Food and Nutrition Institute

This Institute, which receives financial support from the Governments of Jamaica and Trinidad and Tobago, PAHO/WHO, FAO, the Research Corporation, the Rockefeller Foundation, and the Freedom from Hunger Campaign, continued its interdisciplinary activities in the Caribbean area in keeping with the nutrition policy of

the Organization. With a technical staff of 11 members, the Institute carried on its programs in the fields of technical coordination, training, research, and information.

Technical coordination. A Technical Group on Young Child Feeding in the Contemporary Caribbean held a meeting in Jamaica in June, which was attended by leading pediatricians, obstetricians, and nutritionists. Information on infant feeding patterns in the area—including current practices, most common forms of malnutrition, food costs, and nutrition education—was presented, and agreement was reached on general guidelines applicable to the entire area, after the necessary adaptation to conditions in each place. The report of the Group was published during the year.

Another Technical Group, on Institutional Food Services in the Contemporary Caribbean, held a meeting in Barbados in October, which was attended by interested professionals from the area, particularly heads of hospital services. Problems of these services were examined, guidelines for their solution were formulated, and a program of practical training was reviewed.

With the cooperation of the Nutrition Unit of the Jamaican Government, a survey was conducted in 10 representative areas of that country to determine the

prevalance of malnutrition in young children and pregnant women. A food consumption survey was completed in Trinidad and Tobago in collaboration with the country's Nutrition Unit. In Guyana, active assistance was rendered to the Government in the preparation of updated food composition tables and in the planning of a national food and nutrition survey to be carried out in 1971. Analysis of the results of the food and nutrition survey performed in Barbados in 1969 was completed and the pertinent recommendations were submitted.

Training. During the year, 28 students completed the nine-month course in community nutrition offered by the Institute at the University of the West Indies, and returned to their home countries. Two were from Antigua, six from Barbados, two from Grenada, two from Guyana, six from Jamaica, one from Montserrat, one from St. Kitts-Nieves-Anguilla, one from St. Lucia, one from St. Vincent, four from Trinidad and Tobago, and two from the Philippines.

A number of interdisciplinary seminars were organized in cooperation with the Governments of Antigua, Grenada, Jamaica, and Trinidad and Tobago. The training activities covered a wide variety of subjects: agronomy, medicine, public health nursing, midwifery, and home economics.

Research. In addition to the field surveys already described, specific investigations were carried out during the year on the relationships between schistosomiasis and nutrition in schoolchildren in St. Lucia and on the use of the arm circumference measurement as a public health index of malnutrition.

The report prepared by a joint FAO-PAHO-Institute working group on the possibility of developing protein sources based on foods available in the Caribbean area, especially for young child feeding, was presented to the Governments.

Information. The Institute continued to publish its bimonthly bulletin *Cajanus*, containing news and reports on its activities; 2,500 copies of each issue were distributed. A preliminary version of the "Food Composition Tables for the English-Speaking Caribbean," which was being revised, was also given wide distribution.

The report of the aforementioned Technical Group that met in Jamaica in June was published under the title *Guidelines to Young Child Feeding in the Contemporary Caribbean (Scientific Publication PAHO 217)*.

The report of the Barbados food and nutrition survey was in process of publication.



Staff of the Caribbean Food and Nutrition Institute taking weight and arm measurements of a young baby.

World Food Program

In compliance with Resolution X of the XIX Meeting of the Directing Council, PAHO/WHO has rendered technical assistance to various countries in the preparation and implementation of projects sponsored by the World Food Program (WFP).

By November the Program had approved 478 aid projects valued at \$1,023,302,800. Of this total, 75 projects (15.7 per cent) were located in the Americas; these were valued at \$141,157,500, or 13.8 per cent of the total aid approved by the WFP.

Of the 75 projects in the Americas, 11 (valued at \$3,384,400) had been completed, while 43 were in the operational phase and 21 were awaiting signature. In addition, 12 emergency operations costing \$6,312,000 had been carried out and five, costing \$4,877,000, were under way, thus making a total of 92 WFP-assisted projects and operations in the Hemisphere. The overall amount of WFP assistance to the Americas up to November 1970, including emergency operations, was \$152,346,500.

It is noteworthy that of the 75 WFP-assisted projects in Latin America and the Caribbean area, 22 have health activities as their primary objective (protection of vulnerable groups and development of health infrastructure) and 45 as a secondary objective (development of community and public services, human resources, and production of food); eight of the projects are not health-related. The total amount of WFP assistance to the 67 health-related projects is \$136,787,700, representing 89.7 per cent of all the aid provided to the Americas.

The Organization continued to render advisory services to WFP projects directly or indirectly related to the health sector. In 1970 the Program approved 13 new projects or expansions of existing projects for seven countries (Barbados, Chile, Guatemala, Guyana, Mexico, Paraguay, and Peru). Applications were submitted for 18 new projects and were being circulated to the various international agencies for technical examination prior to final study and approval.

CHRONIC DISEASES

The Organization took further steps to promote the establishment of chronic disease units at the level of

ministries of health, and for this purpose the Regional Adviser visited a number of countries. At the same time guidelines and procedures were worked out for the planning, operation, and evaluation of programs related to these diseases.

The Regional Adviser and a consultant advised the Government of Chile on the investigation and solution of the problem of arsenicism in the city of Antofagasta caused by pollution of drinking water. Recommendations were made for continuing epidemiological studies and for the appropriate clinical and laboratory research. The immediate problem was solved when the source of pollution was brought under control by the Government.

The Adviser maintained contact with several organizations interested in chronic diseases, in particular the Inter-American Society of Cardiology, the American Arthritis Foundation, and other agencies in different countries.

The Organization promoted and assisted with the preparation of the monthly Spanish publication *Conceptos modernos en enfermedades cardiovasculares*, which is distributed to cardiologists throughout Latin America.

At the request of the Government of the United States of America, a consultant rendered advisory services to the National Heart and Lung Institute, with special reference to a program of pulmonary research. At the Universities of Hawaii, Missouri, and Georgetown (Washington, D.C.), lectures on chronic diseases were presented by the Regional Adviser.

Advice was given to the Ministry of Health and Welfare of Mexico in connection with a program for control of rheumatic heart disease. In Jamaica, the possibility was discussed of drawing up a large-scale program of multiphasic screening. In Barbados, a series of proposals were studied with the competent authorities for programs relating to chronic diseases.

At the request of the organizing committee of the V Pan American Congress on Rheumatology, the Organization made an epidemiological study of the socioeconomic aspects of rheumatic diseases in the Americas, engaging a special consultant for the purpose and enlisting the collaboration of 12 national specialists: 10 from Latin American countries, one from the United States of America, and one from Canada. The analysis and correlation of the 50 cases studied by each of the collaborators was submitted to a round-table forming part of the Congress, which was held in December in Punta del Este, Uruguay. The special consultant also represented the Organization at a meeting on continuing education in rheumatic diseases for general medical practitioners.

CANCER

As a result of various developments in the Americas in recent decades—progress in the control of communicable diseases, increases in life expectancy, migration to urban centers, environmental pollution, and cultural changes—malignant neoplasms are today of considerable importance in the mortality and morbidity statistics of many countries. In 10 cities of Latin America and two in the United States of America and England, for example, cancer was found to be the cause of 17 per cent and 24 per cent of all deaths of females and males, respectively, between 15 and 74 years of age. Moreover, malignant tumors require long and costly treatment and impose serious demands on medical care services.

The policy of PAHO in regard to cancer is to promote knowledge of the epidemiological, diagnostic, therapeutic, and prognostic differences characterizing the various types and sites of the disease; support programs for the detection and treatment of uterine-cervical cancer; improve the practice of radiotherapy and other specialized methods; encourage community participation in the detection and diagnosis of incipient cancer; promote the control of tobacco smoking; and endeavor to ensure that the planning of activities, management of resources, and research into preventive measures are based on adequate epidemiological knowledge.

Continued support for the work of the Cytology Center

of the University of Chile has made it possible to meet part of the demand for training required by the expansion of the program for the detection of uterine-cervical cancer. Arrangements were also in progress for the establishment of regional training programs to supply the countries' need for cytotechnologists. The Organization maintains that family planning programs should include the detection of cancer of the cervix uteri and periodic examination of the cases discovered. This policy has created an additional demand for cytotechnologists, and in order to help meet this demand a training center for the eastern Caribbean countries was being organized in Trinidad and Tobago.

The training of radiotherapists and radiophysicists continued to receive support. The *Manual of Dosimetry in Radiotherapy* prepared by PAHO/WHO and the International Atomic Energy Agency was distributed to treatment centers and utilized as a textbook in a regional course held in Puerto Rico under the sponsorship of the three organizations.

A regional survey on the role of health education in cancer control was completed and the results were presented at the X International Congress of Cancerology (Houston, Texas, May 1970). A survey of the measures adopted in the Americas to control cigarette smoking was completed and a report on the findings was presented to the XVIII Pan American Sanitary Conference, which recommended (Resolution XXXV) that the countries intensify their efforts to combat tobacco consumption and supported the plan to conduct a survey on the characteristics of the smoking habit in eight Latin American cities. Successful efforts were made to obtain support for this survey from the United Nations Development Program, the American Cancer Society, and the Governments of the countries concerned.

The documents, conclusions, and recommendations of the Seminar on Cancer Registries in Latin America (Cali, Colombia, 1969) were issued as *Scientific Publication PAHO 215*. Technical assistance was furnished to the registries of the various countries, which reported to the International Association of Cancer Registries on the progress achieved.

The epidemiological approach to cancer control is handicapped by a serious shortage of specialized professionals; to help correct this shortage, a regional program of research and training in the epidemiology of chronic diseases was being organized.

The Organization participated actively in the meeting of the Cancer Committee of the International Federation of Gynecology and Obstetrics, the Ninth Annual Seminar on Breast Cancer (United States), the X International

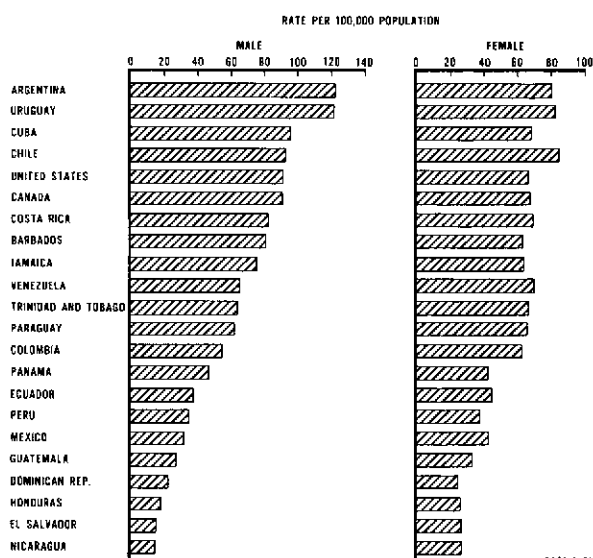


FIG. 28. Age-adjusted death rates for malignant neoplasms per 100,000 population, by sex, in 22 countries, 1968.

Congress of Cancerology, the meeting of the International Association of Cancer Registries, and the Graduate Session on Epidemiology (United States).

The materials prepared for World Health Day, the theme of which was "Cancer: Early Detection Saves Lives," were reviewed and distributed throughout the Americas.

MENTAL HEALTH

To enable the inhabitants of the Americas to reach a state of biopsychic and social equilibrium is the ultimate goal underlying the basic policy of the Organization in this field. The limitations imposed by shortage of funds and lack of information on many aspects of mental pathology have restricted the scope of the practical objectives, which are concerned with the provision of services for psychiatric care and prevention of mental disorders. The various groups of experts convened by the Organization have recognized, and experience has confirmed, that mental health programs cannot function in isolation and must form an integral part of health plans.

It is evident that the incidence of mental disorders and personality disturbances has been on the increase in recent years. On the one hand, there has been an increase in the frequency of certain mental problems connected with social change, urbanization, demographic trends, and related factors; and on the other hand, there has been a sharp rise in the demand for services as the result of the greater availability of information in this field.

Several countries have established a mental health policy that follows, along general lines, the principles endorsed by the Organization and the recommendations made at the technical meetings convened by PAHO, including the most recent one held in Viña del Mar, Chile, in April 1969.

The real extent of the mental health problems is only indirectly ascertainable from the known demand and from the few epidemiological surveys that have been made. The data compiled thus far are limited to the urban population and they reveal needs far beyond the available resources. Apart from the diseases that have traditionally absorbed the few resources available, especially psychoses and neuroses, there has been an increase in other conditions requiring intensive treatment and prevention services, such as those related to the use of dependency-producing substances. In the majority of cases the natural history

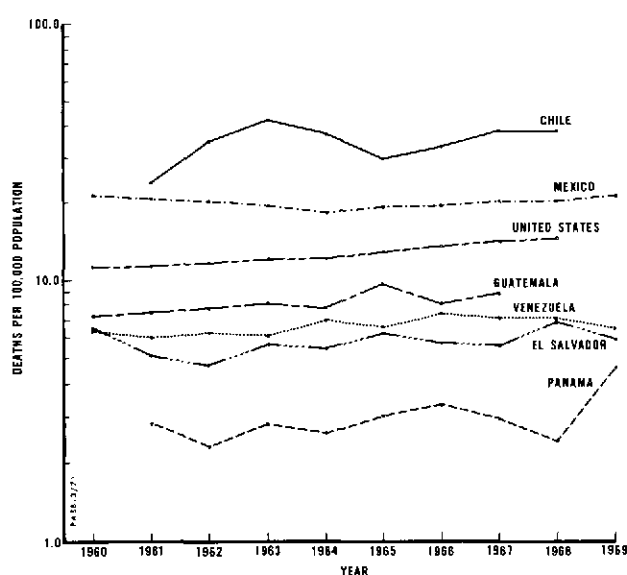


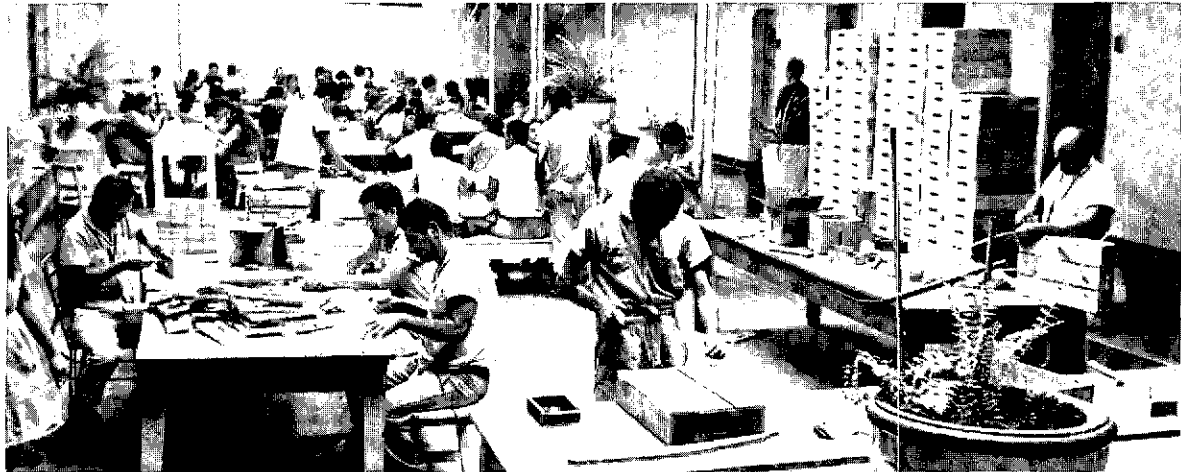
FIG. 29. Deaths from cirrhosis of liver per 100,000 population in seven countries of the Americas, 1960-1969.

of these conditions is unknown, and there is a great need for clinical, laboratory, and epidemiological research.

Assistance to the countries has been directed mainly toward the organization of care and rehabilitation services and the training of personnel. Efforts have focused on the improvement of psychiatric hospitals, which with few exceptions are overcrowded, short of staff, and organized on a system based on the custodial rather than the therapeutic approach.

Special attention has been given to the development of community mental health services in which assistance is not restricted to psychiatric hospitals but covers a whole range of services, including the psychiatric units of general hospitals, outpatient clinics, and sheltered workshops. Apart from the informational work carried out in all the countries, the Organization in 1970 furnished direct assistance for this purpose to Argentina, Brazil, Chile, Costa Rica, Dominica, El Salvador, Grenada, Jamaica, St. Vincent, and Venezuela.

The psychological problems of youth and childhood have been the subject of close attention by a number of Governments. PAHO cooperated with Venezuela in designing a mental health service in the Caracas Children's Hospital, and with the Government of Barbados and the University of the West Indies in organizing a seminar on emotional problems in childhood and youth (Barbados, 17-22 August), which dealt especially with the community education and preventive aspects of the subject. It also cooperated with the Jamaican Association for Mentally Handicapped Children, in conducting the First Caribbean



Workshop at the Manuel Antonio Chapuí Psychiatric Hospital, San José, Costa Rica.

Conference on Mental Retardation, held in Kingston from 7 to 9 September.

In several countries the psychiatric nursing services were given assistance through the services of consultants (Costa Rica, Dominica, and Venezuela), the award of fellowships for studies abroad, the organization of courses, and advice on the organization of services.

Integration of mental health within the over-all public health plans was the subject of study by a working group that met in Caracas from 29 October to 1 November. This meeting, which was held with the Organization's assistance, was attended by 138 officials from the Ministry of Health and Social Welfare.

The consumption of dependency-producing substances has increased greatly in the cities of the Americas. Over the past few years, the Organization has cooperated with countries in studying the problems of alcoholism and the adoption of measures for its treatment and prevention. Several Governments have shown their concern about the consumption of intoxicants, as was brought out in the papers presented at the XV Meeting of Ministers of Health of Central America and Panama, which discussed various aspects of the problems of alcoholism and the consumption of cannabis in the six countries of that area. The Organization cooperated with the authorities of Rio Grande do Sul, Brazil, in organizing a public discussion, held in Porto Alegre in September, on the use of and traffic in dependency-producing substances.

Assistance continued to be given to the Inter-American Council of Psychiatric Associations, which at its annual meeting in Halifax, Canada, arranged a conference on the training of psychiatrists.

In 1970 the Organization began the publication of a quarterly news bulletin on mental health entitled *Mens Sana*, which was distributed to 2,500 psychiatrists throughout the Americas.

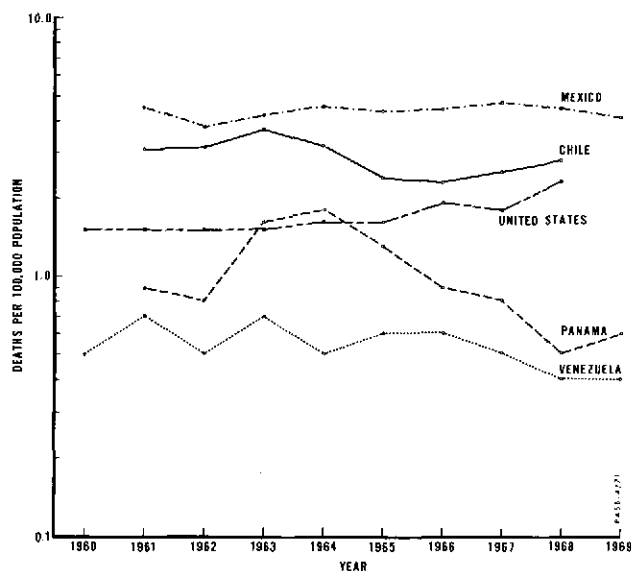


FIG. 30. Deaths from alcoholism per 100,000 population in five countries of the Americas, 1960-1969.

DENTAL HEALTH

In dentistry, the Organization collaborated with the Governments in studies and programs for the development of manpower resources, as well as in the planning and implementation of preventive and curative services

designed to provide improved coverage of the population. In the educational field, assistance was rendered in connection with dental studies in schools of health sciences, the design of curricula utilizing new concepts in the teaching of dentistry, and the organization of programs for training auxiliary personnel in accordance with existing needs.

During 1970 the Governments of Colombia and Venezuela received further economic and technical assistance in the design and analysis of studies to provide information on the status of dental health, the use of dental services, dental education, human resources, and the provision of dental care in institutions in both countries. A preliminary report on dental manpower in Colombia was published.

Equipment and technical assistance were furnished to the University of Concepción, in Chile, for the operation of a community clinic, and a consultant rendered advisory services to Guyana in regard to the future development of its dental programs. In Panama clinics for the provision of dental services were initiated in conjunction with the opening of the new dental school. In Guatemala teaching areas were defined for the extramural supervised practice of dental students; 97 students were supplied with basic equipment and initiated their practice in rural communities.

The Dental Materials Center commenced the program



Dental Materials Center, School of Dentistry, Central University of Venezuela. A dentist examines the surface of a dental alloy, for the preparation of national standards in this field.

of materials testing at the School of Dentistry of the Central University in Caracas. Appointments and training of personnel were initiated and the installation of equipment for the testing and standardization of materials was completed. A survey was conducted to identify the dental materials in use in Venezuela and those of most interest to the dental profession. Subsequent to the survey and the training of local personnel, a study was initiated on quality control of materials. Government approval was being sought for the official recognition of standards and specifications determined by this Center.

In addition to these activities, the Organization conducted a survey on teaching in the field of dental materials in schools of dentistry in Latin America and on research currently being conducted in this specialty.

The Spanish volume *Guía de materiales dentales*, a translation of the American Dental Association's guide to dental materials, was published and distributed in collaboration with the Dental Materials Center in Caracas and the University of Los Andes in Mérida, Venezuela.

A survey was undertaken to determine the impact on dental education of the three seminars sponsored by PAHO in the period 1963-1968. The first phase of data collection was begun. Through these studies, the effect of the seminars and the subsequent adjustments in dental curricula and educational programs in Latin America will be ascertained.

The Spanish version of the volume *International Classification of Diseases—Application to Dentistry and Stomatology* (Scientific Publication PAHO 206) was distributed to dental schools and health authorities throughout Latin America.

Fluoridation. Three courses on fluoridation engineering techniques, held in Recife and in Belo Horizonte, Brazil, and in Havana, Cuba, were attended by a total of 97 engineers, laboratory chemists, and dentists. Laboratory equipment was made available to both countries for use in the analysis of fluoride content in water supplies, and Guyana was provided with materials for the same purpose.

Consultants rendered technical assistance in the development of fluoridation programs in Costa Rica and Mexico, and in Venezuela the National Institute of Sanitary Works (INOS) commenced fluoridation in four cities. The Government of Colombia appointed a full-time engineer to its fluoridation program, and equipment and supplies for the program were received during the year. Guatemala City reinitiated fluoridation, and in Chile the Organization made technical recommendations to assist in the future development of a program that currently provides fluoridated water to 56 per cent of the

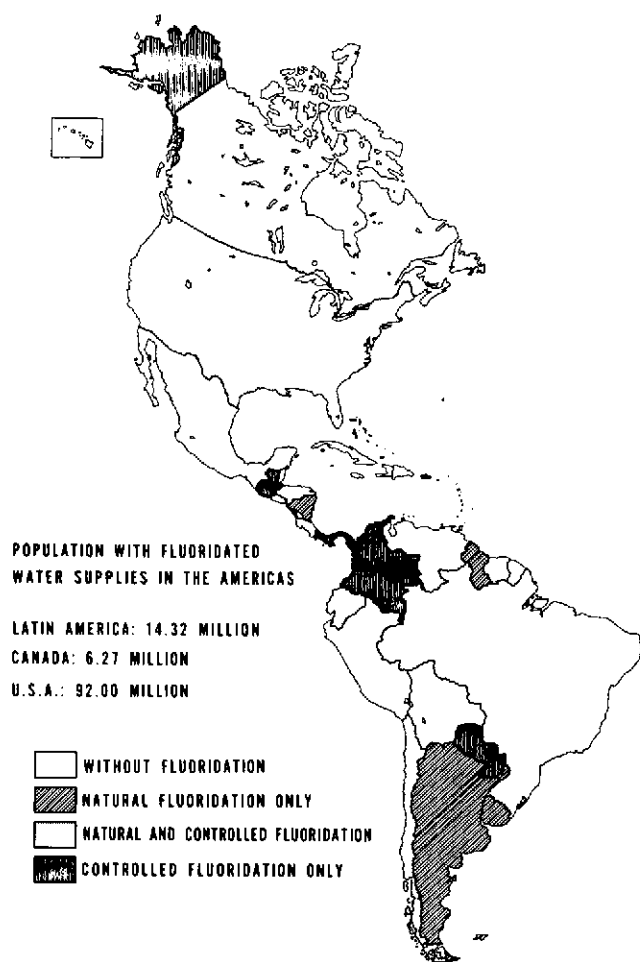


FIG. 31. Countries of the Americas with water fluoridation, as of 1 January 1970.

population through community water supply systems. Argentina's National Sanitary Works Institute was assisted in planning a project for the defluoridation of water supplies in areas where excessive fluorides are present.

Organization staff visited suppliers of fluoride compounds and manufacturers of equipment in the United States of America in order to obtain current information on the sources of such products for use by Member Countries, and also to observe the new approaches to fluoridation of rural and school water systems currently being applied in North Carolina.

Final revisions were made to the Spanish edition of the *Manual of Fluoridation Practice* (Scientific Publication PAHO 203), and the first comprehensive report on the *Status of Water Fluoridation in the Americas, 1969* (Document HP/DH/2), was published and distributed to health and water authorities in the Hemisphere.

Dental auxiliary personnel. The surveys initiated in 1968 on the utilization and training of dental auxiliaries were completed and the report of the findings was published under the title *Dental Auxiliary Utilization and Education in Latin America* (Document HP/DH/3). It was shown that in Latin America there are only five countries with programs in this field and that five categories of dental auxiliary personnel are utilized. The fact that in 1967 a total of only 460 auxiliaries (including 300 dental assistants) were trained in 24 countries of the Americas indicates the urgent need for programs in this area.

Further information on training activities is given in Chapter III, and research programs are described in Chapter V.

HEALTH AND RADIATION

Advances in nuclear and radiation technology have forced health authorities to work out specific programs for the protection of users and the general public against unnecessary exposure to radiation. The Organization has cooperated with the countries of the Americas in devising and developing these programs and others related to radiological protection, hygiene, and medicine.

In 1970 the Headquarters technical staff and special consultants in some of these fields visited and gave technical assistance to Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Panama, Peru, and Venezuela. Chile and Venezuela joined the countries that have signed agreements with the Organization to develop their programs.

Assistance was given to countries carrying out studies on identification of sources of radiation and risks of exposure. In addition, pursuant to the recommendations of the PAHO Working Group on Radiation Protection which met in 1969, the countries of the Americas furnished information on their resources and needs in this field, to serve as a basis for the planning of multinational programs. In this connection mention should be made of the meeting of the Scientific Group for the Establishment of a Multinational Program in Nuclear Medicine, held in Washington, D.C., in March to discuss the best means of coordinating and facilitating the work of the various groups of clinical researchers in the Americas using radioisotope techniques.

The program for surveillance of radioactivity levels in the air, water, and food continued to be carried on through 12 air sampling stations in 10 countries (Argentina,

Bolivia, Chile, Colombia, Ecuador, Guyana, Jamaica, Peru, Trinidad and Tobago, and Venezuela), and six milk sampling stations (Chile, Colombia, Ecuador, Jamaica, Peru, and Venezuela). The results of the measurements taken, together with those taken in the United States of America, are published each month in *Radio-logical Health Data and Reports*.

Cooperation continued with the countries requesting advisory services in connection with film dosimetry laboratories to measure levels of occupational exposure to radiation. Technical advice, equipment, or training fellowships were given to Bolivia, Chile, Colombia, Ecuador, Jamaica, Peru, Venezuela, and the West Indies, and arrangements were made for the installation of a laboratory at the Institute of Oncology of Panama.

With regard to the adoption of legal provisions and regulations governing radiation protection, the Organization cooperated on projects prepared by the Governments of Costa Rica and Panama; and during the year Colombia, Ecuador, and Jamaica enacted legislation on the subject.

Special attention continued to be given to the coordination of the programs of national and international bodies working on related activities. The Ministries of Health and Atomic Energy Commissions of Argentina, Bolivia, and Chile signed bilateral agreements, and in Costa Rica preliminary studies on coordination were carried out. There was close cooperation with WHO and the International Atomic Energy Agency (IAEA) in connection with their programs in the Americas; and the *Manual of Dosimetry in Radiotherapy*, prepared jointly with these agencies, was published in English and distributed to all the countries of the Americas, and was being translated into Spanish.

The Organization participates along with WHO and IAEA, through 15 centers set up in the Americas, in a program to compare the radiation doses used in different countries in radiotherapy, the comparison being made with a special type of dosimeter that can easily be mailed. It took part in a joint mission with IAEA, at the request of the Chilean Government, to examine the safety problems inherent in the installation of a dual nuclear station in northern Chile.

Chapters III and V give information on the health and radiation training and research activities carried out during the year.

HEALTH LEGISLATION

The Organization completed during the year the study

on health legislation in the Hemisphere covering the laws enacted in 28 countries and territories in the period 1948-1968. The work was carried out in two phases. In the first phase the material relating to the Latin American countries was reviewed, and in the second that relating to the English-speaking countries.

The study included three fields of research: constitutions, special legislation, and penal codes. In the countries with federal constitutions, the federal level was included and the available state legislation was reviewed simultaneously. The study brought out the need for updating the existing legal provisions in the countries in order to provide support for the planning and implementation of health programs, including maximum utilization of available and potential resources.

The relevant report was submitted to the XVIII Pan American Sanitary Conference. In Resolution XL, the Conference urged the Governments to promote the revision and modernization of their health laws and regulations, and emphasized the need for a guide for the formulation of health codes according to the individual needs of countries and the advances of technology.

The aim of the next stage will be the preparation of guidelines by a multidisciplinary group and the revision of the Pan American Sanitary Code.

HEALTH AND SOCIAL WELFARE

In order to define the areas of social welfare that could contribute to the strengthening of health services, a preliminary study was made in four countries—Chile, Costa Rica, Jamaica, and Venezuela—by two PAHO special consultants. The general objective of the study was to identify: (a) the nature and extent of social welfare programs in relation to the health sector; (b) the status and functions of the personnel responsible for those programs; (c) the priorities established by the health authorities for strengthening the social services; and (d) levels of training and research, including demonstration projects.

The report on the study will constitute the working paper for discussion by a multidisciplinary group (health administrators, social workers, sociologists, health educators, nurses, and other professionals) at a meeting scheduled for the first half of 1971. This group will make recommendations to the Director on the areas in which the Organization might participate in the future. The project will be carried out with the cooperation of the School of Social Service of the University of Pittsburgh (USA).

III. DEVELOPMENT OF HUMAN RESOURCES

During 1970 the Organization continued to respond to the increased demand for assistance in this field from the Governments and from teaching institutions. At the same time, it directed its efforts toward the development of new ideas and procedures for determining needs and for planning programs to meet those needs.

The feasibility of integrating the teaching of various health professions within a common administrative and academic structure was the subject of continuing studies. Advances were made in the preparation of models, and ideas were exchanged with individuals at the policy-making level of the various countries. Meetings and planned discussions on this subject were held with governmental and university authorities in Brazil, Panama, and Peru and preliminary contacts were made with authorities in other countries in order to plan similar activities. Among the alternatives reviewed, the practicality of creating schools or divisions of health sciences was examined in each particular case and recommendations were made in accordance with the existing local situation.

Emphasis continued to be placed on the importance of an adequate methodology for the analysis and evaluation of problems encountered in the revision of administrative structures and of teaching programs in schools of the health professions. The greatest possible participation by professors principally engaged in this activity in the different countries was sought, and opportunities for training in the application of the proposed methodology were provided.

As part of this effort, the Organization continued to sponsor laboratories in human relations and medical

pedagogy, as well as seminars on definition of educational objectives and curriculum design, on methodology of teaching and investigation in the behavioral sciences, and on structural and administrative planning of teaching institutions. The experience obtained in these seminars was utilized in planning a seven-week Workshop in Health Sciences Education, which was scheduled to take place at PAHO Headquarters in the early part of 1971.

Four PAHO consultants assisted with the Seminar on Models and Methods for Health, held in Argentina, and others collaborated in two Symposia on Medical Curriculum and Teaching Methodology held at the School of Medicine of the National University of Buenos Aires.

In placing increased emphasis on personnel training and the improvement of methodology for dealing with local problems, the Organization was mindful of the need, not only for immediate advisory services, but also for the development of self-competence by the various



Medicine is no longer an individual undertaking, but the work of a team of physicians, public health technicians, social scientists, sanitary engineers, and nurses, caring not only for the health of the individual as such, but as a member of the community.

countries seeking mid- and long-term solutions to the existing problems.

The Organization participated in the meeting of the Permanent Committee of Ministers of Health of the Caribbean, held in Bermuda (17-22 January), which discussed the need for institutionalizing and giving a permanent character to the Conference of Ministers. Planning was begun, in January 1970, for the development of a five-year program for that part of the Hemisphere, aimed at the coordination of education and training activities and the proper design and execution of an appraisal of the over-all situation related to human resources availability and development. Such a program was initiated and was being carried out with financial assistance from the Milbank Memorial Fund. This program, with headquarters in Barbados, has responsibility for human resources development activities in the English-speaking Caribbean and also in the Dominican Republic and Haiti. British Honduras was also included in the program during the year.

The Organization took part in the meeting of the Regional Advisers on Education and Training held in Geneva (29 April-10 May), where discussions were held concerning how WHO could meet the increasing demands of Member Countries in the field of health manpower. Activities in education and training were described as the number one priority of the Organization. A pool of ideas and an exchange of information among personnel involved in this area was viewed as vital, if the Organization is to respond to the growing number of requests for assistance.

Close relationships continued to be maintained with institutions that provide health training, and new avenues of cooperation were explored. Thus, discussions were held with officials of St. Thomas Hospital at the School of Medicine in London and with staff of the University of Nottingham, concerning the possibility of offering training in preventive medicine for professors from Latin America. In the United States of America, similar discussions were held with the Office of Medical Education Research and Development of Michigan State University.

With a view to increasing the effectiveness of teaching institutions in Brazil, the feasibility of organizing a training center for teaching personnel for 15 of the country's new medical schools was studied and discussed with officials of the School of Health Sciences in Brasilia. The justification for such a center was strengthened by the demand for teaching staff, which has resulted from the creation of 33 new schools of medicine in Brazil in the last four years. A proposal describing the development of such a center was prepared by the Organization

and was discussed at length with the national health authorities as well as with officials of the Ministry of Education and Culture. A task force was appointed in Brazil to further study the proposal before its final presentation to the United Nations Development Program.

The Conference of Schools of Public Health of Latin America on Health and Population, held in Santiago, Chile (8-14 November), was jointly sponsored by the Organization, the Latin American Center for Demography (CELADE), and the University of Chile.

At the invitation of the organizing committee, PAHO was represented at the III Pan American Conference of Medical Education held in Argentina (4-6 November). It also attended the Third Meeting of the Offices of Medical Education in Ciudad Bolivar, Venezuela, taking part in a panel discussion on current concepts on the practicality of health sciences centers and presenting its views on the machinery needed to implement the integration of multiprofessional training programs.

The Organization also participated in the V General Conference of the International Association of Universities, held in Montreal (30 August-5 September), where the central topic of discussion was "The University and the Needs of Contemporary Society." Six hundred delegates and observers from 81 countries were present.

The II Meeting of the Health Sciences Education Information Center (HSEIC), held at PAHO Headquarters (10-11 December), was attended by 48 representatives of 30 private, governmental, and international agencies providing technical and financial support to medical education in Latin America. The importance of coordinating the cooperative efforts in this field, particularly in the area of auxiliary personnel training, was one of the main topics dealt with. Also discussed was

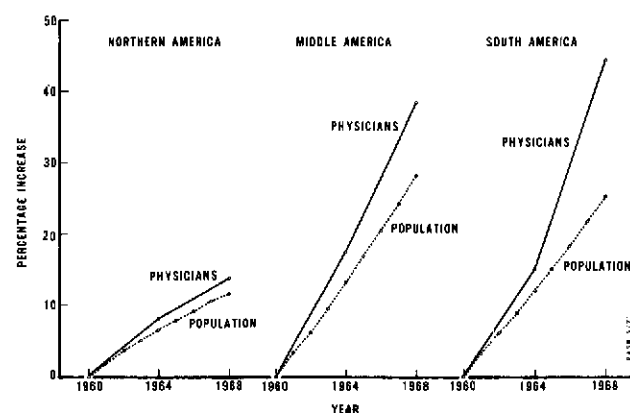


FIG. 32. Percentage increase in population and in physicians in three regions of the Americas, 1960-1968.

TABLE 36. PAHO SHORT-TERM CONSULTANTS AND TEMPORARY ADVISERS, JANUARY-DECEMBER 1970
(DEPARTMENT OF HUMAN RESOURCES DEVELOPMENT).

Country visited	Country of origin																	
	Argentina	Barbados	Bolivia	Brazil	Chile	Colombia	Costa Rica	Dominica	Ecuador	El Salvador	Guyana	Jamaica	Mexico	Panama	Peru	Trinidad and Tobago	Uruguay	United States of America
Argentina.....	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bermuda ^a	—	1	—	—	—	—	—	1	—	—	1	3	—	—	—	1	—	5
Brazil.....	4	—	1	3	1	3	—	—	—	1	—	—	1	—	—	—	—	1
Chile.....	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Colombia.....	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Cuba.....	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
Ecuador.....	—	—	—	—	1	3	—	—	—	—	—	—	—	—	—	—	—	1
El Salvador.....	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guatemala.....	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
Haiti.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Honduras.....	—	—	—	—	1	—	3	—	—	—	—	—	—	—	—	—	—	1
Jamaica.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mexico.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Panama.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
Paraguay.....	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Peru.....	—	—	—	—	2	1	—	—	—	—	—	—	—	—	—	—	—	—
Uruguay.....	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Venezuela.....	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—
PAHO Headquarters.....	4	—	—	5	—	4	—	—	1	—	—	—	2	1	2	—	—	17
Other.....	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Total.....	11	1	1	14	8	12	3	1	1	1	1	3	4	1	3	1	1	30

— None.

^a Participants at the II Meeting of the Permanent Committee of the Caribbean Health Ministers' Conference.

the formation of multinational training centers. A *Summary of Activities of International Cooperation in the Health Sciences Education in Latin America during 1969* and a *Directory of Schools of Dentistry, Medicine, Nursing, Nursing-Midwifery, Public Health, and Veterinary Medicine, 1970*, were among the documents prepared for the meeting.

The quarterly journal *Educación médica y salud* was published regularly, some 5,000 copies of each issue being distributed to ministries of health as well as to deans or directors, libraries, and individual teachers in schools of medicine, nursing, and dentistry.

Continued emphasis was placed on special studies on human resources, as well as on increasing the effectiveness of schools of medicine, public health, dentistry, engineering, veterinary medicine, nursing, and nutrition through advisory services, training programs, and other assistance as reported in more detail later in this chapter.

The PAHO textbook program continued to expand to meet the growing demands for low-cost educational material for medical students. A \$2,000,000 loan to the

Pan American Health and Education Foundation for this purpose was successfully negotiated with the Inter-American Development Bank in the latter part of the year.

The Organization's fellowship program continued its upward trend. A total of 1,868 fellows came under the technical and administrative supervision of PAHO during 1970, 935 of them representing new awards.

During 1970 the Department of Human Resources Development utilized the services of 118 short-term consultants and temporary advisers in the programs under way in the various countries (Table 36).

SPECIAL STUDIES

In order to establish need, demand, and other factors bearing on problems in manpower development, the Organization continued to design and carry out special

studies as well as to supervise others already in operation. One such program was the Experimental Study of Health Services conducted in three areas in Colombia. In the latter part of 1970 a short-term consultant was provided to assist with the evaluation of this program.

A panel on research in medical education, organized as part of the Ninth Meeting of the PAHO Advisory Committee on Medical Research (Washington, D.C., 15-19 June), examined the preliminary results of a study made on attitudes and behavior of students of medicine in Latin America, designed to enable the medical educator to gain a better understanding of the decision-making processes and subsequently to propose ways of providing students with better vocational guidance. The results were presented as part of a broader study on this subject that was being carried out by PAHO.

The data collected in the study on the teaching of preventive medicine, conducted in 1969, were processed and analyzed and a report on the findings was in preparation.

An evaluation of the PAHO fellowship program was begun in 1970, with the objective of obtaining information on the program's impact on the health services of the Americas and of formulating guidelines for its future development. Also contemplated in the study was the design of a continuous evaluation of the fellowship program, which will include the retrieval of data in connection with selection procedures, placement institutions, academic performance of the fellow, and his performance upon return to his home country.

The fellowship survey that was conducted in Bolivia, Colombia, Ecuador, and Peru yielded excellent quantitative results, all individuals in the sample having been

located and interviewed. By the year's end, part of the data had been analyzed and a preliminary report was prepared.

A study of medical schools in Central America was carried out and the findings were being analyzed.

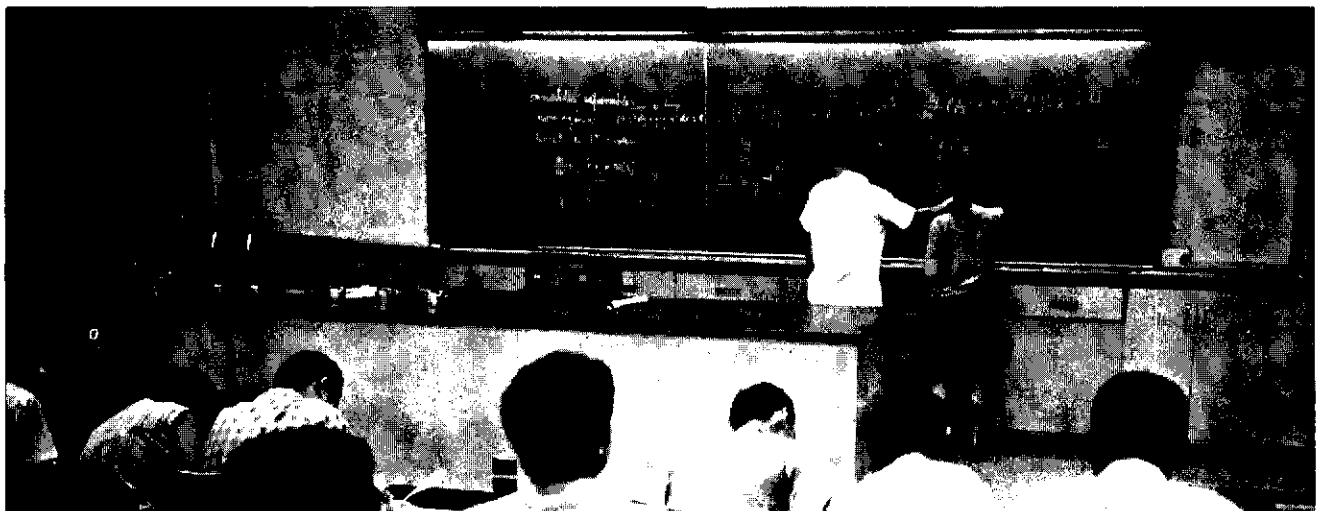
Many countries (Brazil, Chile, Cuba, Dominican Republic, Guatemala, and the Caribbean countries and territories) were undertaking studies on the functions and activities of nursing personnel in order to determine the types of staff required and the educational programs needed for their preparation.

STRENGTHENING OF TEACHING INSTITUTIONS AND PROGRAMS

Schools of Medicine

On the basis of an impressive amount of accumulated data, the Organization was better able in 1970 to assess teaching institutions throughout Latin America, their systems and structures, and hence the direction of their ultimate role in the planning and development of the training of human resources for health.

The University of Chile was furnished with advisory services for the preparation of a request for UNDP assistance in the regionalization of health sciences education. A five-year plan was designed to increase the number of professionals trained; it envisaged a decentralized system providing for participation of regional hospitals in the training planned. Assistance was also rendered to the



Medical education was among the primary concerns when the United Nations declared 1970 the International Education Year.

University in Valdivia in the development of a program for clinical teaching, and to the Catholic University in the planning of the Division of Health Sciences.

Assistance was rendered to Cuba in the restructuring of teaching programs and in the development of scientific research.

The University of El Salvador was assisted with an evaluation of the organizational structure of the School of Medicine.

In Honduras meetings were held with health authorities in connection with the project presented to IDB for the remodeling of the Teaching Hospital in Tegucigalpa. In a visit to the National University in May, the future role of that institution in the development of human resources was discussed with the Dean and the Department of Preventive Medicine. Assistance in conducting the laboratories in human relations and medical pedagogy, and advice on the integration of preclinical basic courses, were provided at the School of Medicine.

In Mexico meetings were held with health authorities to discuss the envisaged national programs for human resources development. PAHO offered assistance in the preparation of a plan embracing a multidisciplinary approach within the framework of the Government's health policies and economic development projects. At the request of the National University, a plan proposed by the School of Medicine for coping with problems of medical education was studied by PAHO officials and discussed with the University authorities. The proposal includes the administrative and academic decentralization of the School into 11 units, five of which would be situated in the Federal District and the remaining six throughout the country.

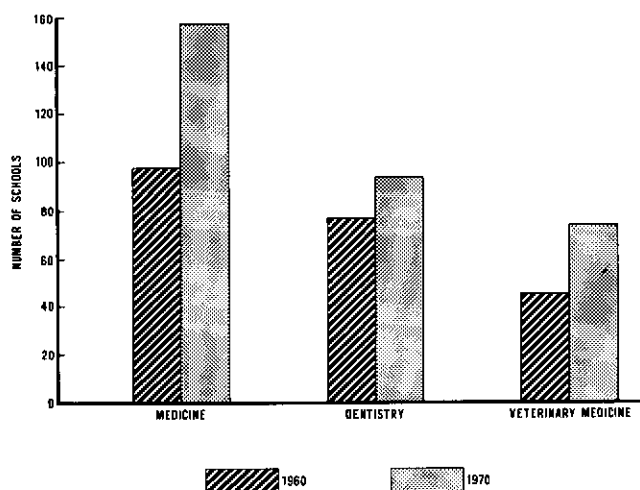


FIG. 33. Number of schools of medicine, dentistry, and veterinary medicine in Latin America in 1960 and 1970.

Advisory services were extended to the National Council of Peruvian Universities and to the directors of the academic programs for health professions. The Organization participated in a symposium on integrated teaching and the development of divisions of health sciences.

In connection with plans for restructuring the Schools of Medicine in Barquisimeto and Valencia, Venezuela, meetings were held with university authorities. In Barquisimeto, the University Rector requested assistance for a preliminary evaluation of a program designed to consolidate the University structure.

Other assistance and advisory services were rendered to the School of Medicine of the University of Guayaquil, Ecuador, in connection with the Department of Morphology, and to the School of Medicine of the University of Pernambuco, Brazil, in the organization of the Department of Internal Medicine.

Schools of Public Health

The School of Public Health of the National University of Buenos Aires, with assistance from the Organization, achieved a considerable expansion of its activities. The 1970 total of 1,188 graduates at the professional level, from the various academic and short courses, was the highest ever recorded for a single school in Latin America. In addition, the School offered 2,442 medical students a 36-hour course in demography. The prestige gained and efficiency demonstrated by the School motivated the Secretariat of State for Public Health to make available a grant in the amount of \$100,000 annually for a five-year period, in addition to \$40,000 to equip the new physical plant, which was about three times larger than the premises occupied prior to 1970.

The program of training in epidemiology in Argentina, which was continued with the assistance of a PAHO consultant, resulted in a comprehensive operation including seminars, intermediate-level courses, a diversified course in the School of Public Health in Buenos Aires, and a seminar for teaching staff of the clinical departments of nine schools. More than 150 professionals of various categories benefited from the program. The impact was felt immediately, inasmuch as the health services improved the quality and the output of their operations, as shown by the immunization program against smallpox and other communicable diseases throughout the country.

All the schools of public health were visited in order to identify and describe the activities being carried out in the field of health and population dynamics. The report of this study served as a basic reference document at the

Conference of Schools of Public Health of Latin America on Health and Population, held in Santiago, Chile.

The University of the West Indies received advisory services for the organization of a program of postgraduate teaching in public health.

Technical assistance was rendered to the School of Public Health of the University of Puerto Rico for the development of a Master's degree program in nutrition, which will be available to students from Latin America, and also to the School of Hygiene and Public Health in São Paulo, Brazil, for a two-month international course in nutrition.

At the School of Public Health of the University of Chile (renamed Department of Public Health and Social Medicine), the first 22-month course in biostatistics was initiated to prepare statisticians for teaching and research in medical and public health schools as well as for key positions in the ministries of health.

An active program of collaboration with schools of public health in regard to health education courses was carried out during the year (see Health Education, below).

Schools of Dentistry

Support continued to be provided for the development of human resources in dentistry throughout the Region, with emphasis on dental teaching institutions and on courses provided by Organization staff. Consultants furnished advisory services to strengthen the teaching programs in the dental schools in 15 countries (Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela) and to the schools of health sciences in both Brazil and Colombia. In Panama the new dental school was completed and opened in October with an enrollment of 96 students.

Assistance was provided for strengthening the teaching of dental health at the School of Public Health in Lima, and for the development of a teaching program in dental epidemiology at the School of Public Health in Medellín, Colombia. Arrangements were completed for this School to participate as a regional center in the WHO Dental Epidemiology Program.

The School for Dental Auxiliaries in Jamaica was opened in May 1970 with 25 students enrolled. This project, for which a special building was constructed by the Jamaican Government, is being conducted by the Ministry of Health with technical assistance and advisory services from the Organization, dental equipment pro-



Third and fourth semester students of the School of Stomatology Technicians (Cuba) provide patient services in the Dental School and in 26 public clinics.

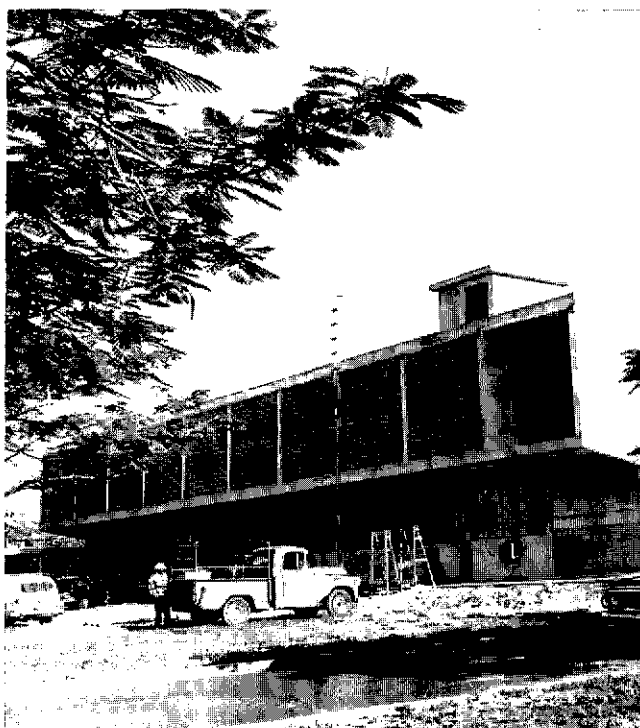
vided by UNICEF, and assistance from the United Kingdom Ministry of Overseas Development, which is providing the initial teaching staff of two dentists and two dental nurses.

The publication *Guidelines for the Development of Dental Curricula* (Document HP/DH/1) was published in English and Spanish.

Schools of Engineering

Further steps were taken in 1970 to strengthen the Organization's program of technical assistance and cooperation to improve the teaching of sanitary engineering in schools of engineering and public health throughout the Hemisphere. In all, 37 universities in 22 countries had signed agreements with the Organization to strengthen their structures and programs and develop educational and research activities. The agreements include the provision of technical services by consultants working with the national authorities on the revision of curricula; assessment of the schools' needs for facilities and installations; study of essential reforms in administrative systems; preparation of applications for assistance from lending agencies; promotion of interchange of personnel and information between schools; award of fellowships to teaching staff; promotion of continuing education activities; and stimulation of research as a regular component of the educational process.

An agreement was signed between the University of San Carlos, Guatemala, the Government of Switzerland,



Building of the Department of Sanitary Engineering of the University of Zulia, Venezuela.

and PAHO/WHO to develop a program of advanced instruction in sanitary engineering at the Regional School of Sanitary Engineering for Central America and Panama. PAHO/WHO will act as the executing agency for the project, which is already at the operational stage.

In the course of the year the agreement between the Government of Venezuela and the UNDP covering the program to improve sanitary engineering education in that country came to an end. The project embraced four universities, and PAHO acted as the executing agency. The Government undertook negotiations with the UNDP for assistance in carrying out sanitary engineering research in the universities.

In Brazil, two short-term consultants and a national educator reviewed the postgraduate sanitary engineering curricula in the Universities of São Paulo and Minas Gerais.

The Organization provided grants to the engineering schools of universities with which it had agreements, principally for the improvement of their laboratories and libraries.

A short-term consultant advised the University of El Salvador on the study of equipment, space, and installation requirements for a hydraulics laboratory to be used for sanitary engineering teaching purposes and to serve

as a basis for a more elaborate laboratory for the degree course in civil engineering.

Discussions were held with authorities of the School of Public Health of the University of Antioquia, Colombia, regarding possible assistance from the Organization to enable the School to participate more actively in the training of engineers working in environmental health. It was decided that a series of short intensive courses, organized by the School with PAHO support, would effectively achieve that objective, and that the program would start in 1971 with a course on the problems of urban sanitation services.

In 1970 the School of Engineering of Antioquia University introduced a six-year specialization course in sanitary engineering, similar in its general outline to the course offered at the University of Valle.

On the initiative of the Colombian Ministry of Public Health, a special commission was set up to explore the possibility of establishing a postgraduate sanitary engineering course in Medellín. The commission's report will be studied by an *ad hoc* committee including a PAHO consultant. The activities of the Institute of Sanitary Engineering in Rio de Janeiro and the sanitary engineering teaching program in Venezuela are described in Chapter I-B, in connection with UNDP participation in environmental sanitation projects.

Schools of Veterinary Medicine

Veterinary medical education in Venezuela underwent a basic reorganization. With the assistance of an Organization consultant, the schools conducted a self-evaluation on curriculum, teaching methods, and administration. Most significant was the introduction of the basic study year, which is similar to the period of preveterinary medical studies in many other countries. The changes were accepted and applied by all three veterinary medical schools in the country. As a result candidates were required to pass examinations in mathematics, physics, chemistry, animal husbandry, and economics before entering the professional curriculum. In this manner, the schools were able to reduce the large number of first-year students that had been overloading the laboratory and classroom facilities. The directors of the three schools held several meetings to bring about greater coordination in the teaching programs. Their second meeting, in Barquisimeto in June, resulted in the formation of the Association of Veterinary Medical Schools of Venezuela, and the preparations for the first national seminar on veterinary medical education.

In Brazil, teaching staff from the veterinary medical schools, as well as from the Ministries of Health and Agriculture, attended several training courses in brucellosis, rabies, laboratory animal medicine, avian pathology, viral and bacterial zoonoses, statistics, and epidemiology, conducted with the Organization's assistance. In five courses held in the States of Bahia, Guanabara, Minas Gerais, Rio Grande do Sul, and São Paulo, training was provided for 99 professionals. One of these was the III Course on Epidemiology and Zoonoses Control, attended by 28 professors and other professional personnel from nine schools of veterinary medicine, the Ministry of Agriculture, and the Army Veterinary Medical Services.

With the collaboration of the Peruvian Association of Educational Centers in Veterinary Science, and a grant from the Organization, the first seminar on veterinary medical education was held in Lima in December. All of the professional education centers in this field were represented. Among the topics discussed were current curricula, human and physical resources, interuniversity working relationships, and planning and coordination of the educational process in accordance with the country's needs.

The Association of Teachers of Veterinary Public Health and Preventive Medicine of the United States and Canada designated the PAHO Department of Human and Animal Health as Executive Secretariat of the Association for the purpose of coordinating more adequately the efforts in the teaching of these disciplines in all countries of the Hemisphere. The Association's Executive Committee, which serves as Advisory Committee on Veterinary Medical Education to the Organization, met in January at the School of Veterinary Medicine, University of Missouri. It reviewed the recommendations of the PAHO-sponsored Symposium on Education in Veterinary Pub-

lic Health and Preventive Medicine (Minnesota, March 1968) and evaluated the action taken by the schools to implement those recommendations. The Committee also met with the Associate Dean and members of the curriculum committee of the School of Veterinary Medicine in Missouri, to discuss their plans for revision of the curriculum and ways in which the Committee could assist them with their future planning.

Ten consultants in veterinary medical education were furnished by the Organization to schools in Brazil, Chile, Guatemala, Peru, and the United States to assist in the presentation of special courses, development of teaching programs, and evaluation of curricula.

With the Organization's assistance, the School of Veterinary Medicine and Zootechnics in Guatemala City held the first national congress on this subject during June.

In Haiti the new school of veterinary technicians began its activities.

Schools of Nursing

Until very recently, nursing education in most countries of the Americas was not part of the formal academic structure. During the last decade there has been a growing trend toward defining the system of nursing education and placing it within the general education framework.

In Brazil the three levels of nursing education (preparation of nurses, nursing technicians, and nursing auxiliaries) are included in the educational system through higher, intermediate, and vocational instruction, respectively.

In Venezuela the basic three-year nursing program was converted in 1970 into a diversified baccalaureate program in which the second cycle of secondary studies is combined with nursing. In this way, nursing became a part of the country's educational system and is now governed by the standards issued by the Ministry of Education.

In Peru the Educational Reform Law had an impact on nursing education programs at all levels. The training of auxiliaries, formerly subject to no systematic plan, will, under this Law, become part of the educational system within the basic cycle.

Training of nursing personnel at various levels. The expansion of services, together with the preparation of four-year projections and national health plans, has made evident the tremendous shortage of nursing personnel and created concern for finding rapid and suitable solutions to this problem.

Many countries (Brazil, Chile, Cuba, the Dominican



School of Veterinary Medicine in Lima, Peru.

III. DEVELOPMENT OF HUMAN RESOURCES

TABLE 37. NUMBER OF NURSING SCHOOLS IN LATIN AMERICA AND THE CARIBBEAN AREA, 1970.

Country or other political unit	Total no. of schools	Number of schools	
		University	Ministries of education or health
Antigua.....	1	—	1
Argentina.....	51	8	43
Bahamas.....	1	—	1
Barbados.....	2	—	2
Bolivia.....	5	3	2
Brazil.....	35	21	14 ^a
British Honduras.....	1	—	1
Chile.....	10	10	—
Colombia.....	7	6	1 ^a
Costa Rica.....	1	—	1
Cuba.....	20	—	20
Dominica.....	1	—	1
Dominican Republic.....	2	1	1
Ecuador.....	5	4	1
El Salvador.....	2	—	2
Guatemala.....	2	—	2
Guyana.....	4	—	4
Grenada.....	1	—	1
Haiti.....	3	—	3
Honduras.....	2	1	1
Jamaica.....	2	—	2
Mexico.....	88	4	84
Montserrat.....	1	—	1
Nevis.....	1	—	1
Nicaragua.....	4	—	4
Panama.....	1	1	—
Paraguay.....	2	1	1
Peru.....	22	9	13
St. Kitts.....	1	—	1
St. Lucia.....	1	—	1
St. Vincent.....	1	—	1
Trinidad and Tobago.....	3	—	3
Uruguay.....	2	1	1
Venezuela.....	15	2	13
Total.....	300	72	228

— None.

^a These 15 schools function as higher education institutes

Republic, Guatemala, and the English-speaking countries and territories of the Caribbean) had conducted or were carrying out studies on nursing functions and activities with a view to determining the type of personnel required and the kind of educational programs needed to train such personnel.

At the IX Inter-American Nursing Congress (First Meeting of the Pan American Federation of Nurses), held in November in Caracas, the topic "Nursing Education at Various Levels" was discussed. The representatives of the countries considered the urgent need to establish well-defined functions and levels of care and suggested an exchange of information on experiences and programs. The conference further recommended that consideration

be given to establishing postgraduate courses at the regional level.

The associations of nursing schools in Argentina, Colombia, Ecuador, and Peru have been consistent advocates of the analysis of nurse training programs in the light of the needs of the health programs.

University and advanced level. Recognition of the need to prepare personnel capable of identifying and proposing solutions to nursing problems, administering and supervising services, and assisting in the training of personnel has led to the establishment of university nursing schools. In 1970 there were 72 nursing schools in Latin America and the Caribbean area which were technically and administratively attached to universities. In addition, out of the 228 nursing schools attached to the ministries of education or health, 15 were operated as independent higher education centers (Table 37).

There is a definite need to determine the number of persons who must be trained, evaluate the current programs, and develop general criteria for instruction at this level.

PAHO/WHO has cooperated directly with 32 of the university or higher-education level schools (36 per cent) through permanent and short-term consultants and indirectly with approximately 50 per cent of them through seminars, award of academic fellowships, and assistance at the regional and Zone levels.

In Ecuador workshops on curriculum planning were conducted for 41 teaching and practicing nurses, and 61 nurse educators received training in the application of the scientific method to nursing.

With PAHO assistance, a seminar was held in Brazil for the purpose of planning the first year of the nursing curriculum under the recent university reform. It was attended by 53 nurses (43 from the schools, 9 from services, 1 from the Nursing Association) and 22 students.

Programs of continuing education at the university level were held in the Dominican Republic, Honduras, Mexico, Panama, and Peru.

In Argentina, Colombia, Ecuador, and Panama supplementary programs leading to the Bachelor's degree in nursing were conducted for graduate nurses.

Nearly all countries of the Region had postbasic courses for specialization in specific areas of nursing. Most of the courses were in public health nursing, nursing-midwifery, administration of services, and nursing education.

The only institution offering a postgraduate program leading to a Master's degree was the University of Valle in Colombia.

Intermediate level. Close to 70 per cent of the nursing

schools in the Region are classified at the intermediate level. In some countries (Brazil and Venezuela) this level has been combined with secondary instruction. Assistance was rendered to some 50 of these schools in curriculum planning or revision and the training of teaching personnel through programs of continuing education, short courses, and seminars. In Venezuela 60 instructors for the new nursing curriculum were trained in a two-month course. A seminar on nursing education, for 80 instructors, was organized in Bolivia, and a short course on clinical instruction was held in the Dominican Republic. In the Caribbean area, an effort was made to use the summer institutes and programs of continuing education as a means of broadening and bringing up to date the knowledge of the teaching staff. Final arrangements were made for repeating the survey of nursing schools in the Caribbean area, in order to evaluate the progress achieved in the past five years and collect the necessary data for establishing a regional committee on nursing education.

Auxiliary level. In spite of the steady growth in the number of nurses trained, nursing auxiliaries continued to make up more than 70 per cent of the staff of the nursing services. Owing to the size of the current shortage and to budget limitations, the ratio between nurses

and auxiliaries is not expected to change substantially during the current decade; this justifies the emphasis being placed on the training of auxiliaries.

In the Dominican Republic, the study made of the functions performed by auxiliaries served as a basis for restructuring the curricula of the schools.

Two working groups met in Brazil to develop and study the implementation of an intensive curriculum for training auxiliaries in 11-month courses, thus reducing the length of the training period from two academic years to one. A course on teaching methodology was also held, for 36 nurse educators.

In Bolivia, Costa Rica, and Ecuador revised curricula and additional training programs for rural auxiliaries were drawn up. In the Caribbean area, as in all the countries of Latin America, the training of auxiliaries continued to be intensified.

Schools of Nutrition and Dietetics

The Organization continued to render technical assistance to schools of nutrition and dietetics for the improvement of curricula, content of courses, and type and quality of field experience.

The lack of a sufficient number of well-trained nutritionists-dietitians continued to limit the extent of action that can be directed toward reducing the level of malnutrition in Latin America and the Caribbean area. Guidelines for training polyvalent nutrition personnel, at the university level, to discharge functions in national and local health services were not established until 1966. Schools are currently in various stages of development, depending upon the level of training of their faculties, the physical facilities and equipment available to them, and the adequacy of field training areas.

In 1970 there were 23 schools in operation: 22 in seven countries, plus one school at the Institute of Nutrition of Central America and Panama serving the six countries of that area. Two of the schools were inaugurated during the year.

Particular emphasis was placed on providing additional training for faculty members of the schools. Two types of fellowships were awarded: one for academic training leading to a degree; and short-term visiting fellowships for observation of educational techniques and methods that might be introduced or adapted by the fellow upon his return to his university.

Further technical assistance was given to the School of Public Health of the University of Puerto Rico for the development of the Master's degree program in nutrition,



Student-nurse acquires clinical experience in a health center.

which was open to physicians, nutritionists-dietitians, and biochemists from Latin American countries. Students from five countries completed their degree during 1970. The Organization also assisted the two-month international course in nutrition offered by the School of Hygiene and Public Health in São Paulo, Brazil.

Health Education

Staff of the Organization cooperated with the School of Public Health of the University of Michigan, Ann Arbor, on the revision of the program for the training of health educators, and participated in the conduct of two seminars on international health education for students of the School.

A short-term consultant visited the schools of public health of the University of São Paulo, the University of Chile, and the University of Puerto Rico to examine with the school authorities the organization, teaching resources, curricula, achievements, and needs in relation to the teaching of health education and related disciplines, with special reference to courses for the training of health educators. A plan was formulated for the establishment of appropriate schemes for expanding and improving the present teaching resources in order to raise the academic standards in the schools and stimulate applied research. The three schools mentioned above were graduating a total of 65 health educators a year.

At the School of Hygiene and Public Health of São Paulo University a short-term consultant assisted with a review of the curriculum of the course for health educators, and cooperation was given in the planning and conduct of a one-month course on the investigation of problems of school health education, attended by 30 education and health officials from five states of Brazil. The School was also assisted in planning the first course for the training of school health education specialists, which will be initiated on a trial basis in 1971. An educator was sent to Puerto Rico on a PAHO fellowship to specialize in this subject before taking up her teaching duties.

TEXTBOOK PROGRAM

In a continuing attempt to raise the educational standards, the Organization further promoted the program through which textbooks are supplied to a large mass of medical students, at purchase or rental prices they can afford.

A total of 113 universities were participating in the program in accordance with agreements signed with the Organization.

The significant advances made by the textbook program in the creation of a new market—among medical students throughout Latin America—are reflected in the cumulative end-of-year figures: 54,997 textbooks in pathology, biochemistry, physiology, and pharmacology had been distributed through 110 university centers, of which number 26,031 had been sold. Cash sales in the amount of \$193,137 represented 85 per cent of all sales (\$227,220). There were in addition installment-payment sales amounting to \$34,083.

By the end of 1970, 60,000 copies of books in the aforementioned fields had been printed, and 15,000 copies of a new text on pediatrics were being distributed.

The first six reports of the expert committees of the textbook program were distributed to all medical schools and related institutions in Latin America. Five thousand copies of each of the following reports were printed and about half were distributed: (1) teaching of pathology, (2) teaching of biochemistry, (3) teaching of pharmacology, (4) teaching of physiology, (5) teaching of pediatrics, and (6) teaching of preventive and social medicine in schools of medicine in Latin America.

Expert committees on teaching of microbiology and parasitology met during the year and their recommendations were being prepared for printing and distribution.

Plans for further development of the textbook program include joint activities between PAHO and the Pan American Health and Education Foundation. Officials of the Organization and the Foundation held discussions with the Inter-American Development Bank and concluded the arrangements for a \$2,000,000 loan, which was approved by IDB in the latter part of the year.

Schools of medicine in several Latin American countries were visited to coordinate and implement various aspects of the textbook program.

TRAINING OF PERSONNEL

As part of the over-all thrust for the development of human resources, and specifically in the area of personnel training, the Organization collaborated in the preparation and implementation of numerous courses and seminars during the year. Thus, **laboratories in human relations and medical pedagogy**—designed to convey to professors in schools of health sciences the principles ruling

interpersonal relations in the teaching-learning process, to train them in the use of teaching methodology, and to provide them with basic bibliographic material in Spanish—were conducted in Brazil, Ecuador, Honduras, Peru, and Venezuela. Staff of the Organization and short-term consultants participated in the organization and execution of these seminars, which were attended by approximately 120 teachers.

In Brazil, PAHO staff conducted two seminars on the **definition of education objectives and design of curriculum**, attended by 40 professors of medical schools, and also a seminar on structural and administrative planning of medical schools, attended by the directors of 20 schools.

Seminars on the **teaching of behavioral sciences in medical schools** were conducted by Organization staff in both El Salvador (with 23 participants) and in Ribeirão Preto, Brazil (with 34 participants). In Venezuela a course on methodology of research in the behavioral sciences was held for 23 professors from medical and dental schools, and at the School of Medicine of Mérida consultation and advisory services were provided in connection with the teaching of this subject.

The Organization cooperated in the planning and execution of a seminar on **demography and epidemiology** held at the School of Hygiene and Preventive Medicine of the University in Montevideo (11-18 June) for 45 participants, and in a seminar on epidemiology held in Argentina for 31 participants from nine schools of medicine.

A training program in **public health administration**, aimed at meeting the needs at different levels, was carried out in Panama. On the basis of the experience obtained, a document was prepared summarizing the philosophy for training physicians in this field. An official of PAHO also collaborated in the course on methodology and research given in Campinas, Brazil, for 35 participants. Another staff member and a short-term consultant designed and conducted a basic public health course for 18 physicians and three nurses from the Ministry of Health of Panama. A number of PAHO/WHO publications and other printed material, summarizing the fundamental aspects of each teaching session, were made available to all participants. A similar course was held in Guatemala.

With regard to the **administration of medical care services**, special attention was devoted by the countries to improving the efficiency and productivity of hospitals and other health establishments through the training of personnel working at various levels of administrative responsibility. In Lima, the second seminar on medical and hospital care administration was held for directors of

university hospitals, professors in charge of medical departments, and instructors of preventive and social medicine. The three-week seminar was attended by 25 participants from university medical centers in Cochabamba and Sucre (Bolivia); Bogotá, Medellín, and Caldas (Colombia); Quito, Guayaquil, and Ambato (Ecuador); and Lima.

The catalyzing effect of this meeting was reflected in the organization in Bogotá of the first Colombian seminar on administration of medical and hospital care. It lasted two weeks and was attended by 20 professors in charge of medical departments at the three hospitals of the National, Xaverian, and Rosario Universities.

In Havana a four-week course on medical care and hospital administration was held for 20 provincial deputy directors of medical care and education and directors of leading clinical-surgical hospitals in the country.

At the Latin American Center for Medical Administration (CLAM) in Buenos Aires, a first seminar on hospital architecture, lasting two weeks, was held for 31 participants.

The Organization also cooperated with the schools of public health in Rio de Janeiro, Santiago, Medellín, Havana, Mexico City, Lima, and San Juan in conducting a review of objectives, organization, curriculum, teaching methodology, administrative residence, faculty, and evaluation of the programs related to public health, medical, and hospital care administration.

As in prior years, assistance was given in teaching the course on organization of medical services held at the Inter-American Center for Social Security Studies (CIESS).

Reports were received from 18 projects on the training at the local and regional levels of 71,286 workers in the **general health services**. Of that number, 7,416 were staff attached to the services and the remainder were local collaborators assisting directly in the work, most of them in the rural areas. The activities in Brazil were particularly noteworthy, some 60,000 local leaders having been trained through the programs for expansion of rural services. Significant efforts in the training of such personnel were also made in Chile, the Dominican Republic, Ecuador, Guatemala, and Honduras.

As a result of the growing demand in the countries for continuing education programs in **sanitary engineering**, the activities in this field were stepped up sharply in 1970, attaining a greatly accelerated pace and wide diversity. The programs are designed to be sufficiently flexible to adapt the training to national needs while at the same time providing opportunities for keeping abreast of technological advances. To meet the growing demand, the

III. DEVELOPMENT OF HUMAN RESOURCES

TABLE 38. SHORT COURSES, SEMINARS, AND SYMPOSIA ON SANITARY ENGINEERING HELD IN COOPERATION WITH UNIVERSITIES, 1970.

Place of training	Date	Subject	Duration (in hours)	Participants			Lecturers				Collaborating or sponsoring agencies
				National	International	Total	National	STC ^a	PAHO staff	Total	
Argentina.....	7-12 Sept.	Air pollution by motor vehicles.....	47	40	—	40	5	—	—	5	5
	19-23 Oct.	Microbiology of drinking water.....	35	35	3	38	2	—	—	2	4
	19-24 Oct.	Water supply for industries and industrial wastes treatment.....	40	26	—	26	4	—	1	5	5
Bolivia.....	18-27 May	Water treatment plants.....	52	50	—	50	6	0	4	10	5
	7-18 Sept.	Electronic computers in sanitary engineering.....	48	29	—	29	4	1	—	5	2
	13-25 Apr.	Programming techniques and engineering analysis.....	60	32	—	32	6	1	2	9	4
Brazil.....	16-28 Nov.	Excavation, explosives, and drainage in mines.....	60	42	—	42	4	1	—	5	3
	May-Nov.	Training for sanitary inspectors.....	800	32	—	32	19	—	2	21	3
	23-27 Feb.	Collection of samples for water analysis.....	30	34	—	34	4	—	—	4	3
	30 Mar.-8 Apr.	Swimming pool operators.....	60	21	—	21	4	—	—	4	3
	6-10 Apr.	Lectures on industrial wastes.....	30	93	—	93	4	—	—	4	3
	1-11 June	Physical and chemical analyses of water.....	50	24	—	24	3	—	—	3	3
	29 June-6 July	Lectures on sanitary engineering.....	12	41	—	41	—	1	—	1	3
	27-31 July	General principles of air pollution.....	35	52	—	52	3	—	—	3	3
	17-28 Aug.	Swimming pool operators.....	60	20	—	20	4	—	—	4	3
	3, 5, 6 July	Lectures on fundamentals of swimming pool sanitation.....	12	29	—	29	3	—	—	3	3
	30 Nov.-4 Dec.	Design and construction of septic tanks.....	35	54	—	54	3	—	—	3	3
	19-24 Jan.	Modern techniques of water treatment.....	40	40	2	42	3	1	1	5	5
	7-11 Dec.	Desinfection of water and sewage.....	44	32	—	32	8	1	—	9	3
	9-14 Mar.	Air pollution control.....	28	35	—	35	12	1	1	14	3
	15-19 June	Seminar on control of air and water pollution produced by industries.....	32	57	—	57	6	—	2	8	7
	21-26 Sept.	Fluoridation techniques in water supply.....	41	19	—	19	5	2	1	8	4
	19-23 Oct.	Water rates.....	40	17	—	17	3	—	1	4	3
	3-13 Nov.	Groundwater development.....	68	26	—	26	5	3	—	8	6
	18-23 May	Modern water treatment techniques.....	40	29	—	29	2	—	1	3	6
	28 Sept.-3 Oct.	Fluoridation techniques in water supply.....	41	15	—	15	3	2	1	6	7
Chile.....	22-30 Apr.	Modern water treatment techniques.....	49	23	—	23	1	—	1	2	3
	8-12 June	Statistics for engineers.....	20	18	—	18	3	—	—	3	7
	15-19 June	Economic feasibility for engineers.....	39	22	—	22	—	1	—	1	8
	3-7 Aug.	Organization and administration of water agencies—Management techniques.....	40	31	—	31	—	3	—	3	7
	19-21 Oct.	Seminar on administration of water and sewerage services.....	40	40	—	40	3	2	8	13	3
	27 June	Round-table on water-quality control in distribution systems.....	6	20	—	20	—	—	—	—	2
	16-24 July	Water supply management.....	60	37	—	37	26	—	1	27	3
	1-10 Oct.	Course for administrators of sewerage systems.....	60	29	—	29	24	—	1	25	3
	19 Dec.	Course on garbage disposal.....	6	20	—	20	—	1	1	2	2
	9-18 Dec.	Urban wastes collection and disposal.....	50	42	—	42	4	1	1	6	4
Colombia.....	18-22 May	Industrial hygiene.....	40	20	—	20	5	—	1	6	3
	5-10 Oct.	Improved design of water treatment plants.....	44	34	8	42	4	2	—	6	3
	22 June-4 July	Pumps and pumping systems.....	84	34	—	34	6	1	—	7	3
	21 Sept.-13 Nov.	Groundwater development.....	330	21	—	21	10	—	1	11	2
	31 Aug.-4 Sept.	Simulation techniques in water resources development.....	56	50	7	57	6	4	1	11	3
Costa Rica.....	11-22 May	Design standards for water supply systems.....	49	19	—	19	4	2	—	6	3
Cuba.....	9-14 Mar.	Fluoridation of water supplies.....	42	55	—	55	7	1	2	10	3
	17 Nov.-3 Dec.	Occupational health.....	80	50	—	50	32	—	1	33	3
Dominican Republic.....	23 Nov.-4 Dec.	Operation of water supply systems.....	79	20	—	20	4	2	2	8	3
Ecuador.....	16-28 Nov.	Stabilization ponds.....	60	48	—	48	6	1	—	7	2
El Salvador.....	6-18 Apr.	Industrial hygiene and safety.....	54	33	—	33	4	—	1	5	3
	13 Apr.-19 June	Training of food inspectors-supervisors.....	256	17	—	17	15	—	—	15	2
Guatemala.....	11-18 May	Stream pollution—Control techniques.....	27	25	—	25	3	2	1	6	2
	16-20 Nov.	Chlorination techniques in water supplies.....	30	8	21	29	1	1	—	2	5
Honduras.....	4-16 May	Organization and administration of water and sewerage services.....	59	32	—	32	4	2	1	7	4
	2 May-31 Oct.	Training of sanitary inspectors.....	1,000	24	—	24	12	—	—	12	2
Mexico.....	28 Sept.-10 Oct.	Water pollution control.....	40	20	—	20	4	2	1	7	3
	7-17 Dec.	Seminar on methodology for the teaching of sanitary engineering.....	66	25	—	25	21	3	1	25	3
	9-13 Feb.	Planning and programming of water supply and sewerage systems.....	52	56	—	56	17	—	3	20	2
	28 Sept.-2 Oct.	Promotion of water and sewerage works.....	23	40	18	58	—	2	1	3	2
	6-11 Apr.	Second national course on asbestos-cement and plastic pipes installation.....	35	61	—	61	12	—	—	12	2

TABLE 38. SHORT COURSES, SEMINARS, AND SYMPOSIA ON SANITARY ENGINEERING HELD IN COOPERATION WITH UNIVERSITIES, 1970 (cont.).

Place of training	Date	Subject	Duration (in hours)	Participants			Lecturers				Collaborating or sponsoring agencies
				National	International	Total	National	STC ^a	PAHO staff	Total	
Nicaragua.....	17-20 Aug.	Third national course on asbestos-cement and plastic pipes installation.....	24	48	—	48	12	—	—	12	2
	21 Sept.-6 Oct.	Sewerage systems.....	60	40	—	40	9	1	—	10	5
	6-11 July	Technical, financial, and administrative aspects of street-cleaning services.....	48	19	11	30	3	3 1 (IDB)	2	9	4
Panama.....	28 Sept.-2 Oct.	Seminar on training of intermediate-level personnel in urban refuse collection systems.....	12	40	—	40	7	—	1	8	2
	13-24 Apr.	Course I for food handlers.....	15	78	—	78	5	—	—	5	2
	4-15 May	Course II for food handlers.....	15	47	—	47	5	—	—	5	2
	21 May-4 June	Course III for food handlers.....	15	53	—	53	5	—	—	5	2
	29 June-9 July	Course IV for owners and managers of public eating places.....	15	20	—	20	5	—	—	5	2
	27 July-7 Aug.	Course V for food handlers.....	15	39	—	39	5	—	—	5	2
	29 June-3 July	Industrial hygiene for inspectors of the Social Security Fund.....	20	42	—	42	1	—	—	1	2
	20 July-28 Nov.	Training of sanitary inspectors.....	675	19	—	19	17	—	—	17	2
	7-15 Nov.	Traveling seminar—Rural water supply services (Entre Ríos and La Rioja Prov., Argentina).....	50	5	9	14	—	—	2	2	5
	6-11 Apr.	Methodology for university teaching.....	42	54	—	54	14	—	—	14	3
Peru.....	22-27 June	Protection of water mains against corrosion.....	30	21	—	21	3	2	—	5	4
Uruguay.....	7-11 Sept.	Economic feasibility for engineers.....	40	17	2	19	—	2	—	2	4
	19-24 Oct.	Industrial hygiene and safety.....	39	39	—	39	10	—	1	11	3
Venezuela.....	30 Nov.-5 Dec.	Waste water treatment.....	34	20	—	20	3	2	—	5	4
	8-13 June	Garbage collection and disposal.....	30	45	—	45	3	2	—	5	3
	29 June-3 July	Economic feasibility for engineers.....	38	28	—	28	—	2	—	2	3
	16-21 Aug.	Regional symposium on water pollution control.....	30	67	64	131	3	8	3	14	3
Total.....		70 courses, 6 seminars, and 1 symposium.....	5,943	2,639	145	2,784	473	70	56	599	261

— None.

... Data not available.

^a Short-term consultants.

Field practice in an international course on operation and maintenance of well-drilling equipment.

Organization increased its cooperation with the schools of engineering and public health in the Hemisphere.

In accordance with the established procedures, the schools were responsible for the programs and for the preparation and direction of activities, and the Organization provided technical and financial assistance. Although international consultants helped with the organization of courses and gave some lectures, local professional staff took charge of more than 80 per cent of the program activities.

In 1970, 70 short intensive courses, six national seminars and symposia, and one regional symposium were held in 19 countries, and training was given to a total of 2,784 persons. Participating in these activities were 473 national instructors, 70 short-term consultants, and 56 permanent consultants of the Organization (Table 38). The very mention of these figures indicates the magnitude of the program and the extraordinary reception it has had in the countries of Latin America.

A noteworthy feature of the program is the concerted effort made to organize courses of training in management and administration techniques and also in the economic feasibility of engineering projects—matters which are of special concern to the international lending agen-



Group of rural lay midwives trained in the Dominican Republic.

cies. Another significant factor is the assistance given by the Pan American Center for Sanitary Engineering and Environmental Sciences through its advisory staff (see Chapter I-B).

Also noteworthy are the courses in sanitary engineering teaching at the university level and in teaching methodology, conducted in Peru and in Mexico, respectively.

As part of the short intensive training program, five courses were given on subjects related to the collection and disposal of solid wastes—two in Chile, two in Panama, and one in Venezuela, with 177 professional-grade officials and auxiliary personnel attending. One of the courses held in Panama was international in scope, with participants coming from all the countries of the Central American Isthmus. On the subject of sewerage and water pollution, 13 short courses were held during the year.

In the field of **nursing**, 42 short courses and seminars were held with the Organization's assistance, as part of the program of inservice training and continuing education. A total of 1,011 persons participated in these activities (Table 39).

In Cuba two seminars on nursing-midwifery were held, in Havana and Santiago, for a total of 72 nurse-midwives (33.5 per cent of the country's personnel in

this field). The seminars examined the role of nursing-midwifery in maternal and child health services and the standards for instruction in this specialty, with a view to bringing about a greater participation of the nurse-midwife in the provision of such services. In Brazil two refresher courses were held: one on maternal and child nursing and the other on administration of nursing service in that field. In Brasilia and Rio de Janeiro, an international course on perinatal problems was held for a total of 38 participants, including five general nurses, five nurse-midwives, and two midwives.

In San José, Costa Rica, a one-week seminar on maternal and child health and family welfare was conducted for 27 physicians and nurses.

In Trinidad and Tobago a four-week course on family planning was attended by 14 nurses from nine English-speaking countries of the Caribbean.

In the Dominican Republic, Haiti, Nicaragua, and Paraguay programs for the training of lay midwives were held.

Training activities were continued in almost all **malaria eradication** projects during the year. In Mexico large numbers of professionals, supervisors, and field personnel at all levels were trained to meet the needs of intensified field activities along the Gulf of Mexico and on the Yucatán Peninsula, and at the same time to prepare for the projected expansion of the program under the Six-Year Plan. In other countries, courses were organized mainly to prepare new recruits to fill the vacancies resulting from frequent turnover and to give refresher training to the field personnel in spraying operations and epidemiological evaluation. The details of the courses conducted in the various countries are given in Table 40, by categories of personnel.

In addition to the activities outlined in the table, the Dominican Republic gave special training in the field of general health services to three sector chiefs and 23 evaluators, in preparation for the future coordination of malaria vigilance activities and other health programs. In four countries, six medical officers of the malaria eradication services were trained in public health (Brazil 2, El Salvador 2, Paraguay 1, and Peru 1). Training in other fields included that arranged for one health educator and one entomologist in Brazil, two administrators in El Salvador, and an entomologist and an administrator in Honduras.

The Government of Venezuela continued to offer facilities for the preparation of professional staff from all countries of the Americas in the field of malaria eradica-

TABLE 39. INSERVICE TRAINING AND CONTINUING EDUCATION PROGRAMS IN NURSING HELD WITH THE ASSISTANCE OF THE ORGANIZATION, 1970.

Place of training	Subject	Duration (weeks)	Participants				Total
			Nurses	Midwives	Nurse-midwives	Physicians	
Short courses							
Argentina.....	Nursing care of the normal and premature newborn ^a	1	72	1	—	19	92
	Nursing care of the normal and premature newborn.....	2 days	26	—	—	—	26
Barbados.....	Methodology for nursing education.....	4	14	—	—	—	14
Bolivia.....	Nursing in tuberculosis control (3 courses)....	1 ^b	50	—	—	—	50
Brazil.....	Maternal and child nursing.....	9	10	8	—	—	18
	Maternal and child health administrative services.....	9	21	—	—	—	21
	Perinatal problems (international course)....	4	5	2	5	26	38
Dominican Republic.....	Administration and supervision of nursing services.....	2	33	—	—	—	33
	Principles of administration and nursing planning.....	1	30	—	—	—	30
Ecuador.....	Organization and administration of hospital nursing services.....	1	62	—	—	—	62
	Administration of nursing services.....	1	83	—	—	—	83
El Salvador.....	Administration of hospital nursing services..	3	38	—	—	—	38
Guatemala.....	Administration of hospital nursing services..	3	25	—	—	—	25
Guyana.....	Leadership and changes in nursing.....	5	29	—	—	—	29
Panama.....	Administration of hospital nursing services..	3	40 ^c	—	—	—	40
Paraguay.....	BCG vaccination techniques.....	2	14	—	—	—	14
Peru.....	Planning in nursing.....	2	28	—	—	—	28
	Intensive nursing care.....	4	21	—	—	—	21
Trinidad and Tobago.....	Family planning.....	4	14	—	—	—	14
Uruguay.....	Intensive nursing care.....	7	16	—	—	—	16
Seminars							
Bolivia.....	Nursing in tuberculosis.....	1	59	—	—	—	59
Brazil.....	Maternal and child health nursing.....	1	30	—	—	—	30
Costa Rica.....	Maternal and child health and family welfare.....	1	—	—	—	27 ^d	27
Cuba.....	Nursing-midwifery (2 seminars).....	2 ^e	72	—	—	—	72
El Salvador.....	Development of inservice educational programs.....	1	27	—	—	—	27
Guatemala.....	Planning of patient care.....	1	14	—	—	—	14
	Inservice training.....	1	23	—	—	—	23
	Educational aids.....	1	19	—	—	—	19
Paraguay.....	Administration of nursing services (2 seminars).....	1 ^b	48	—	—	—	48
Total.....			923	11	5	72	1,011

— None.

^a Ten short courses took place.^b One week each.^c Including 9 nurses from Costa Rica.^d Including physicians and nurses.^e Two weeks each.

tion. For the course conducted from November 1969 to April 1970, the Organization made arrangements for nine fellows (Colombia 5, Brazil 2, Ecuador 1, and Haiti 1).

Training of personnel for the **smallpox** programs was continued through short courses and seminars and

through training offered at the Connaught Laboratories in Toronto, Canada.

The second international course in epidemiology and administration of **tuberculosis control** programs, held in Caracas with the cooperation of the Venezuelan Government, was attended by 14 fellows from 12 countries. Also

III. DEVELOPMENT OF HUMAN RESOURCES

TABLE 40. TRAINING COURSES GIVEN IN NATIONAL MALARIA ERADICATION SERVICES, 1970.

Country or other political unit	Professional personnel		Entomological auxiliaries		Microscopists		Zone or sector chiefs		Spraying brigade chiefs		Spraymen		Mass drug administration sector chiefs		Medicators		Chief evaluators		Evaluators		Supervisors		Other	
	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.	No.	Hrs.
Bolivia																								
National	—	—	—	—	14 ^R	48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Zonal	—	—	—	—	—	—	—	—	—	—	40	7	60	20	60	—	—	70 ^R	40	7	10	—	—	—
Brazil																								
Zonal	—	—	2 ^R	430	—	—	—	—	59	156	775	129	—	—	—	—	8	36	195	132	—	—	—	—
Regional	—	—	—	—	18	460	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
British Honduras																								
National	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	40	—	—	—	—
Regional	—	—	—	—	—	—	3	98	—	—	15	24	—	—	—	—	—	—	—	—	—	—	—	—
Colombia																								
National	2	160	—	—	6	240	156	80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Zonal	—	—	—	—	—	—	—	—	—	—	—	4	40	20	40	—	—	—	—	—	—	—	—	—
Costa Rica																								
National	—	—	—	—	—	—	29	24	—	—	—	—	—	—	—	—	87	24	—	—	—	—	—	—
Dominican Republic																								
National	—	—	—	—	3	125	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	32
Zonal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28	40	4	4	—	—
Ecuador																								
National	1	243	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Zonal	—	—	—	—	—	—	2	120	22	80	85	40	—	—	—	—	—	—	—	—	—	—	—	—
El Salvador																								
Regional	—	—	10 ^R	134	4	684	—	—	100	40	192	82	45	40	636 ^a	100	15 ^R	40	16	86	—	—	—	—
Guatemala																								
Zonal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	36	—	—	—	—	—	—	20	48 ^b
Guyana																								
National	—	—	—	—	—	—	4 ^R	18	—	—	14 ^R	18	—	—	—	—	—	—	30	18	—	—	—	—
Honduras																								
Zonal	—	—	—	—	—	—	4	64	2	64	8	64	—	—	—	—	—	—	—	—	—	—	—	—
Jamaica																								
Zonal	—	—	6	120	3	576	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mexico																								
Central	51 ^c	479	15 ^R	68	26	303	31	337	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	202
Zonal	—	—	—	—	—	—	—	—	1,045 ^d	88	4,790 ^e	68	—	—	856 ^f	88	—	—	2,001 ^g	92	—	—	300	88
Nicaragua																								
Zonal	—	—	—	—	—	—	—	—	7	156	119	104	—	—	—	—	—	—	46	208	—	—	11	104
Panama																								
Zonal	—	—	—	—	—	—	—	—	—	—	340 ^h	40	—	—	—	—	—	—	—	—	—	—	—	—
Paraguay																								
Regional	—	—	—	—	—	—	28	62	81	24	—	—	—	—	—	—	—	—	40	84	—	—	6	32
Peru																								
National	—	—	—	—	16 ^R	36	14 ^R	84	42 ^R	44	138 ^R	44	—	—	—	—	—	—	—	—	—	—	—	—
Zonal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	99	79	—	—	—	—	—	—	—	—
Venezuela																								
International	46	1,262	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
National	—	—	—	—	16	1,775	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	2,687	32	173

— None.

^R Retraining.

^a Some medicators retrained.

^b Investigators.

^c 37 physicians (5 were retrained), 14 engineers.

^d 545 were retrained in a course of 24 hours.

^e 2,290 were retrained in a course of 24 hours.

^f 406 were retrained in a course of 24 hours.

^g 951 were retrained in a course of 24 hours.

^h 290 were retrained in a course of 24 hours.

held in Caracas was the fourth international course on tuberculosis bacteriology, in which 12 fellows from 11 countries participated.

In Argentina an international symposium on tuberculosis chemotherapy was conducted under the auspices of the Secretariat of State for Public Health.

In Bolivia a seminar on tuberculosis was held for nursing personnel, and in Chile the Pneumophthisiology

Institute offered its second course on the clinical and epidemiological study of tuberculosis, which was attended by 12 physicians. Cuba held a course on administration of control programs, for 18 physicians, eight microbiologists, and eight nurses.

In Mexico City a seminar on tuberculosis chemotherapy and bacteriology took place in November, and a course for microbiologists was also held.

Paraguay organized a course of training in laboratory techniques for tuberculosis diagnosis.

A training course on the epidemiology of **venereal diseases** was conducted in Chile, with special emphasis given to the use of the interviewing technique in control programs, and a course on laboratory diagnosis of syphilis was held in Cuba.

Other training activities in regard to **leprosy, plague, and cholera** are described in the sections covering those diseases (Chapter I-A).

An extensive training program in the field of **zoonoses control** was conducted during the year. The Pan American Zoonoses Center organized or provided assistance in three international and 15 national courses and seminars and gave individual training to 30 fellows. The Pan American Foot-and-Mouth Disease Center presented two international and two national courses and gave training to 18 fellows. These activities are described in Chapter I-A.

With a view to determining training needs in the field of **parasitic diseases**, a consultant visited nine countries and drew up recommendations on the subject.

In regard to **chronic diseases**, a regional survey on health education for cancer control was carried out, and assistance continued to be given to the Cytology Center at the University of Chile in its program of training (see Chapter II-B).

Training in the field of **mental health** included five short seminars on social psychiatry in Argentina, attended by 523 physicians, nurses, psychologists, and social workers.



Training of dental auxiliaries to increase productivity in the delivery of dental care services.

In Venezuela, 10 nurses completed a psychiatric nursing course of one year's duration under the auspices of the Ministry of Health and Social Welfare, with advisory services provided by the Organization. Short courses for nurses were also held on mental health services in general hospitals (48 participants) and on the integration of mental health into nursing education plans (44 participants).

Advisory services on inservice training in psychiatric nursing continued to be given in Jamaica and Venezuela.

In the field of **dental health**, courses on the design of simplified dental equipment were presented at the School of Dentistry in Concepción, Chile; at the Technician Training School of the Ministry of Social Welfare in La Plata, Argentina; and at the Center for Research in Social Dentistry in Pôrto Alegre, Brazil. A total of 75 dentists, dental auxiliaries, and dental mechanics attended these courses.

A course on new concepts in dentistry was presented by PAHO staff to 65 members of the Dental Association in Santiago, Chile; to members of the Dental Association in Quito, Ecuador; and to regional dental advisers in the Department of Health in Puerto Rico.

The Third National Seminar on Dental Materials, held at the University of Los Andes in Mérida, Venezuela, was attended by 20 faculty members from all three dental schools of the country. At the University of Zulia in Maracaibo a short course was conducted for the training of dental auxiliaries destined to become the future trainers of additional auxiliary personnel.

Chapter II-B gives information on the training in fluoridation techniques.

In **maternal and child health and family planning**, numerous training activities were carried out during the year.

Training programs in health and population dynamics



Field practice in malaria epidemiology in El Salvador.

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The programs of pediatric residencies for the training of graduates in the sphere of comprehensive child care have continued. In the program under way in Santiago, Chile, special emphasis is placed on both preventive pediatrics and intrahospital training.

were continued, with the Organization's assistance, at the University of Chile and the University of São Paulo, Brazil. They covered various aspects of demographic analysis, biostatistics and vital statistics, theories and policies of population, and their relationships to public health.

Continuing assistance was also rendered in the pediatrics programs in Chile and Colombia: the courses on clinical and social pediatrics, in Santiago and Medellín in 1970 (45 students participated, 28 of whom received PAHO fellowships); the pediatrics residency program in Chile (10 professionals participated); and the Second Latin American Course on Maternal and Child Health, conducted in Santiago in October-November (27 students from many countries of the Region attended, 13 of them with PAHO fellowships).

In Montevideo, Uruguay, the PAHO-supported Latin American Center for Perinatology and Human Development (CLAP) offered the course "Scientific Bases of the Integrated Care of the Mother, the Fetus, and the Newborn." There were 18 participants, 15 of them attending with PAHO fellowships.

As in past years, the Organization collaborated in the teaching activities of the International Children's Center and the Inter-American Children's Institute, in programs conducted in Montevideo and in Rio de Janeiro. Also, advisory services were provided for the preparation of the course on perinatal problems that was given in Brasília-Rio de Janeiro in November and attended by 38 participants from Chile, Colombia, Costa Rica, El Salvador, Guatemala, Mexico, Panama, and Peru—12 of whom received PAHO fellowships.

The Organization supported the first of a series of seminars on the teaching of the biology of human repro-

duction for professors in schools of medicine in Latin America. The six-week seminar was given in October-November, and was attended by professors from all the Central American countries and Panama. Techniques of research and teaching methodology, as well as their practical implications for maternal and child health and public health, were presented. The Latin American Center for Perinatology and Human Development in Montevideo, the Latin American Institute of Reproduction in Buenos Aires, and the School of Public Health of the University of Chile in Santiago collaborated in the presentation of the course, which was carried out in all three sites with the students travelling to them in succession.

In Trinidad and Tobago, PAHO supported a regional Caribbean course in family planning for nurses and midwives in October-November; and in St. Kitts-Nevis an inservice training course in family planning was offered for multidisciplinary groups.

Many training courses in family planning were given as part of the Colombian maternal and child health and family welfare program. A total of 1,526 physicians, nurses, auxiliaries, and rural health promoters attended during the year.

A comprehensive regional education and training program in health and population dynamics was developed by the Organization with the objective of increasing awareness of the needs in this field and improving the capabilities of personnel. The activities encompass training in universities and in the health ministries, and assistance includes fellowships, institutional grants, and support of seminars, courses, and inservice training. The program is directed toward students and faculty of medical schools, ministry officials, physicians, nurses, aux-

iliaries, and other paramedical personnel involved in maternal and child health family planning programs.

With regard to **nutrition**, the Organization provided technical assistance to the Institute of Nutrition of Recife, Brazil, in connection with a six-week course offered to physicians and nutritionists.

Assistance was also furnished in the conduct of a 10-month course given in Paraguay for 11 students who will be employed by the Ministry of Public Health and Social Welfare as nutrition assistants in the rural areas where they live. This course, supported by UNICEF, is a pilot endeavor designed to develop certain nutrition activities planned for the health programs.

At the Institute of Nutrition of Central America and Panama, 13 nutritionists completed their studies in the School of Nutrition and Dietetics during the year and six physicians received degrees upon completion of the postgraduate course in public health. In all, 132 students from 14 countries participated in INCAP's various educational programs. At the Caribbean Food and Nutrition Institute, 28 students completed the nine-month course on community nutrition, and a number of interdisciplinary seminars were held. Detailed information on these activities is contained in Chapter II-B.



Students of the course offered at the Institute of Nutrition in Recife, Brazil.

Assistance was rendered to Colombia in the organization and holding of a course on **food microbiology and hygiene**, at the University in Bogotá, which was attended by 21 veterinarians. In Panama, courses on food microscopy and technology were organized.

A five-week training course in **drug control** was organized for specialists from Latin America and the Caribbean area, with the assistance of the U.S. Food and Drug Administration.

Fellowships for training in **health laboratory services**

were awarded to 17 countries and an important training program to improve laboratory support for the tuberculosis control program in the Central American area was planned (see Chapter II-A).

The 12-month course for training physicians in the clinical use of **radioisotopes** was again held under the joint sponsorship of the University of Chile, the National Health Service, and the Organization. This course, which has been carried on for the past 10 years with emphasis on the basic principles of the subject, will begin in 1971 to give training in specialized techniques, thus reflecting the progress already made by this branch of technology in the various countries, a progress toward which this course has contributed through the training of some 40 physicians.

The Organization also cooperated in the organization of courses on radiation protection in Argentina and Colombia, and awarded 16 fellowships for radiological health studies to officials from Argentina, Bolivia, Brazil, British Honduras, Colombia, Costa Rica, Ecuador, Peru, Venezuela, and the West Indies.

In Peru a consultant gave advice on plans for training intermediate-level staff in X-ray techniques at the School of Public Health. At the request of the Government of Ecuador, the Schools of Medicine of Quito and Guayaquil were assisted in planning the course of studies for medical technologists, with special reference to X-ray and radioisotope techniques.

In November, a regional course for physicists specializing in radiotherapy was held in Puerto Rico under the joint auspices of the Organization and the International Atomic Energy Agency.

In addition to the assistance given in the field of **health education** to the schools of public health, the Organization collaborated in a series of training courses in this subject.

In Argentina the Department of Health Education presented courses for the training of 40 professional health workers (fourth course) and senior teaching personnel in six provinces. These courses, added to the program carried out in 1969 and that scheduled for 1971, will bring this training to all sections of the country. For intermediate-level personnel, one course of 30 days' duration was held, with 45 participants (social workers and assistants, dietitians, and others). In addition, the Department participated in a Chagas' disease control program in San Juan and in a program designed to incorporate the behavioral sciences into the training of medical students, through the chair of medical psychology at the School of Medicine of the University of Buenos Aires.



Group discussion during a refresher course on school health education, Belo Horizonte, Brazil.

In Barbados the Organization assisted in giving training in school health to 50 field workers in applied nutrition projects and to 13 public health inspectors. It took part in a training program in human relations for 25 nurses and 26 food-service workers at the Queen Elizabeth Hospital, and assisted the Ministry of Education with the training of 51 headmasters of schools in the preparation of educational material on health.

In Brazil a six-day course on planning of curriculum for school health education was held in São Paulo, with 48 participants from five states. In Belo Horizonte refresher courses were organized over a 30-day period for 435 coordinators and supervisors of school health education from Minas Gerais.

In Chile a number of health education training programs were carried out, with the participation of 4,000 teachers, community leaders, and volunteer workers (1,000 hours of instruction and demonstration) in eight health zones, including Santiago. With regard to the training of National Health Service staff, courses were held in four zones, with 510 professionals and 1,300 nursing auxiliaries attending.

The Regional Center for Functional Literacy in Rural Areas for Latin America (CREFAL) conducted, from July to December, a course in functional literacy which was attended by 70 students from 19 countries of Latin America and one African country. The Organization collaborated with CREFAL through a health education consultant.

Improvement of **health statistics**, which is so essential for planning and evaluating health programs, is dependent on the availability of trained statistical personnel. During the past 20 years excellent *courses at the intermediate level* have been developed. In 1970 courses of nine or 10 month's duration were given in six countries

TABLE 41. STUDENTS TRAINED IN INTERMEDIATE LEVEL COURSES IN HEALTH STATISTICS AND MEDICAL RECORDS, BY PLACE OF STUDY AND COUNTRY OF ORIGIN, 1970.

Country of origin	Place of study									Total
	Argentina 9 months	Brazil 6 months	Chile 9 months	Colombia 9 months	Costa Rica 6 months	Cuba 9 months	Mexico 10 months	Peru 9 months	Venezuela 11 months	
Argentina.....	84	—	—	—	—	—	—	—	—	84
Bolivia.....	—	—	—	—	—	—	—	4	—	4
Brazil.....	—	12	—	—	1	—	—	—	—	13
Chile.....	—	—	18	—	—	—	—	—	—	18
Colombia.....	—	—	—	25	—	—	—	—	1	26
Costa Rica.....	—	—	—	—	10	—	—	—	—	10
Cuba.....	—	—	—	—	—	9	—	—	—	9
El Salvador.....	1	—	—	—	3	—	—	—	—	4
Guatemala.....	—	—	—	—	1	—	—	—	—	1
Honduras.....	—	—	1	—	2	—	—	—	—	3
Mexico.....	—	—	—	—	2	—	29	—	—	31
Nicaragua.....	1	—	—	—	—	—	—	—	—	1
Panama.....	2	—	—	—	1	—	1	—	—	4
Paraguay.....	1	—	—	—	—	—	—	—	—	1
Peru.....	—	—	—	—	—	—	—	13	—	13
Uruguay.....	1	—	—	—	—	—	—	—	—	1
Venezuela.....	—	—	—	—	—	—	—	—	24	24
Total.....	90	12	19	25	20	9	30	17	25	247

— None.

TABLE 42. NUMBER OF STATISTICAL AUXILIARIES RECEIVING TRAINING IN 1970.

Country	Courses		No. of students trained
	No.	Duration	
Argentina.....	15	6-12 weeks	358
Bolivia.....	1	4½ months	18
British Honduras.....	1	3 weeks	10
Colombia.....	1	2½ months	13
Costa Rica.....	1	2 months	22
Cuba.....	{ 1	2 weeks	39
	{ 5	11 months	161
Ecuador.....	3	1 month	114
El Salvador.....	1	3 months	22
Haiti.....	1	3 months	50
Jamaica.....	1	1 week	5
Mexico.....	1	6 weeks	22
Panama.....	1	1 month	24
Paraguay.....	2	2 weeks	35
Peru.....	{ 3	6 weeks	83
	{ 1	2 weeks	25
Trinidad and Tobago.....	1	1 week	12
Venezuela.....	1	6 months	17
Total.....	41		1,030

(Argentina, Chile, Colombia, Cuba, Mexico, and Peru) for 190 students. Three of the courses included medical records and hospital statistics as part of the curriculum. In three other countries, 57 students were enrolled in courses on medical records and hospital statistics of five, six, and 11 months' duration. The 247 students enrolled in these courses were from 17 countries (Table 41). Those studying outside their own countries were awarded fellowships from PAHO.

In Argentina in 1966 it was estimated that 400 statisticians with training at the intermediate level would be needed. This goal has been achieved in the intervening years. One hundred had been trained from 1962 to 1965. In 1970 alone, three courses were given in Argentina for 90 persons: one at the School of Public Health of the University of Buenos Aires, one in Buenos Aires Province, and one in Santa Fe. All three courses had the same curriculum and requirements.

In Brazil a course on medical records was given for the first time at the University Hospital in Bahia. The twelve students from five states and the Federal District were prepared to provide auxiliary training as well as to improve medical records departments in hospitals.

Auxiliary-level training began to receive attention in the Region about 1965, and in 1970 reports were received of 41 courses in 16 countries for 1,030 students (Table 42). These courses generally lasted from one week to six months, with a median of six weeks. The majority were for auxiliary personnel for hospital records systems.

Special mention should be made of the large numbers of auxiliaries trained in Argentina (358), Cuba (200), Ecuador (114), and Peru (108). One-month courses, the first in the country, were held in three different cities in Ecuador; plans were made to train personnel for all hospitals with over 50 beds, and several courses were scheduled for 1971.

The auxiliary-level courses in Cuba give a very extensive type of training. Statistical auxiliaries are awarded a certificate at the end of two years (the first in classes, the second in practice). A limited number of trainees continue with a third year of classes, constituting the intermediate-level training.

Other countries and areas providing auxiliary training for the first time included British Honduras, Costa Rica, Haiti, and Mexico. One short course in Peru was given at the School of Public Health for 25 statisticians who would later be instructing civil registrars.

A survey in Colombia revealed that most of the 777 employees working in medical records in 345 hospitals were without training. A pilot course was given in 1970, to be followed by an intensive activity in the training field. Lack of trained personnel in hospitals was recognized as the greatest deterrent to achieving good organization of medical records departments.

Progress in both intermediate- and auxiliary-level training in Latin America has been good, but continuing efforts are needed to increase the numbers trained and to improve the training.

The greatest need is for *professional statisticians and medical records librarians*. The School of Public Health of the University of Chile began training professional-level health statisticians in 15-month courses in 1961. Since that time, the course content has frequently been reviewed and improved. In recent years special courses and training have been organized for staff of the Biostatistics Department in order to introduce new specialized subjects into the curriculum. In 1970 the first 22-month course in biostatistics was initiated to prepare statisticians for teaching and research in medical and public health schools as well as for key posts in the statistics departments of ministries of health. Twelve students were enrolled. Consultants were provided for this course to teach non-parametric statistics, sampling, and operations research. The computer acquired by the School of Medicine was used to demonstrate computer techniques. The Biostatistics Department also carried out research on child mortality and other subjects. This University is the only center in the Region providing, in the Spanish language, a regular program of specialized training in statistics at the professional level.

The Biostatistics and Demography Center was established in 1969 in Buenos Aires, under an agreement between the School of Medical Sciences of the National University, the Secretariat of State for Public Health, and the Organization. Eleven persons were on the staff in 1970. Short courses were conducted both at the Center and in other parts of the country. In 14 courses on statistics and nine on demography, the attendance totaled more than 600. Staff of the Center also provided advisory services on statistics and on research design and analysis to personnel of the School and the Secretariat, and to other research centers.

The Department of Mathematics of the School of Medicine of Ribeirão Preto, Brazil, also provided training in statistics applied to medical problems; two PAHO fellowships were awarded for this course in 1970. Short-term consultants conducted short courses for faculty of medical schools in Fortaleza and Pôrto Alegre, Brazil, and in Asunción, Paraguay, on general statistical methodology and design of experiments.

With PAHO fellowships, three students from Brazil, Cuba, and Ecuador attended the professional-level course in Chile; six statisticians from Argentina (3), Brazil (1), Colombia (1), and Costa Rica (1) studied in an academic course in the United States of America; and three medical records librarians from Argentina, Colombia, and Jamaica were enrolled in courses in U.S. universities. Other medical records librarians from Argentina, Costa Rica, and Jamaica received travel fellowships to observe organization of courses and departments in hospitals in the United States or in Puerto Rico and Venezuela. Several persons received training in computer sciences in the United States and Mexico.

Additional training centers are urgently needed in Latin America to prepare statisticians to give leadership to programs for improving health statistics and the use of statistical methodology in research. Professional-level courses for medical records librarians are also essential. In Argentina, preliminary steps were taken to include a course on medical records and hospital statistics in the Biostatistics and Demography Center. In this three-stage course, the first year would represent the intermediate-level course currently being given; the second stage, to begin in 1971, would provide a year of training to persons who completed the first stage; and on completion of the third stage, the professional would receive a university degree.

Through the Pan American Program for **Health Planning**, the Organization stepped up its cooperation in the

training of personnel in the field of planning. During the year international courses were held in Chile and Jamaica (see Chapter IV).

In regard to **administrative methods and practices**, assistance was given to the University of Buenos Aires in an intensive course on health administration, to Brazil in a course on administration of health services in Pôrto Alegre, to Uruguay in a seminar for hospital administrators, and to the University of Chile in the sixth course of administrative training for public health officers.

FELLOWSHIPS

The Organization's fellowship program continued to provide training opportunities to individuals in an attempt to overcome the manpower shortages that hamper the execution of health programs. Most of the awards made in 1970 went to personnel in the health services, but 14.4 per cent were granted to teaching personnel.

The distribution of fellowships followed more or less the pattern of previous years. Thus, of the 935 awards to individuals in countries of the Americas, 45.8 per cent were for intensive short courses organized or assisted by PAHO/WHO; 15.2 per cent were for academic studies; and 33.8 per cent for travel grants or observational visits (Table 43).

By field of study, the distribution of fellowships was in line with the general program of work of the Organization: 23.4 per cent for public health administration studies; 8 per cent for environmental sanitation; 10.9 per cent for nursing; 19.6 per cent for communicable diseases; 14.4 per cent for medical education and related sciences; 15.7 per cent for other health services; 7 per cent for maternal and child care; and 0.09 per cent for clinical medicine (Tables 44 and 45).

The Organization continued to receive collaboration and assistance from educational institutions in the Americas and in other Regions for the training of fellows. Every effort was made to place fellows in countries where language, living conditions, and health problems are similar to those of their country of origin.

Of all studies, 17 per cent were carried out in the United States of America and Canada; 59 per cent in Latin America; 8 per cent in the English-speaking Caribbean; and 16 per cent in other WHO Regions (Table 46). Of the latter, 38 per cent were carried out in Europe, most of them in interregional courses sponsored and organized by WHO Headquarters.

The distribution of fellows by profession is closely

TABLE 43. FELLOWSHIPS AWARDED IN THE AMERICAS, BY COUNTRY OF ORIGIN AND TYPE OF TRAINING, 1970.

Country of origin of fellows	Type of training				Total	
	Courses organized or assisted by PAHO or WHO			Regular academic courses		Travel grants and other awards
	Short group courses	Nonacademic	Academic			
Argentina.....	23	3	2	13	17	58
Barbados.....	7	—	7	1	—	15
Bolivia.....	9	1	2	15	12	39
Brazil.....	16	2	—	15	29	62
Canada.....	—	—	—	1	—	1
Chile.....	20	—	4	5	31	60
Colombia.....	14	1	5	14	36	70
Costa Rica.....	8	7	1	2	4	22
Cuba.....	4	—	1	10	25	40
Dominican Republic.....	4	1	—	3	7	15
Ecuador.....	5	1	1	5	15	27
El Salvador.....	7	10	1	2	9	29
Guatemala.....	9	7	—	4	4	24
Guyana.....	9	—	3	6	1	19
Haiti.....	—	—	—	1	8	9
Honduras.....	11	5	2	7	9	34
Jamaica.....	24	—	—	5	19	48
Mexico.....	15	4	—	2	28	49
Nicaragua.....	6	9	1	—	1	17
Panama.....	8	15	2	6	5	36
Paraguay.....	4	2	1	3	7	17
Peru.....	13	5	3	5	17	43
Trinidad and Tobago.....	32	—	5	1	9	47
United States of America.....	—	—	—	—	23	23
Uruguay.....	11	—	2	2	10	25
Venezuela.....	8	3	1	10	23	45
British Territories.....	32	—	10	5	12	59
French Territories.....	—	—	—	—	1	1
Surinam and the Netherlands Antilles.....	—	—	—	—	1	1
Total.....	299	76	54	143	363	935

— None.

related to the nature and development of the programs. Ninety per cent of all fellowships were awarded to professional personnel and 10 per cent to nonprofessionals. Of the former, 36 per cent were physicians; 16 per cent nurses; 9 per cent engineers; 3 per cent dentists; 4 per cent veterinarians; and 31 per cent of other professions (Table 48).

In addition to the 935 fellows who received awards in this Hemisphere, the Organization made study placement arrangements in the Americas for 304 fellows from other WHO Regional Offices (Table 49). Fifty-three per cent of these pursued academic studies in the United States or Canada, and 47 per cent made observational visits there and in various Latin American countries.

All the preceding data refer to the 935 awards made in the Americas and the 304 fellows who arrived for

study during the reporting year (Tables 43 to 50). There were, however, an additional 629 fellows who had begun their studies in 1969 and continued under the Organization's technical and administrative supervision through the completion of their studies in 1970. Thus, PAHO handled a total of 1,868 fellows during the year, representing an increase of approximately 13 per cent over the total for 1969. In addition, it arranged a number of study programs for PAHO/WHO staff from this and other Regions.

In the course of the year, the Organization undertook the evaluation of the fellowship program in four countries to obtain information on the impact of the program on the health services of the Region. Interviews were held with approximately 145 fellows in Bolivia, Colombia, Ecuador, and Peru. The data obtained were partially

TABLE 44. FELLOWSHIPS AWARDED IN THE AMERICAS, BY FIELD OF STUDY AND COUNTRY OF ORIGIN, 1970.

Field of study	Country of origin of fellows																											Total		
	Argentina	Barbados	Bolivia	Brazil	Canada	Chile	Colombia	Costa Rica	Cuba	Dominican Republic	Ecuador	El Salvador	Guatemala	Guyana	Haiti	Honduras	Jamaica	Mexico	Nicaragua	Panama	Paraguay	Peru	Trinidad and Tobago	United States of America	Uruguay	Venezuela	British Territories		French Territories	Surinam and the Netherlands Antilles
Health organization																														
Public health administration	5	—	7	7	—	—	3	2	7	3	5	3	3	5	—	3	9	7	—	—	5	3	—	23	1	3	2	5	—	—
Hospital and medical administration	2	—	3	1	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	3	1	—	—	—	—
Other	4	1	2	6	—	7	10	3	6	1	2	2	—	—	3	4	10	6	1	3	2	5	1	1	3	6	5	—	—	94
Sanitation																														
Sanitary inspection	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Sanitary engineering	—	—	1	1	—	—	2	—	—	1	—	1	—	—	—	2	—	—	—	—	—	—	—	—	1	2	—	3	—	11
Other	3	—	5	3	—	8	2	2	1	3	2	2	1	3	2	1	2	7	2	—	1	4	1	—	2	—	2	—	1	60
Nursing																														
Nursing education	1	2	—	—	1	3	2	1	—	—	—	—	1	4	—	2	7	1	—	—	—	—	1	7	7	—	2	8	—	50
Public health nursing	—	—	2	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	6
Nursing services	—	4	1	—	—	—	1	2	—	1	—	2	—	1	1	2	8	1	—	—	3	—	—	2	1	1	15	—	—	46
Maternal and child health	3	—	2	2	—	7	3	5	3	—	1	4	5	—	4	4	5	3	1	2	8	2	6	1	2	5	—	—	—	66
Other health services	4	1	2	4	—	3	2	4	—	3	—	8	5	3	—	4	5	3	7	7	9	4	2	7	—	—	3	9	—	92
Mental health	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	2	—	—	1	—	—	—	—	—	—	—	—	4
Health education	—	1	1	—	—	—	—	—	—	—	—	1	1	1	—	1	—	—	—	—	—	—	—	1	—	—	—	1	—	8
Nutrition	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Health statistics	4	—	4	2	—	—	2	1	2	—	1	—	—	—	—	1	2	—	1	3	—	—	—	—	—	1	—	—	—	22
Dental care	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Rehabilitation	2	—	—	—	—	1	1	—	2	—	—	—	—	—	—	2	1	1	—	—	—	—	—	—	1	—	2	—	—	9
Control of pharmaceutical preparations	1	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	1	1	—	—	—	—	—	1	—	—	—	—	—	6
Communicable diseases																														
Malaria	—	—	1	2	—	—	5	—	—	—	1	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11
Tuberculosis	4	—	2	2	—	2	—	—	—	2	—	1	2	—	—	—	7	2	1	—	1	—	—	—	—	1	—	—	—	30
Zoonoses	—	—	1	1	—	1	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	2	—	—	—	7
Foot-and-mouth disease	—	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1	1	—	—	8
Leprosy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	1
Other communicable diseases	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	93
Laboratory services	14	6	2	8	—	8	6	2	7	—	—	2	2	1	—	6	2	4	1	1	—	—	4	4	—	4	2	7	—	5
Veterinary public health	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	5
Other	2	—	1	3	—	1	6	—	—	—	1	—	1	1	—	1	—	—	—	—	2	4	1	1	—	3	—	1	—	28
Medical education and related sciences	8	—	—	16	—	18	18	—	10	1	10	2	1	—	1	2	2	6	—	—	1	15	—	8	2	14	—	—	—	135
Clinical medicine	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	2	—	—	7
Total	58	15	39	62	1	60	70	22	40	15	27	29	24	19	9	34	48	49	17	36	17	43	47	23	25	45	59	1	1	935

— None.

TABLE 45. FELLOWSHIPS AWARDED IN THE AMERICAS, BY FIELD OF STUDY, TYPE OF AWARD, AND COUNTRY OF ORIGIN, 1970.

Field of study and type of award	Country of origin of fellows																											Total		
	Argentina	Barbados	Bolivia	Brazil	Canada	Chile	Colombia	Costa Rica	Cuba	Dominican Republic	Ecuador	El Salvador	Guatemala	Guyana	Haiti	Honduras	Jamaica	Mexico	Nicaragua	Panama	Paraguay	Peru	Trinidad and Tobago	United States of America	Uruguay	Venezuela	British Territories		French Territories	Surinam and the Netherlands Antilles
Public health administration																														
Courses organized or sponsored by PAHO/WHO.....	3	1	5	7	—	4	5	3	3	1	4	2	2	4	—	4	11	4	1	4	2	3	3	21	—	4	3	9	—	110
Academic courses.....	6	—	6	5	—	1	3	1	7	1	2	1	1	1	—	2	3	—	—	3	3	1	—	—	1	4	—	—	52	
Travel grants.....	2	—	1	2	—	2	7	1	3	2	2	2	1	—	3	1	5	9	—	1	—	1	3	2	4	2	1	—	57	
Sanitation																														
Courses organized or sponsored by PAHO/WHO.....	1	—	1	—	—	5	2	2	—	—	1	1	1	—	—	1	—	2	2	—	—	2	—	—	—	—	—	—	21	
Academic courses.....	—	—	—	1	—	—	2	—	—	—	—	1	—	3	—	1	—	—	—	—	—	—	—	—	—	—	—	—	11	
Travel grants.....	2	—	6	3	—	3	—	—	1	4	1	1	—	—	2	1	2	5	—	—	1	2	1	1	4	—	2	—	43	
Nursing																														
Courses organized or sponsored by PAHO/WHO.....	1	6	—	—	—	—	—	2	—	—	—	2	—	5	—	2	7	1	—	2	—	—	9	—	1	—	19	—	57	
Academic courses.....	—	—	3	—	1	3	—	1	—	1	1	—	1	—	—	2	1	—	—	1	—	1	—	—	—	2	—	—	18	
Travel grants.....	—	—	—	1	—	—	3	—	—	—	—	—	—	—	1	—	7	1	—	—	—	—	—	8	—	1	5	—	27	
Maternal and child health																														
Courses organized or sponsored by PAHO/WHO.....	2	—	2	1	—	4	2	3	—	—	1	2	4	—	—	4	—	—	2	7	2	5	—	—	2	5	—	—	48	
Academic courses.....	1	—	—	1	—	3	1	2	3	—	—	2	1	—	—	—	—	—	1	—	1	—	—	1	—	—	—	—	18	
Other health services																														
Courses organized or sponsored by PAHO/WHO.....	3	1	1	1	—	2	1	5	1	1	1	8	5	2	—	5	3	6	8	10	1	1	5	—	—	—	7	—	78	
Academic courses.....	5	1	5	4	—	—	4	—	2	1	—	—	1	1	—	1	1	—	—	2	—	—	1	—	—	1	1	—	31	
Travel grants.....	3	—	1	1	—	3	—	—	3	1	1	2	—	1	—	—	4	1	1	1	3	1	2	2	—	5	2	—	38	
Communicable diseases																														
Courses organized or sponsored by PAHO/WHO.....	15	6	3	9	—	8	8	1	1	2	—	2	4	1	—	2	2	5	3	2	2	5	2	—	5	3	7	—	98	
Academic courses.....	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	1	—	—	—	2	—	—	—	—	—	6		
Travel grants.....	5	—	4	10	—	3	14	1	6	—	3	1	2	—	2	5	—	6	—	—	2	3	3	1	2	5	1	1	80	
Medical education and related sciences																														
Courses organized or sponsored by PAHO/WHO.....	3	—	—	—	—	1	2	—	—	1	—	1	—	—	—	—	1	1	—	—	—	5	—	—	1	1	—	—	17	
Academic courses.....	1	—	—	5	—	1	5	—	1	—	2	—	1	—	1	—	—	—	—	—	—	1	—	—	1	3	—	—	23	
Travel grants.....	4	—	—	11	—	16	11	—	9	—	8	1	—	—	—	2	1	4	—	1	—	9	—	8	—	10	—	—	95	
Clinical medicine																														
Academic courses.....	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	2	
Travel grants.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	5	
Total.....	58	15	39	62	1	60	70	22	40	15	27	29	24	19	9	34	48	48	17	36	17	43	47	23	25	45	59	1	935	

— None.

TABLE 46. FELLOWSHIPS AWARDED IN THE AMERICAS, BY COUNTRY OF ORIGIN AND BY COUNTRY OR REGION OF STUDY, 1970.^a

Country of origin	Countries of study in the Region of the Americas																				Other Regions of study											
	Argentina	Barbados	Bolivia	Brazil	Canada	Chile	Colombia	Costa Rica	Cuba	Dominican Republic	Ecuador	El Salvador	Guatemala	Guyana	Honduras	Jamaica	Mexico	Nicaragua	Panama	Paraguay	Peru	Trinidad and Tobago	United States of America/Puerto Rico	Uruguay	Venezuela	British Territories	Africa	Eastern Mediterranean	Europe	South-East Asia	Western Pacific	
Argentina.....	9	—	—	7	3	7	8	—	—	—	—	—	—	—	—	—	3	—	—	—	2	—	22	1	8	—	—	—	—	—	—	—
Barbados.....	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bolivia.....	4	—	—	2	—	8	7	—	—	—	—	—	—	—	—	—	—	—	—	—	6	1	1	7	3	—	—	—	—	—	—	—
Brazil.....	7	—	—	5	—	12	8	2	—	—	—	1	2	—	—	—	—	—	—	—	1	—	23	1	9	—	—	—	—	—	—	—
Canada.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chile.....	7	—	—	—	—	1	15	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	17	4	7	—	—	—	—	—	—	—
Colombia.....	6	—	—	19	—	11	—	1	—	—	—	—	—	—	—	—	12	—	—	5	2	23	1	13	—	—	—	—	—	—	—	—
Costa Rica.....	2	—	—	3	—	7	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
Cuba.....	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dominican Republic.....	—	—	—	1	—	2	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ecuador.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
El Salvador.....	2	—	—	8	—	9	10	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guatemala.....	2	—	—	2	—	7	5	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guyana.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Haiti.....	—	2	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Honduras.....	—	—	—	2	—	1	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jamaica.....	—	7	—	—	—	7	5	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mexico.....	3	—	—	—	—	—	11	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nicaragua.....	1	—	—	8	—	1	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Panama.....	2	—	—	2	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Paraguay.....	1	—	—	3	—	5	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Peru.....	6	—	—	12	—	12	13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trinidad and Tobago.....	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
United States of America.....	3	—	—	3	—	3	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Uruguay.....	7	—	—	4	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Venezuela.....	8	—	—	—	—	6	2	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
British Territories.....	—	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
French Territories.....	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Surinam and the Netherlands Antilles.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total.....	70	34	1	99	15	140	108	30	1	1	2	3	61	1	2	46	45	2	37	1	23	51	217 ^b	18	100	7	3	5	79	12	13	—

--- None.

^a Figures in this table reflect only the number of visits made by fellows to the countries listed therein.

^b Of these, 63 studied in Puerto Rico.

TABLE 47. FELLOWSHIPS AWARDED IN THE AMERICAS TO PROFESSORS OF SCHOOLS OF PUBLIC HEALTH, SCHOOLS OF MEDICINE AND RELATED SCIENCES, BY FIELD OF STUDY AND COUNTRY OF ORIGIN, 1970.

Field of study	Country of origin of fellows																	
	Argentina	Brazil	Chile	Colombia	Cuba	Dominican Republic	Ecuador	El Salvador	Guatemala	Haiti	Honduras	Jamaica	Mexico	Panama	Peru	United States of America	Uruguay	Venezuela
Organization of public health teaching																		
Public health			1													1		1
Medical care administration		1																
Epidemiology	1		1															
Health statistics		1													1			
Sanitary engineering																		
Health education—schools		1														1		
Public health nutrition		1											1					
Hospital administration		1																
Dental public health		1																
Microbiology		1																
Health education		1																
Nutrition		1													1			1
Organization of medical education																		
Physiology			1															3
Preventive medicine		1													1			1
Pathology			1						1									2
Nutrition																		3
Epidemiology		2																2
Medical sociology	1																1	4
Hospital administration				1														1
Genetics	1																	1
Medical education teaching	3	2	5	4	1		5			1	1	1	1		4		1	33
Neonatology			1															1
Pediatrics	1	1	3	1										1	2			9
Microbiology								1										1
Parasitology				1														1
Surgery			2	1														3
Psychiatry																		1
Orthopedics																		4
Biochemistry				1														1
Veterinary public health		1																1
Entomology																		1
Immunology			1										1			1		5
Medical care		1										1	1					1
Anatomy																		1
Health statistics																		1
Cardiovascular disease			1															1
Renal disease																		1
Histology																		1
Organization of dental education																		1
Organization of veterinary medical education		1		3			5								4	2		16
Organization of sanitary engineering education				2	1	1									1	1		5
Pharmaceutical teaching																		4
Organization of nutrition education				6												1		1
Total	8	16	13	18	10	1	10	2	1	1	2	2	6	1	15	8	2	14
																		135

— None.

III. DEVELOPMENT OF HUMAN RESOURCES

TABLE 48. PROFESSION OR OCCUPATION OF FELLOWS, 1970.

Profession or occupation	Number
Physician.....	332
Dentist.....	25
Engineer.....	76
Veterinarian.....	38
Nurse.....	149
Other professions.....	278
Sanitary inspector.....	18
Other nonprofessional occupations.....	19
Total.....	935

analyzed and a preliminary report on the findings was prepared. The first results were very satisfying, since the representative sampling showed that most of the former fellows were holding posts connected with the training they had received.

Computerization of the data related to the fellowship program continued to progress during 1970: 20 computer programs were completed and implemented in the Fellowship Section. Also, preliminary work commenced on the systems design for the input of data for the fellowship

TABLE 50. EXPENDITURES ON FELLOWSHIPS IN THE AMERICAS, BY SOURCE OF FUNDS, 1969 AND 1970.

(In U.S. dollars^a)

Source of funds	1969	1970
Pan American Health Organization		
Regular budget.....	281,701	439,328
Special Malaria Fund.....	2,680	4,740
Community Water Supply Fund.....	11,210	3,290
Other funds.....	84,659	89,696
Total.....	380,250	537,054
World Health Organization		
Regular budget.....	1,252,795	1,084,074
Technical assistance funds.....	90,280	128,380
Other funds.....	17,405	55,455
Total.....	1,360,480	1,267,909
PAHO/WHO total.....	1,740,730	1,804,963 ^b

^a Figures represent amounts obligated each year.

^b This amount includes \$38,475 used for extensions of prior years' awards.

evaluation study and for the development of a fellowship resources retrieval file.

TABLE 49. FELLOWS FROM OTHER REGIONS WHO BEGAN STUDIES IN THE AMERICAS, BY FIELD OF STUDY, TYPE OF AWARD, AND REGION OF ORIGIN, 1970.

Field of study and type of award	Region of origin and number of fellows					
	Africa	Eastern Mediterranean	Europe	South-East Asia	Western Pacific	Total
Public health administration						
Academic courses.....	3	8	2	8	9	30
Travel grants.....	—	1	5	2	3	11
Sanitation						
Academic courses.....	16	1	6	8	1	32
Travel grants.....	3	2	6	3	8	22
Nursing						
Academic courses.....	10	5	—	9	6	30
Travel grants.....	2	2	4	7	—	15
Maternal and child health						
Academic courses.....	—	—	—	1	1	2
Travel grants.....	—	—	—	3	—	3
Other health services						
Academic courses.....	7	3	1	9	7	27
Travel grants.....	1	1	3	12	6	23
Communicable diseases						
Academic courses.....	1	—	—	4	1	6
Travel grants.....	4	6	5	10	7	32
Medical education and related sciences						
Academic courses.....	2	7	1	11	3	24
Travel grants.....	4	12	7	1	1	25
Clinical medicine						
Academic courses.....	10	—	—	1	—	11
Travel grants.....	1	6	3	1	—	11
Total.....	64	54	43	90	53	304

— None.

IV. HEALTH PLANNING

The Organization's program of cooperation with the countries on long-term planning was carried forward in conformity with Resolution XXVII of the XIX Meeting of the Directing Council of PAHO and Resolutions WHA21.29 and WHA22.53 of the Twenty-First and Twenty-Second World Health Assemblies, respectively.

Recommendations of the Executive Committee and the Conference

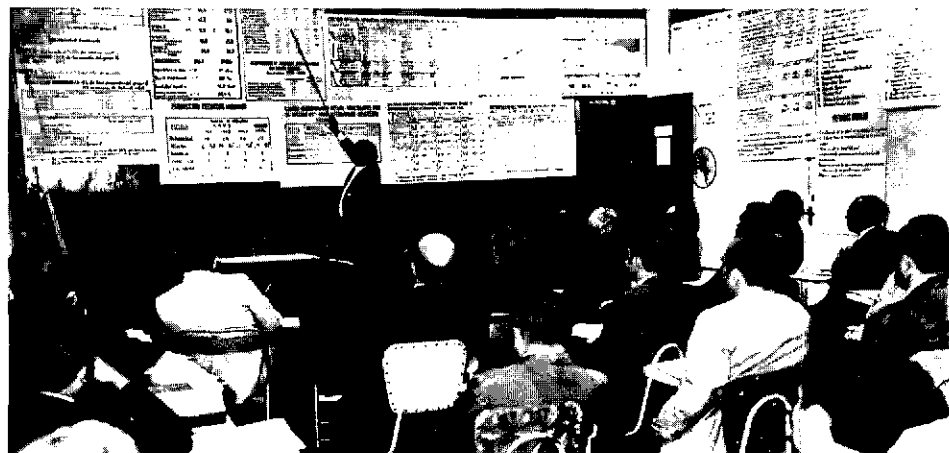
A report was submitted to the 64th Meeting of the Executive Committee explaining the measures taken and the implementation given to the "Quadrennial Projections of PAHO/WHO Collaborative Activities," the basic purpose of which is to provide a tool for improving cooperation between the Organization and the countries through a continuing process of joint programming. In Resolution XV, the Committee approved the report submitted and recommended that the program and budget estimates of the Organization reflect the importance assigned to the critical areas; that the projects for the Americas to be included in the Fifth General Program of Work of WHO for 1973-1977 be based on joint programming by the Governments of the Region and the Organization; and that the Member Countries continue

their efforts to develop and improve health planning as a part of economic and social development planning.

In accordance with this resolution, the report on long-term planning and evaluation was submitted to the XVIII Pan American Sanitary Conference. The Conference approved the report (Resolution XXXVIII) and recommended to Governments that they adopt or continue to apply the joint health planning procedures at the national level. It also requested the Director to continue the studies for the improvement of the procedure so as to ensure maximum use of the available resources; to continue to apply the joint programming procedure in the formulation of the Organization's programs and budgets; and to report on the results of his efforts to the XX Meeting of the Directing Council.

The Conference also examined the question of long-term financial indicators, the definition, preparation, and utilization of which is an inseparable part of the procedures for health planning. In Resolution XXXIX, after recognizing that this highly complex subject requires more detailed study, it recommended, in accordance with Resolution EB45.R13 of the Forty-Fifth Session of the WHO Executive Board, that consultation be undertaken with the Governments and that discussion of the question be postponed until the next meeting of the Directing Council. At the same time it requested the Director-

Recommendations on health policy are discussed with authorities of Costa Rica.



General of WHO to include the resolution in the report to be prepared for the Forty-Seventh Session of the WHO Executive Board.

Program of Work

In 1970, the program of work in the field of health planning covered the following areas: promotion and development of planning procedures at the country level, including collaboration with the Inter-American Committee on the Alliance for Progress (CIAP), the Inter-American Development Bank, and other international organizations; support for the Pan American Center for Health Planning; and internal programming of the Organization's cooperation with the countries.

In the course of the year an analysis was made of the situation in regard to planning in Latin America and the Caribbean area, for the purpose of redirecting the strategy for assisting countries so as to include the active participation of the aforementioned Center. To this end a working group was set up in Caracas consisting of the Zone planning advisers and officials of the Center.

Technical assistance was provided in programming investments as a multidisciplinary operation. These activities, carried out in coordination with CIAP and the international lending agencies, had to do with the definition of a strategy, the preparation of guidelines and methodological outlines for sectoral analysis, institutional diagnosis, analysis of investment plans, and the formulation and evaluation of projects in the health sector. These outlines were used in the analyses carried out in Honduras, Panama, and Paraguay. In Honduras assistance was also given in the preliminary stage of formulation of a national sectoral plan and in preinvestment studies.

Country Representatives were provided with a technical

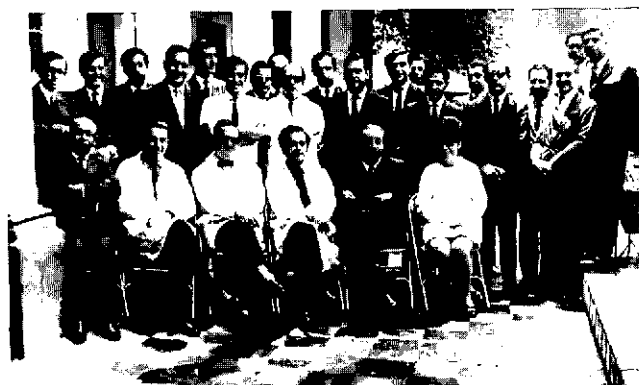
guide for the preparatory stage of evaluation and reformulation of health plans in Antioquia (Colombia) and in Costa Rica and Panama.

In conjunction with the Pan American Center for Health Planning, two working groups on planning methodology were set up: one for department heads of PASB and the other for officials of the International Health Office of the U.S. Public Health Service. In the research field, in addition to the activities described in respect of the Center (project AMRO-3715), a simplified method was developed in collaboration with the Center's Research Division for working out country typologies embracing economic and social development and health planning. The Organization furnished technical assistance for the study on health resources in Argentina and took part in a national seminar on global methods and models for analysis and projections in the health sector, organized by the Argentine authorities. It also participated in the restructuring of the program of work of the Planning Center for the period 1971-1974.

Strenuous efforts were made to put the quadrennial projections into practice. At this initial stage of the process, the method revealed weak points and gaps, and these began to be remedied in accordance with the recommendations of Departments, Zones, and Country Representatives. The revised method will undergo a field trial in Costa Rica, and the results will be communicated to the countries in March 1971. In addition, the first steps were taken to examine the quadrennial projections scheme in the light of the project analysis system undertaken in Geneva by WHO. It is felt that these are two phases of one and the same process which it is hoped to link together and if possible to integrate into a single method during the first half of 1971.

Pan American Center for Health Planning

This Center, which has its headquarters in Santiago, Chile, began to operate officially, with the support of the United Nations Development Program, upon signature of the relevant agreement by six countries of the Hemisphere. The chief technical adviser and the other staff were appointed. Among the activities in the field of training, mention should be made of the ninth international course in health planning held in Santiago from 27 July to 13 November, with the participation of 30 professional workers from 14 countries of the Americas. A similar course in English was held in Kingston, Jamaica, from 28 September to 5 December, in conjunc-



Refresher course in health planning held for officials and students in Colombia (October 1970).

tion with the University of the West Indies; it was attended by 12 professionals from the English-speaking countries of the Caribbean and one from the Philippines.

A refresher course in health planning was offered in Colombia in October. Eight selected former students of the international course in Chile participated, as well as 17 teachers and students of the School of Public Health.

With regard to research, work was completed on the design of a numerical experimentation model, a reduced version of which was programmed in the Computer Department of the Central University of Venezuela. A similar model was prepared for Argentina. Notable progress was made in working out health typologies, and in regard to the methodological model, work continued on the preparation of its computer program, which will

make it possible to go more deeply into the study of variables and other aspects of the method. In the study of the relationship between health and other components of the development process, a partial examination was made of the available information and the corresponding initial analysis was undertaken. In the last quarter of the year the program of activities for the period 1971-1974 was prepared, with special reference to the diversification of training through the promotion of basic courses in the various countries, the organization of advanced and special courses at the Center's headquarters, the decentralization of research through the promotion and expansion within each country of studies coordinated with the program of the Center, and the establishment of a technical and scientific information system.

V. RESEARCH DEVELOPMENT AND COORDINATION

The Organization's activities in the field of research during 1970 continued to focus on the problems of highest priority and of greatest practical interest.

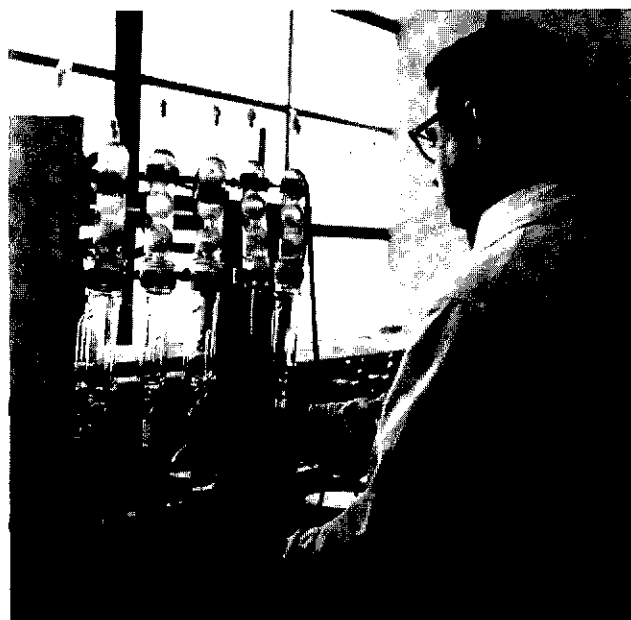
Operations research is of primary concern to PAHO/WHO as a means of furthering the concept of individual and collective health not only as an asset and an essential need, but also as an inalienable right and a value of present-day society. Research, in sum, is one of the basic instruments for protecting, promoting, and restoring health, and in line with that principle the Organization endeavors to extend as widely as possible the range of epidemiological and administrative research, the development of multinational programs, and the expansion and interchange of biomedical communications and information. All of these aspects are referred to in the present chapter.

ADVISORY COMMITTEE ON MEDICAL RESEARCH

The Ninth Meeting of the PAHO Advisory Committee on Medical Research was held from 15 to 19 June, in Washington, D.C. In a special one-day session the question of metabolic adaptation and nutrition was thoroughly reviewed. The first part of the program provided a molecular view of the factors concerned with homeostasis and adaptation as responses to diet. It was concluded that nutrition cannot ignore the role of the endocrine system and the metabolic events that underlie adaptation. The changing ideas of normality, adaptability, and positive health necessitate a recognition of molecular concepts in dealing with problems of nutrition. In the second half of the session, attention was given to ways of defining the range of adaptation compatible with normal function and to the criteria for distinguishing between normal and abnormal. As medicine moves more and more toward the study of populations and the prevention

of ill health, it becomes increasingly important to establish the normal ranges of variation and, concomitantly, the limits beyond which adaptation breaks down and organisms progress toward diseases. The proceedings of the session were being prepared for publication.

The Advisory Committee reviewed the findings of the nutrition surveys of Central America and Panama conducted by the U.S. Interdepartmental Committee on Nutrition for National Defense (ICNND) and INCAP. The purpose of the surveys was to provide a description of the populations of the six member countries of INCAP in terms of diet, and of the physical, sociocultural, and microbiological factors that relate to the problem of nutrition. The results showed serious shortages of calories, protein, vitamin A, riboflavin, and iodine in a substantial proportion of the families studied, as well as a high prevalence of anemia, caused mainly by deficien-



During the last 20 years the PAHO research program has made significant contributions in a number of fields of broad and immediate scientific and public health importance in the Americas.



Session of the Ninth Meeting of the PAHO Advisory Committee on Medical Research (Washington, D. C., 15-19 June 1970).

cies of iron and of folic acid. Goiter was also common in all the countries except Guatemala, where the incidence has been strikingly reduced as a result of the iodized salt program. The prevalence of parasitic and microbial infections was very high, showing its effects in increased stress and loss of nutrients from the body. Very low incomes and levels of education, and poor means of communication and exchange of information characterized the rural populations, thus making the implementation of classical public health measures very difficult. The value of such surveys as a basis and as a stimulus for programs of nutrition improvement in the countries, and as teaching material for medical schools and technical groups in universities and in governmental and other agencies was stressed by the Advisory Committee.

The Committee considered the report on an intensive and selective survey of medical mycological centers in Latin America which revealed strong points in every phase of medical mycology but showed that virtually all the projects were one-man operations. To help strengthen resources in the Hemisphere for work in this field, a PAHO coordinating committee for the mycoses was established.

The Committee, in reviewing the report on an assessment of the principle centers in which research and training in parasitology are being carried on in tropical America, pointed out the need for improvement of these activities if the countries are to increase their capacity to understand the problems of parasitic diseases and devise means to control them. It recommended the creation of a technical advisory committee on parasitology whose function would be to provide a structure to ensure continuity and maximum efficiency in international cooperation and communications in that field.

Other matters considered by the Advisory Committee

included (a) a report on the PAHO/WHO program for advanced training in immunology, whose main objective is the development in Latin America of creative scientific manpower for the investigation of regional and local health problems; (b) a progress report on a study of pest and vector control techniques related to the intensive use of insecticides, designed to gain an understanding of the ecological consequences of such practices for agriculture, public health, and economic development; and (c) reports on PAHO-sponsored scientific meetings and symposia, including radiation protection, nuclear medicine, mycoses, Chagas' disease, dengue, *Aedes aegypti*-borne diseases, maternal nutrition and family planning, zoonoses, and foot-and-mouth disease.

FIELDS OF RESEARCH

Arthropod-Borne Viruses

Arbovirus encephalitis, including St. Louis and Venezuelan encephalitis, and other arbovirus diseases, such as dengue fever, have caused extensive epidemics in the Western Hemisphere in recent years. There is a widely acknowledged shortage of trained investigators in many fields of medical research, especially investigators competent to plan and carry out programs that include both field and laboratory research.

In the course of studies carried out in Mexico, British Honduras, and Honduras, seven arboviruses were isolated for the first time in Mexico: Tlacotalpan (1961), Venezuelan encephalitis (1963), Nepuyo (1963), Patois (1964), Zegla (1964), St. Louis encephalitis (1965), and Minatitlán (1970). Tlacotalpan and Minatitlán have been described as new arboviruses.

Extensive training in virology is given at the Department of Microbiology, Cornell University Medical College. Field training has been given through an eight-week graduate research and training course in virology, entomology, vertebrate zoology, and ecology held in sites on the tropical Atlantic lowlands of Mexico, and through graduate student participation in field research programs in Mexico, Guatemala, British Honduras, and Honduras. By the end of 1970, 33 trainees had participated in field programs in Mexico including: 6 from Mexico, 1 from Iran, 1 from Jamaica, 1 from Japan, 1 from Peru, and 23 from the United States of America.

Also by the year's end, a total of 31 scientific articles

and two theses had been published to describe results of the program, and 13 articles were in preparation.

Malaria

The Organization's research on malaria continued to be directed to finding solutions for the problems that hamper or impede the progress of the eradication programs.

Evaluation of Insecticides

A large-scale field trial was begun in February in El Salvador to ascertain whether propoxur (OMS-33) could interrupt the transmission of malaria when used for the partial spraying of the surface of dwellings, an average of 60 g of active substance being sprayed per dwelling in two swathes, on the ceiling and in the angle between the ceiling and the wall. Sprayings will be repeated every 35 days.

This trial was being carried out on the coastal belt of El Salvador, in an experimental area which contains approximately 25,000 inhabitants and in which *Anopheles albimanus* is highly resistant to DDT. The evaluation was being made in a central area containing 6,300 inhabitants and in a control area with 3,000 inhabitants in which intensive entomological and epidemiological studies will be made. In the control area the attack measures used by the national antimalaria campaign will be applied. According to an analysis of the results obtained in 1970, there was some reduction in prevalence as compared with the control area; however, owing to the previous use of mass drug treatment as an attack measure in the experimental area, and the continuation of that measure in the control area and in all adjacent areas, the differences between the evaluation parameters of the experimental and the control areas were masked by the suppressive effects of the drugs, and the possibility of drawing conclusions was therefore delayed.

The malaria eradication program in Colombia made observations on different levels of DDT and BHC spraying in the area of Bajo Cauca-Nechi. These observations showed (a) that a three-month spraying cycle of 1 g of DDT combined with 0.1 g of BHC per m² is very effective against the main vectors, namely, *A. darlingi* and *A. nuñez-tovari*; and (b) that a three-month spraying cycle of 1 g of DDT per m² is effective against *A. darlingi* but not against *A. nuñez-tovari*.

Chemotherapy Research

Reaction of Plasmodium falciparum to chloroquine. In Panama, *in vivo* tests of the susceptibility of *P. falciparum* to the 4-aminoquinolines indicated the presence of strains with R1 persistence in the trans-Isthmus and the lake area. It is expected that in 1971 *in vitro* studies will more accurately delimit the area of distribution of the strains.



Research on the behavior of *A. albimanus* in houses treated with propoxur (OMS-33) in El Salvador.

Studies on *in vitro* methods for determining *P. falciparum* susceptibility were continued in Brazil. It was considered necessary to gain more experience with the use of this method in susceptible strains and, for that purpose, plans were made to undertake a field study in Haiti in early 1971.

Mass radical treatment to eliminate residual foci of malaria. This project (Bolivia-0201) was being undertaken by the malaria eradication program of Bolivia in order to test a treatment schedule with a combination of chloroquine-primaquine-pyrimethamine in three days for the elimination of residual foci in the inter-Andean valleys in the south of the country. The treated area contains 150 localities with approximately 17,000 inhabitants. In 1970 the population was covered twice, first in September-October, and then in November-December.

The epidemiological data cannot be expected to show any trend in so short a period. As for the evaluation of operations, preliminary data on the first cycle showed a low degree of coverage since, although all the dwellings indicated in the plan had been inspected, only 55 per cent of the inhabitants received the complete three-dose treatment.

Investigation of the Economic Impact of Malaria

This project was initiated in 1968 with the view to

ascertaining the impact of malaria on agricultural families and small rural industries in selected areas of eastern Paraguay, in a region in which agricultural development is just beginning. Collection of field data was completed in July 1970. The data were being coded and prepared for electronic processing and analysis. More detailed information is given in Chapter IX (project Paraguay-0201).

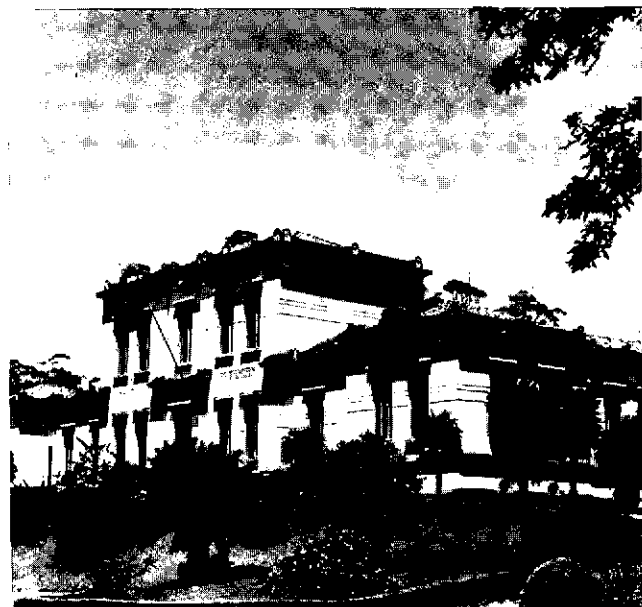
Parasitic Diseases

Although very limited funds were available to support research projects, it was possible to assist several small studies that should result in improved possibilities for control of schistosomiasis and Chagas' disease. These studies are described in Chapter I-A.

In response to the need for an assessment of the extent and quality of training and research on parasitic diseases in the Member Countries, a consultant visited 30 institutions in nine countries and presented recommendations concerning the future of research and training programs. The review made by the PAHO Advisory Committee on Medical Research of the report on these programs was mentioned earlier in this chapter.

Plague

In Brazil the Organization continued to assist the Plague Research Center at Exu (Pernambuco) through



The Butantan Institute houses the WHO Immunology Research and Training Center in São Paulo, Brazil.

consultants who furnished regular advice to national researchers. The object of the research is to identify the factors that have a bearing on the focalization, maintenance, and epizootization of the disease. The results obtained thus far were highly satisfactory; it was established that wild rodents are the real reservoirs of plague, that the disease is maintained in "islands" where the ecological conditions are suitable, and that it reappears periodically in epizootic phases, spreading for short periods to adjacent territories circumscribed by the area of the rodents' habitat. An important discovery was the demonstration of the proneness of *Polygenis sp.* to bite humans and hence its possible role in the incidence of sporadic human cases.

Chronic Diseases

An investigation of the smoking behavior and attitudes of the population of eight Latin American cities where reliable mortality and demographic data are available was undertaken. A tentative questionnaire form was prepared, and official support was obtained from the Governments concerned. The selection was made of local investigators who will be responsible for carrying out the field work in the eight cities. The objectives, general design, and methodology of the study were drawn up.

Zoonoses

An intensive program of research studies was carried out by the Pan American Zoonoses Center in regard to rabies, brucellosis, hydatidosis, tuberculosis, and leptospirosis, as well as in the field of food microbiology. Also, the Pan American Foot-and-Mouth Disease, after strengthening its scientific staff, was able to expand its research studies aimed at the control of that disease. These activities are described in detail in Chapter I-A.

Sanitary Engineering

Research programs in sanitary engineering continued to be carried out with the Organization's assistance and support, in close collaboration with universities. In considering the universities as focal points for these programs, the Organization has followed the guidelines drawn up by its advisory bodies. The catalyzing effect of the projects has been great, since they serve to strengthen the capacity of these institutions for both teaching and

V. RESEARCH DEVELOPMENT AND COORDINATION

service. The discovery of research talent is another of the program's accomplishments. The primary emphasis is on research that helps to further the development of national or local plans in different aspects of sanitary engineering.

The program maintained the same rate of progress as in 1969. There were 17 projects under way in six countries, as described below.

ARGENTINA (National University of Buenos Aires)

1. Dust pollution in work areas

Status: In progress.

Results: No significant results are available as yet.

Objective: In the first stage of the study, to establish a methodology for evaluating the risk of exposure to dust in work areas.

2. Stabilization ponds

Status: The second stage was in progress, the first having been completed in November 1969.

Results: Two ponds were constructed, one aerobic and the other anaerobic. A partial report was prepared on the preliminary work on oxidation ponds. The definitive results will be known when the second stage is completed.

Objective: To obtain more precise information on the effectiveness of this type of treatment in Buenos Aires Province.

3. Treatment of drinking water containing arsenic, vanadium, or fluorides

Status: Completed.

Results: Promising methods were developed on the basis of neutralization techniques.

Objective: To improve treatment processes with a view to eliminating these noxious substances more easily and economically.

BRAZIL (University of São Paulo)

1. Biological treatment of toxic wastes from manioc flour mills

Status: In progress.



Engineer performs bacteriological tests with the membrane filter technique in sand filter experiments.

Results: No significant results are available as yet.

Objective: To obtain more information on the possible effect of toxic substances in the wastes from manioc flour mills in the processes of waste water treatment.

2. Sanitary and economic aspects of refuse disposal processes

Status: First stage completed.

Results: The survey of the refuse collection and disposal services of Guanabara, São Paulo, Araraquara, and Pôrto Alegre was completed.

Objective: To provide official and private agencies and teaching institutions with properly organized data on methods of solid waste disposal in a series of cities in Brazil.

3. Use and efficiency of household water meters (PAHO/IDB)

Status: Completed.

Results: The results were being analyzed.

Objective: The purpose of this survey, like that of similar projects in Colombia and Guatemala, is to find out more about the efficiency of meters in various types of dwellings, with a view to working out improved methods of selection, installation, operation, and maintenance of meters.

CHILE (University of Chile)

1. Basic data on the design of water supply and sewerage systems

Status: In progress.

Results: The first stage, which included the study of population increases, was completed. Studies were also completed on the application of the Newton-Raphson method to calculate water distribution networks, and on the application of computers for making calculations for sewerage networks.

Objective: To assist in establishing design specifications in keeping with conditions and experience in Chile.

2. Evaluation of the influence of filtration rate on water quality at the Santiago treatment plant

Status: In progress.

Results: No significant results are available as yet.

Objective: It is hoped to enlarge the capacity of plants considerably if the investigation shows that the load can be increased without appreciably affecting the quality of water.

3. Stabilization ponds

Status: In progress.

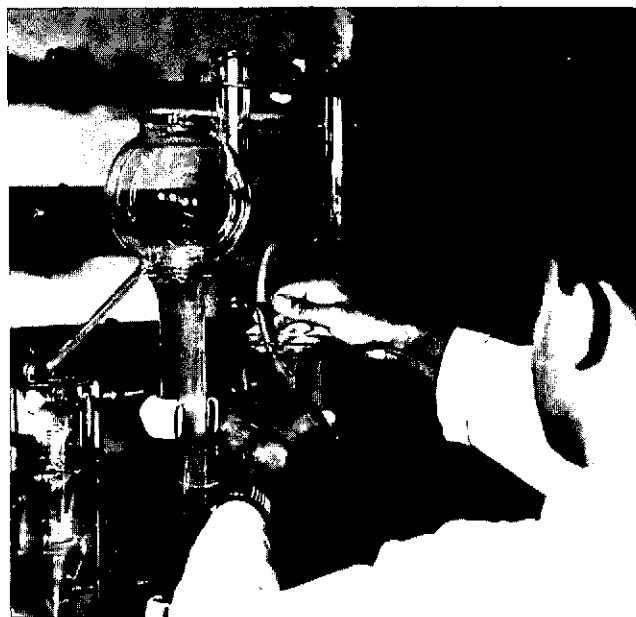
Results: The excavation of three ponds in the city of Melipilla by the Department of Sanitary Works of the Ministry of Public Works was completed. The process of filling the ponds with wastes from the city and the natural settling of the ponds means that it will be some time before the laboratory tests are carried out. Completed works include the elevator plant and special chambers. Facilities were also completed (reservoirs, buildings, chambers, etc.) for the conventional plant. The reaction distributors of the biofilters were being mounted.

Objective: The efficiency of the ponds will be compared with that of the conventional plant treating the same waste, with a view to determining realistic patterns of load adsorption.

4. Sedimentation tanks

Status: In progress.

Results: No significant results are available as yet. The design



One of the objectives of project Venezuela-6400 is the establishment of an experimental station and laboratories for research and practice teaching in environmental sanitation.

was completed for a rectangular and horizontal flow experimental unit. The model was in the construction stage.

Objective: To clear up problems of circular sedimentation tank design.

5. *Increase in filtration rates at the Lo Castillo plant, its influence on water quality, and the possibility of extending the rate increase to conventional plants*

Status: In progress.

Results: The preliminary findings include the following: average residual turbidity shows no significant change; the effective removal of bacteria would appear to be less when the filtration rate increases, and there is a definite drop in efficiency when a coarser type of sand is used. The lifetime of the filter is longer for a given filtration rate when a more coarse-grained sand is used. These findings indicate that the most important parameter in selecting the type of sand is its efficiency in removing bacteria. The recommended effective grain size at this stage of the investigation would appear to be 0.65 mm.

Objective: It is hoped that higher filtration rates will bring about an increase in the capacity of water treatment plants.

6. *Economic aspects of municipal processing of composts, including design and financing of plants*

Status: Completed.

Results: The final report was published. It concludes that the most suitable methods for refuse disposal are sanitary landfill and composting.

Objective: It is hoped that, since the survey establishes the feasibility of the process, the Municipality of Santiago might consider constructing a composting plant.

COLOMBIA (National University of Colombia)

1. *Use and efficiency of household water meters (PAHO/IDB)*

Status: Completed.

Results: The results were being analyzed.

Objective: The purpose of this survey, like that of similar projects in Brazil and Guatemala, is to find out more about the efficiency of meters in various types of dwellings, with a view to working out improved methods of selection, installation, operation, and maintenance of meters.

2. *Filtering properties of natural sand*

Status: In progress.

Results: The specially constructed pilot plant was completed. Studies were made of sand taken from seven different sites, three of which were selected as sources for obtaining sand for the project.

Objective: To discover less expensive methods of selecting and grading sand and to economize on the cost of importing filtration materials for water treatment.

GUATEMALA (University of San Carlos)

1. *Use and efficiency of household water meters (PAHO/IDB)*

Status: Completed.

Results: The results were being analyzed.

Objective: The purpose of this survey, like that of similar projects in Brazil and Colombia, is to find out more about the efficiency of meters in various types of dwellings, with a view to working out improved methods of selection, installation, operation, and maintenance of meters.

MEXICO

1. *Hydraulic flocculation (National University of Mexico)*

Status: In progress.

Results: No significant results are available as yet.

Objective: To observe the flocculation process in hydraulic flocculators not requiring mechanical equipment.

2. *Water distribution (University of Chihuahua)*

Status: In progress.

Results: No significant results are available as yet.

Objective: To determine per-capita water consumption rates on the basis of actual observations and records, with a view to reducing the construction costs of waterworks.

Nursing

The countries have shown an ever-increasing interest in studying the activities carried out by nursing personnel, both in hospitals and in the community. To meet the needs in this field, a methodological guide for undertaking functional studies on nursing was prepared.

In Barbados a four-week course on the methodology of nursing studies was held for 14 nurses from English-speaking countries of the Caribbean, and in Guatemala the first part of the report on the study of nursing activities, conducted in 1969, was prepared. In Mexico work was begun on the collection of data for a study of nursing resources.

Health Education

The Health Education Department of the Secretariat of State for Public Health of Argentina carried out a series of research operations during the year. A start was made on four studies in Buenos Aires covering: (a) health personnel and population receiving services in a particular area, with a view to evaluating the change in the attitude of the public toward health programs; (b) a sampling of adolescents in the Rawson Hospital sector, designed to reveal the problems of this age group in the urban areas of Argentina, where there are upwards of 2 million young people; (c) a sampling of the working sector by means of surveys and studies in large factories, to ascertain the extent of their knowledge of health matters, taking into account the fact that there is a population of 7 million wage-earners; and (d) a study at the Ciudadela Hospital—the pilot area for the Secretariat's hospital research—designed to throw light on the attitude of health personnel, patients, and the general public toward medical care programs.

Health Statistics

The collection of data for the Inter-American Investigation of Mortality in Childhood was completed in almost all 13 projects in Latin America during 1970. The field work, started between June and September 1968, continued over a two-year period. In two other areas—San Francisco Bay Area in California, U.S.A., and Quebec Province in Canada—data collection was initiated in June 1969 and January 1970, and will continue in 1971.

Complete data for eight projects for the first six to eight months were analyzed for a report to the PAHO

Advisory Committee on Medical Research in June 1970. Analyses made during the year served to evaluate the completeness and quality of data as well as to point out needs for preventive programs and for other uses of the results in health planning.

Information on deaths in early life, especially in the first 24 hours, had been incomplete in the first few months of the study. Procedures were adopted in the course of the investigation to locate information on such deaths, and as a result there was an increase in the infant death rates. Those rates varied widely in the projects, from 85 per 1,000 live births to a low of 39. Neonatal death rates (in the first month of life) ranged from 36 to 20 per 1,000 live births. Mortality rates in the age group 1-4 years varied from 11 to 2 per 1,000 population.

Associated causes of mortality were analyzed, as well as underlying causes, in order to study interrelationships of infectious diseases, nutritional deficiency, and social and environmental factors. Each community has a distinct pattern of mortality with a wide variety of underlying causes of death, a variety that is increased when associated causes are included. Infective and parasitic diseases were responsible for more than half the deaths under 5 years of age in several projects and for more than one third in all. Diarrheal diseases were the major contributor to morbidity in this group, followed by measles.

Nutritional deficiency was often a contributory cause of death, particularly when associated with the infective and parasitic diseases. The percentage of deaths from this latter group of diseases with which nutritional deficiency was associated ranged from 44 to 69 per cent for the age group under 5 years, excluding neonatal deaths. For causes other than infective and parasitic diseases, the percentage with an associated nutritional deficiency ranged from 19 to 47.

Processing and analysis of data will continue during 1971, both on the deaths and on living children in the probability sample of households studied during the investigation.

Several meetings related to the investigation were held during 1970, including a meeting of the medical referees responsible for final assignments of the causes of deaths. Criteria and procedures were standardized, following discussion of problems encountered in coding. Also held was an internal meeting of the project staff with nutrition advisers from both PAHO and WHO, at which the findings were discussed and a proposal formulated to be submitted for the next Revision of the *International Classification of Diseases*.

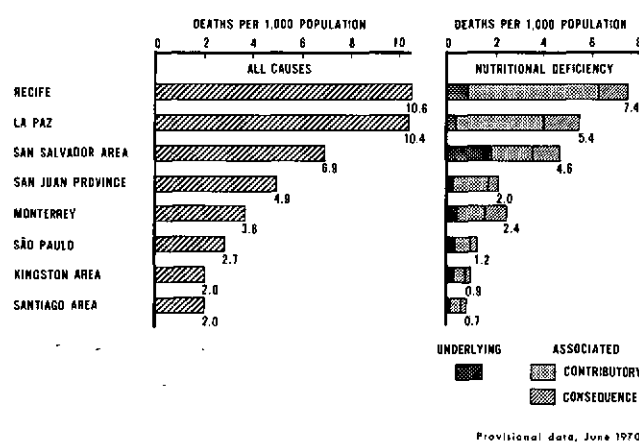


FIG. 34. Death rate from all causes and from nutritional deficiency as underlying or associated cause for age group 1-4 years for 8 projects.

Maternal and Child Health and Family Planning

Research activities in health and population dynamics were carried out, with the Organization's assistance, at the Center for Population Dynamics Studies (CEDIP) of the University of São Paulo, Brazil, and at the Department of Public Health and Social Medicine of the University of Chile. They included various studies of fertility, infant mortality, induced abortion, and attitudes toward family planning.

Preliminary steps for the Organization's support of research on the health effects of family planning were completed during the year. For example, plans were made for expanding the study of lactation currently under way at the University of Chile to include the effects of oral contraceptives.

The School of Public Health in Lima, Peru, received additional technical and financial support from PAHO and WHO for the study of human reproduction in two communities in the country. Three years of observation of the population and of all women of childbearing age were completed in Lurín in June and in Masma in December 1970. In addition, a survey of knowledge, attitude, and practices (KAP) of contraceptive use was carried out in Lurín. A similar survey will be made in Masma in 1971. Information on contraceptives will be related to the findings of the study. With the participation of a short-term consultant, plans were made for processing the data from this study and coding was begun. Provisional data showed the birth rates to be around 40 per 1,000 population. Fertility rates appeared to be higher in Lurín, the coastal village, than in Masma in the highlands.

The Latin American Center for Perinatology and

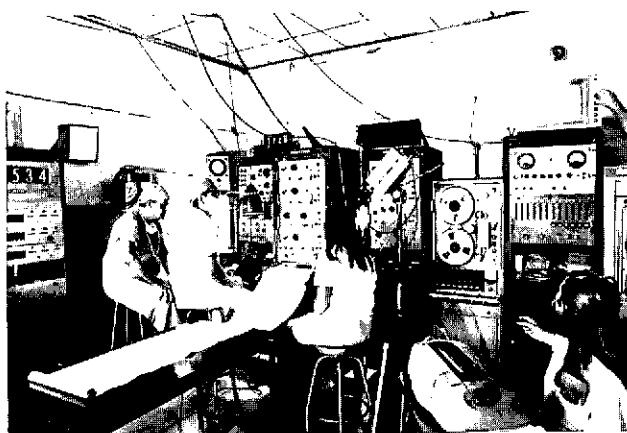
Human Development (CLAP) in Montevideo, Uruguay, was carrying forward the research previously conducted by the Obstetric Physiology Service and the Obstetrics Clinic of the School of Medicine of the National University. The studies deal with physiopathological circumstances of gestation and delivery, conditions of fetal distress, and the consequent impact on the health of the mother and child.

Other research projects of CLAP include: the response of the gravid uterus to oxytocin, which is one of the major causes of fetal death; the effects of uterine-inhibiting drugs, the administration of which is beneficial in the prevention of premature delivery and in the control of fetal distress during delivery; the composition of the amniotic fluid, and pharmacological agents, especially glucose, which could have an important therapeutic effect in the control of acidosis; and an analysis of the relationships between uterine activity during delivery, membrane rupture, and danger to the fetus.

At the School of Medicine of the University of Chile, a longitudinal study on infant growth and development was continued, and researchers initiated an important study on prediction of neonatal risk.

Nutrition

The relationship between malnutrition, mental development, and sociocultural factors have assumed increasing importance in recent years as a subject of research and in the planning of preventive health programs. The Organization and the U.S. National Institutes of Health have participated actively in research in this field, which requires careful orientation for determining the types of



The Latin American Center for Perinatology and Human Development, in Montevideo, carries on an important program of research and teaching for preventive care and early treatment of the pregnant woman and newborn child subject to high biological risk: Left: Neonatal intensive care unit, Right: Electronic recording equipment in the same unit.

study to be made and the methods to be used. In order to review the progress made and prepare the way for future research, the two organizations jointly sponsored a conference in October on assessment of behavior tests utilized in nutrition studies in the Western Hemisphere.

An agreement was approved during the year for undertaking a training program in nutrition and human growth and development, to be sponsored jointly by the School of Medicine of Cornell University (U.S.A.), the Pediatric Service of Roberto del Río Hospital in Santiago, Chile, and PAHO/WHO.

The PAHO Scientific Group on Endemic Goiter met in August in São Paulo to review the progress achieved in research on this disease since the 1968 meeting and define the program of activities for the next two years.

The Organization assigned short-term consultants to conduct seminars and assist in the determination of methods for the study of nutrition and human development in Chile and Uruguay; to evaluate and cooperate in the analysis and preparation of data from the study of cretinism and endemic goiter in Ecuador; and to review the current status of the programs of research and public health on endemic goiter and the effects of salt iodization in Brazil (São Paulo). The reference centers for iodine determination, in Santiago, and for nutritional anemias, in Caracas, continued to provide training to collaborating investigators.

The Organization participated in the planning and conduct of a cooperative research project to determine the effects of contraceptive practices on maternal nutrition and lactation, following one of the recommendations of the PAHO Technical Group on Maternal Nutrition and Family Planning in the Americas. It also reviewed the status of the programs on prevention of nutritional anemias in Latin America, formulated recommendations on cooperative research programs in this field, and furnished technical assistance for the training course in pediatrics held in Brasília and the promotion of specific research projects in maternal and child nutrition in Brazil.

The Institute of Nutrition of Central America and Panama continued its studies on the enrichment of corn, intestinal colonization in children, and the effects of malnutrition on the mental development of children, as well as beginning new research projects during the year, which are reported in Chapter II-B.

The Caribbean Food and Nutrition Institute completed its analysis of the results of the food and nutrition survey in Barbados and carried out two other surveys: one in Jamaica, on the prevalence of malnutrition in young children and pregnant women, and the other in Trinidad



Low-cost high-protein foods are tested in laboratory animals in Recife, Brazil.

and Tobago, on food consumption levels. It also did research on the relationship between schistosomiasis and nutrition in schoolchildren of St. Lucia (see Chapter II-B.).

Mental Health

The following research projects were begun in Chile: (a) a comparative study of the results of the use of various tranquillizers in the treatment of alcohol withdrawal syndromes; (b) a comparative study of the results of the use of various tranquillizers in the treatment of delirium tremens; and (c) an evaluation of the treatment of alcoholics under supervision by volunteers from an abstainers' club.

In Jamaica a study was undertaken in the rural areas on attitudes toward mental illness, alcoholism, and cannabis smoking.

Dental Health

In Brazil the final clinical examinations in the four-year study to investigate the effect of different methods of self-application of topical fluoride compounds in the

prevention of dental caries were completed. This project—conducted jointly by the University of São Paulo, the Division of Dental Health of the U.S. Public Health Service, and the Organization—was undertaken in 1967 with 1,279 children from eight schools in São Paulo divided into four study groups and a control group. In the final clinical evaluation, 760 children were examined, and preliminary results indicated differing degrees in the reduction of the incidence of caries depending upon the combination of products and methods used. Final results of the study will be available in 1971.

The study on the fluoridation of salt in four communities in the Department of Antioquia, Colombia, was continued. Preliminary results indicated the feasibility of utilizing salt as a vehicle for fluoride compounds, and the clinical findings showed that a reduction in the incidence of caries was occurring in the communities using fluoridated water and fluoridated salt.

In Colombia and Venezuela, technical assistance was again provided in the studies on human resources, dental education, and the provision of dental care services in institutions. The collection of data on all these phases should be completed by early 1971. Coding and tabulation of data from the study on dental conditions and the household interview surveys in Venezuela were completed.

Research studies on new materials in dentistry were initiated in Maracaibo, Venezuela, and in Medellín, Colombia. In Maracaibo, 240 children were selected in four schools for the application of four distinct types of pit and fissure sealants, and a like number of children with similar caries experience were selected to serve as controls. This study, conducted in conjunction with the Division of Dental Health of the U.S. Public Health Service, will assess the possibility of utilizing basic restorative materials and determine whether these materials might play a greater role in the treatment of large population groups. Funds for the two studies were provided through the Pan American Health and Education Foundation, with the collaboration of the firms Johnson and Johnson, L.D. Caulk Co., Epoxylite, and the S.S. White Dental Division of the Pennwalt Corporation.

Health and Radiation

In Chile research was continued on manganese poisoning as it affects the metabolism in occupationally exposed individuals. Treatment of the condition in miners with L-DOPA (dihydroxyphenylalanine) produced a reduction in muscular hypertonia and an improvement in the postural reflexes.

Similarly, work was continued in Brazil on the effects of exposure to high background radiation doses in certain parts of the country; and during the year the Institute of Biophysics of the University of Rio de Janeiro produced a preliminary report on its cytogenetic studies.

The meeting of the Scientific Group for the Establishment of a Multinational Program of Nuclear Medicine Research (Washington, D.C., 3-6 March), which studied methods of facilitating the work done by the various groups of clinical researchers in the Americas using radioisotope techniques, recognized the need to improve communications between researchers, to promote the development of radioisotope techniques, standardizing them in certain instances to achieve comparable findings and facilitate joint research, and to improve the efficiency of training programs at both undergraduate and postgraduate levels. Similarly, the need was brought out for solving common operational problems such as the timely supply of radioisotopes or labile biological materials, and the purchase and maintenance of equipment.

One of the recommendations put forward as immediately applicable was the establishment of file records with information on centers in the Americas using radioisotopes. This operation began with collaboration between the PAHO Regional Library of Medicine in Brazil and the University of São Paulo.

Health Planning

Through the Pan American Center for Health Planning, the Organization continued to cooperate with the countries in the promotion of research activities in this field, as is reported in Chapter IV.

OPERATIONS RESEARCH

The Operations Research Unit was set up within the Department of Research Development and Coordination in conformity with the recommendation made by the Advisory Committee on Medical Research.

The following are regarded as some of the main problems of the health administrator in the face of the growing demand for services and the limited physical and human resources available for solving them:

1) Choice of courses of action that fall short of the ideal because of a failure to define technologically feasible alternatives and to predict how they will turn out on the basis of benefit, efficiency, and evaluation criteria.

2) Suboptimal levels in the utilization of available resources for lack of suitable work rationalization methods.

In the last few years, various methodologies have been developed which constitute very valuable working instruments for the rational study of decision-making. They are known under such names as operations research, scientific administration, systems analysis, industrial engineering, cost-benefit studies, cost-efficiency analysis, etc., and within their methodological limitations, their application to the health sector holds out the promise of greater benefits or a better return on the investment inputs for particular goals.

In the specific field of devising and implementing health projects, the Organization is applying and promoting scientific methodologies for planning, programming, and reviewing projects known as the "critical path" method, and PERT (Project Evaluation Review Technique), which have been very well received in other sectors such as private industry.

In the course of the Ninth Meeting of the Advisory Committee on Medical Research, a methodology was presented under the title "Birth-Life-Death Model for the Evaluation and Planning of a Health Services Program." It constitutes a practical application to the health sector of the theory of stochastic processes. With this methodology, already programmed in the computer, probability estimates can be made on the basis of hypotheses of change of variables in decision-making (specific rates of mortality by disease and age and specific rates of fertility by age) for:

- 1) Calculations of life expectancy associated with changes in mortality structure.
- 2) Health status projections in terms of:
 - a) Mortality rates by groups of diseases, per 100,000 inhabitants.
 - b) Changes in percentage composition of mortality.
- 3) Population projections in terms of:
 - a) Absolute values.
 - b) Percentages by age group.
- 4) Projections of population growth rate, fertility rate, mortality rate.

In addition, an analytical model has been worked out for studying the effectiveness of policies relating to student admission and turnover in successive years of the medical course in relation to the variable factor represented by graduations per year. Thus, given certain targets of demand for graduates, dynamically and over a period of time, one can simulate the supply of this health resource for different hypotheses of the decision

variables formulated by the planner. The data are needed for estimating the parameters involved in the system and writing the program accordingly.

With regard to the inventory study of the Blood Bank in Kingston, Jamaica, the data processing stage has been completed, so that a statistical analysis can now be made of the information compiled, and relations between the variables in the system can be defined. The findings of this study may suggest changes in data-collecting systems that will simplify the development and testing of the operational model.

COMMUNICATIONS IN THE BIOMEDICAL SCIENCES

Regional Library of Medicine

The Regional Library of Medicine continued to expand its services in an effort to establish within Brazil, and in other Latin American countries, an international biomedical communications network. In 1970 services were extended beyond Brazil to include Argentina, Bolivia, Colombia, Panama, Peru, Uruguay, and Venezuela. In September a seminar was held at the Regional Library to study the organization and functions of the seven coordinated centers and two subcenters in Brazil. Three additional seminars were held with librarians and direc-



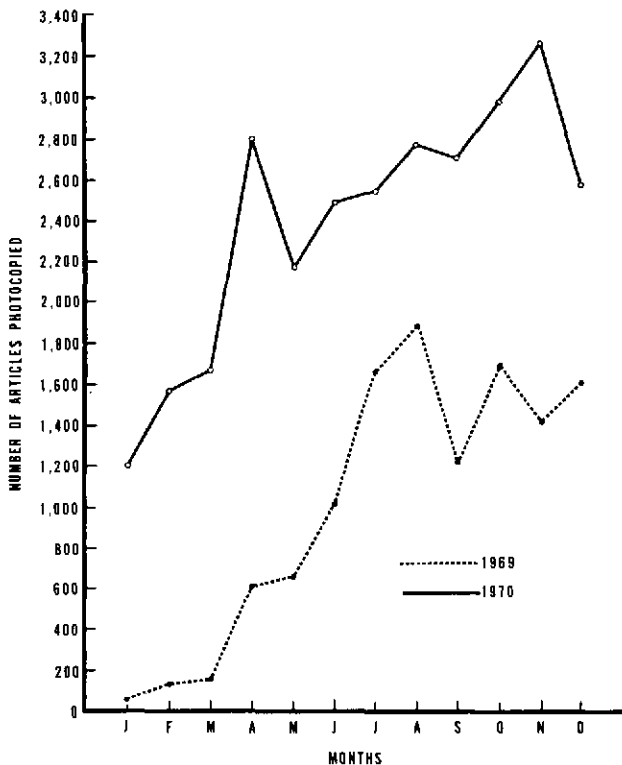


FIG. 35. Interlibrary loan services of the Regional Library of Medicine, 1969-1970.

tors of schools from Bogotá, Lima, and Caracas. The purpose was to create a stimulus and incentive for joint cooperative efforts toward the furtherance of an international biomedical communications system.

A total of 28,458 interlibrary requests were received for photographic reproduction of scientific articles. Of these, 57 per cent were answered with the Library's own resources; 16 per cent were handled through the cooperation of other libraries in São Paulo and elsewhere; and 27 per cent were forwarded to the U.S. National Library of Medicine for fulfillment.

During the year 30,095 journal issues were received from the U.S. Book Exchange—or obtained through purchase, gift, or exchange—and added to the collection. By using these issues to fill gaps in the serial holdings, the Library was well on the way to its goal of a complete collection of 2,200 selected periodicals from 1960 onward. Gift and exchange activities were conducted with 803 institutions in Brazil and other Latin American countries, and 18,246 duplicates were provided by the Regional Library in an effort to complete the journal collection of the participating libraries.

The third meeting of the Scientific Advisory Committee of the Library, held in São Paulo on 15-16 October, reviewed, among other topics, the interlibrary loan ser-

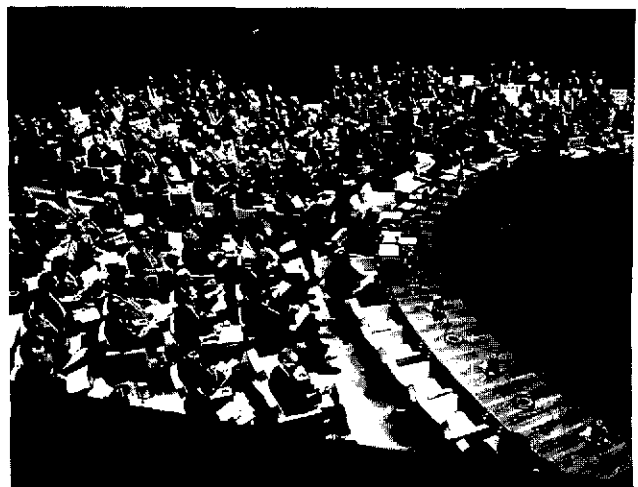
vices, an educational program for the Library, and a plan for a biomedical communications network for Latin America coordinated by the Regional Library.

Meetings and Symposia

In a continuing effort to promote communication among scientists in the biomedical field, the following scientific meetings and symposia were convened, in addition to the special session on metabolic adaptation and nutrition held in conjunction with the Ninth Meeting of the PAHO Advisory Committee on Medical Research, described earlier in this chapter.

The Scientific Advisory Committee on Dengue Surveillance met on 15-16 January to consider the problem of increased frequency and intensity of outbreaks of this disease in the Caribbean area and parts of northern South America. The committee proposed the establishment of a program that would make possible the discovery of dengue epidemics in their early stages, assure immediate detection of any occurrence of the dengue shock/hemorrhagic fever syndrome, regularly monitor and evaluate the magnitude of the disease as a public health and economic problem, and provide knowledge on the natural history of dengue viruses.

The International Symposium on Mycoses was convened on 24-25 February in response to a growing realization that these infections constitute a major public health problem. The group recommended that PAHO lend its support to the creation of a Permanent Coordinating Committee for the Mycoses to serve as an advisory



International Conference on the Application of Vaccines against Viral, Rickettsial, and Bacterial Diseases of Man (Washington, D. C., 14-18 December 1970).

V. RESEARCH DEVELOPMENT AND COORDINATION

body to the Organization on all matters in this field, suggesting also that subcommittees be formed to cover the specific areas of diagnostic procedures and therapy for the mycoses, regional diagnostic centers, and education and training. The proceedings were published as *Scientific Publication PAHO 205*.

Rapid advances in the four years since the first international conference on vaccines against viral and rickettsial diseases of man led to the decision to hold a com-

panion conference which included bacterial diseases and vaccines. Some 300 scientists from 50 countries attended the conference, which took place at the Headquarters office on 14-18 December. The meeting reviewed the public health questions posed by these diseases as well as the present status of the corresponding vaccines and the factors connected with their administration. The proceedings of the conference were being prepared for publication.

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VI. SCIENTIFIC AND PUBLIC COMMUNICATIONS

PUBLICATIONS

PAHO's publications program is designed to meet the particular needs of the Region of the Americas through the dissemination of original papers and monographs, reports and working papers of technical meetings sponsored by the Organization, research studies, statistical reports, and translations of manuals or other material of special relevance to current activities in Latin America. It complements, without duplicating, the WHO program of publications directed to the Americas.

Three technical periodicals—the monthly *Boletín de la Oficina Sanitaria Panamericana*, the quarterly medical education journal entitled *Educación médica y salud*, and the *Weekly Epidemiological Report*—form part of the program, in addition to the series of Special Publications of PAHO.

Special Publications

This series in 1970 included 55 volumes: 38 Scientific Publications, 16 volumes of Official Documents, and one other publication. The total number of printed pages was 7,550, and the number of copies 120,510. The details are given in Tables 51 and 52.

TABLE 51. SUMMARY BREAKDOWN OF PAHO PUBLICATIONS, 1970.

Series	Number	Pages	Pressrun (copies)
Scientific Publications.....	35	2,965	79,170
Second printings.....	3	737	7,000
Official Documents.....	16	3,808	16,440
Others.....	1	40	17,900
Total.....	55	7,550	120,510

The Organization's activities in the field of nutrition were well represented among the 1970 publications. The English edition of *Elementos de una política de alimentación y nutrición en América Latina* appeared during the year (the Spanish edition was issued in 1969), as did the volume *Guidelines to Young Child Feeding in the Contemporary Caribbean*, containing the report of a meeting of the Caribbean Food and Nutrition Institute held in June 1970. The reports of two other PAHO technical group meetings were published, in both English and Spanish, in the volumes entitled *Hypovitaminosis A in the Americas* and *Maternal Nutrition and Family Planning in the Americas*.

Of the publications on research issued in English in prior years, Spanish editions were prepared of the following two: *Fiebre hemorrágica argentina: Conocimientos actuales*, a special study on Argentine hemorrhagic fever authored by Dr. Norma E. Mettler; and *Factores*

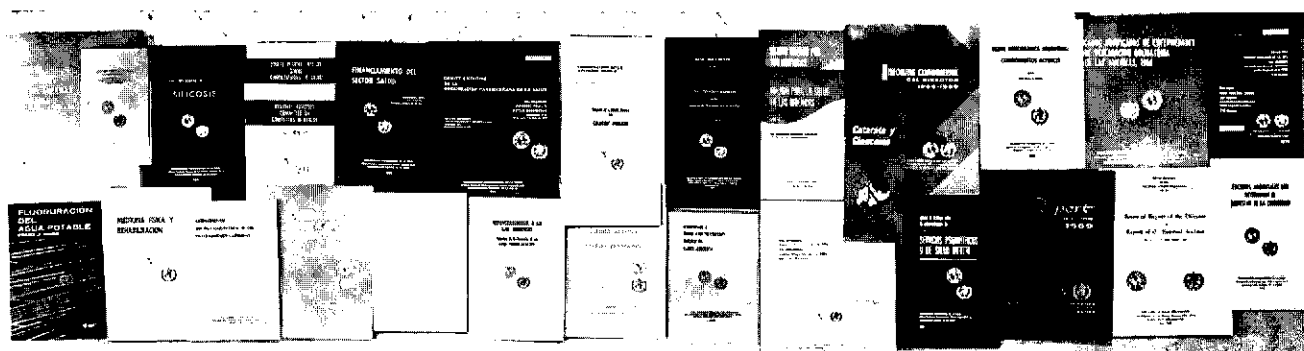


TABLE 52. PAHO PUBLICATIONS, 1970.

Serial number	Title	Pages	Pressrun (copies)
<i>Scientific Publications</i>			
98	Guía para el adiestramiento de auxiliares de enfermería en la América Latina (2nd printing)	42	1,000
123	Environmental Determinants of Community Well-Being (2nd printing)	68	1,000
162	Profilaxia das Doenças Transmissíveis (Décima edição) (2nd printing)	627	5,000
183	Fiebre hemorrágica argentina: Conocimientos actuales, by Dr. Norma E. Mettler	54	2,000
194	Elements of a Food and Nutrition Policy in Latin America	29	2,000
195	Report of a Study Group on Chagas' Disease	34	1,000
195	Informe de un Grupo de Estudio sobre la Enfermedad de Chagas	40	1,670
196	II Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control	154	1,000
196	II Reunión Interamericana sobre el Control de la Fiebre Aftosa y Otras Zoonosis	164	2,000
197	Control de enfermedades infecciosas en hospitales generales	105	5,000
198	Hypovitaminosis A in the Americas—Report of a PAHO Technical Group Meeting	33	2,000
198	Hipovitaminosis A en las Américas—Informe de la Reunión de un Grupo Técnico de la OPS	35	2,000
199	Reported Cases of Notifiable Diseases in the Americas, 1967	72	1,000
199	Casos notificados de enfermedades de declaración obligatoria en las Américas, 1967	72	1,000
200	Seminario Regional de Silicosis	75	2,000
201	Study Group on the Coordination of Medical Care Services of Ministries of Health, Social Security Institutes, and Universities	94	1,000
201	Grupo de Estudio sobre la Coordinación de los Servicios de Atención Médica de los Ministerios de Salud, de las Instituciones de Seguridad Social y de las Universidades	99	3,000
202	Enfermedades parasitarias de origen hídrico	25	3,000
203	Fluoruración del agua potable, by F. J. Maier	253	2,500
204	Maternal Nutrition and Family Planning in the Americas—Report of a PAHO Technical Group Meeting	53	3,000
204	Nutrición Materna y Planificación de la Familia en las Américas—Informe de la Reunión de un Grupo Técnico de la OPS	58	3,000
205	International Symposium on Mycoses	282	3,000
206	Clasificación Internacional de Enfermedades—Aplicada a Odontología y Estomatología	110	2,000
207	Health Conditions in the Americas, 1965–1968	196	2,000
207	Las condiciones de salud en las Américas, 1965–1968	201	2,000
208	Financing of the Health Sector—Technical Discussions at the XIX Meeting of the Directing Council of PAHO	34	2,000
208	Financiamiento del Sector Salud—Discusiones Técnicas de la XIX Reunión del Consejo Directivo de la OPS	39	1,000
209	Factores ambientales que determinan el bienestar de la comunidad	80	2,000
210	Grupo de Trabajo sobre la Administración de Servicios Psiquiátricos y de Salud Mental	100	2,000
211	Regional Advisory Committee on Computers in Health—First Meeting	33	2,000
211	Comité Regional Asesor sobre Computadoras en Salud—Primera Reunión	35	2,000
212	Catarata y glaucoma	34	5,000
213	Grupo de Estudio sobre Capacitación de Especialistas en Medicina Física y Rehabilitación	97	2,000
214	Encuesta epidemiológica de la sífilis	36	2,000
215	Seminario sobre Registros de Cáncer en América Latina	169	2,000
216	Health Agenda for the Americas, Dr. Abraham Horwitz	24	2,000
216	Agenda para la salud en las Américas, Dr. Abraham Horwitz	24	3,000
217	Guidelines to Young Child Feeding in the Contemporary Caribbean	22	5,000
<i>Official Documents</i>			
97	Financial Report of the Director and Report of the External Auditor, 1969	84	300
97	Informe Financiero del Director e Informe del Auditor Externo, 1969	84	340
98	Proposed Program and Budget Estimates: PAHO, 1971; WHO, Region of the Americas, 1972; PAHO Provisional Draft, 1972	472	500
98	Proyectos de Programa y Presupuesto: OPS, 1971; OMS, Región de las Américas, 1972; OPS, Anteproyecto, 1972	472	500
99	Final Report, XIX Meeting of the PAHO Directing Council (bilingual edition)	102	1,500
100	Précis Minutes and Annexes, XIX Meeting of the PAHO Directing Council, XXI Meeting of the WIO Regional Committee for the Americas	366	1,000
100	Actas Resumidas y Anexos, XIX Reunión del Consejo Directivo de la OPS, XXI Reunión del Comité Regional de la OMS para las Américas	374	1,000
101	Quadrennial Report of the Director, 1966–1969	196	1,500
101	Informe Cuadrienal del Director, 1966–1969	206	1,500
102	Annual Report of the Director, 1969	310	2,000
102	Informe Anual del Director, 1969	328	2,000
103	Final Report and Précis Minutes, 62nd, 63rd, and 64th Meetings of the PAHO Executive Committee	217	1,000
103	Informe Final y Actas Resumidas, 62a, 63a y 64a Reuniones del Comité Ejecutivo de la OPS	223	1,000
104	Final Report, XVIII Pan American Sanitary Conference (bilingual edition)	116	1,500
105	Basic Documents of the Pan American Health Organization, Ninth edition	129	300
105	Documentos Básicos de la Organización Panamericana de la Salud, Novena edición	129	500
	Catálogo de Publicaciones Especiales, 1964–1969	40	17,900

ambientales que determinan el bienestar de la comunidad. The English edition of the latter book, *Environmental Determinants of Community Well-Being*, was reprinted during the year to meet the continuing demand. A major new publication in the research field was that on the *International Symposium on Mycoses*, which is described at length in Chapter V of this Report.

The proceedings of the *II Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control* were published in both Spanish and English, as was the *Report of the Study Group on Chagas' Disease*. The report of the Working Group on the Administration of Psychiatric and Mental Health Services was issued in Spanish as Scientific Publication 210.

Publications on medical care included the proceedings of the *Study Group on the Coordination of Medical Care Services of Ministries of Health, Social Security Institutes, and Universities*, issued in Spanish and English, and the report of another study group meeting on training in physical medicine and rehabilitation (Scientific Publication 213).

An important publication in the field of chronic diseases was the compilation of the papers of the Seminar on Cancer Registries in Latin America, issued in Spanish as Scientific Publication 215. An informational pamphlet on *Cataract and Glaucoma*, prepared by the U.S. Public Health Service, was translated into Spanish with the authorization of that Service (Scientific Publication 212).

The Organization also published the Spanish version of the American Public Health Association's manual on *Control of Infectious Diseases in General Hospitals*, for wide distribution in Latin America.

The Spanish edition of the *Manual of Water Fluoridation Practice*, by Franz J. Maier, was issued as Scientific Publication 203. This manual is especially concerned with the training of engineers in fluoridation techniques. Another publication in the environmental sanitation field was the report of the Regional Seminar on Silicosis (Scientific Publication 200), issued in Spanish.

Among the statistical publications that appeared during 1970 was the volume *Health Conditions in the Americas, 1965-1968*, prepared in English and Spanish for presentation at the XVIII Pan American Sanitary Conference; *Reported Cases of Notifiable Diseases in the Americas, 1967*, also issued in the two languages; and the Spanish version of the WHO manual on *International Classification of Diseases—Application to Dentistry and Stomatology*.

Other volumes issued in both English and Spanish were the report of the first meeting of the *Regional Advisory Committee on Computers in Health* and the report of the

Technical Discussions on *Financing of the Health Sector*.

The 16 volumes issued in the Official Documents series included the program and budget document and the financial and external auditor's report, the final reports and proceedings of the Directing Council and Executive Committee meetings, the Annual Report and Quadrennial Reports of the Director, and the ninth edition of the Basic Documents of PAHO.

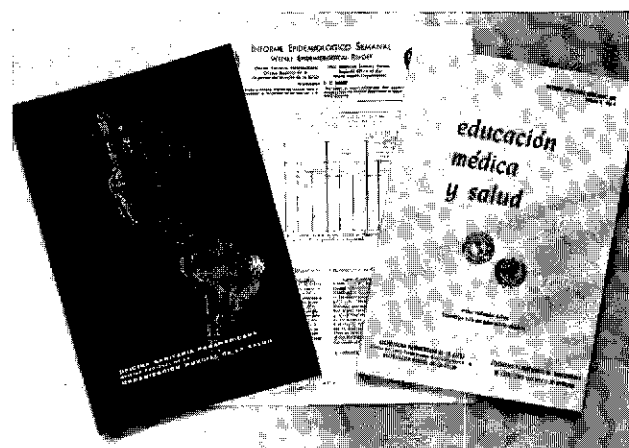
In addition to the foregoing, four new documents were issued in the technical series of the Department of Engineering and Environmental Sciences (ES/6-9), and in the dental health series three documents were issued (HP/DH/1-3). These are referred to in Chapters I-B and II-B, respectively.

Periodical Publications

The monthly *Boletín de la Oficina Sanitaria Panamericana*—the principal technical organ of PAHO—continued to reach readers in all parts of the Americas, as well as in certain other regions of the world. In its 49th year of consecutive publication, this journal's monthly press-run averaged 14,200 copies; the 12 regular issues contained an average of 96 printed pages each.

Original articles were contributed by authors from both the Americas and other parts of the world. The 66 articles published accounted for 708 printed pages (more than 60 per cent of the total). Most of the articles appeared in Spanish, each being followed by summaries in English, Portuguese, and French.

Papers presented at technical meetings and conferences were prominent among those published in the *Boletín*. The January 1970 issue was devoted to the Technical Discussions on "Financing of the Health Sector," and other issues throughout the year featured technical papers



from such meetings as those of the PAHO Advisory Committee on Medical Research, the U.S.-Mexico Border Public Health Association, the Seminar on Hydraulic Resources, the Latin American Congress on Tuberculosis and Respiratory Diseases, the International Symposium on Metabolic Function of Vitamin A, the Regional Conference on Hospitals, and the Symposium on Iron Metabolism and Anemia. Other articles dealt with communicable diseases, parasitic infections, nutrition, sanitary engineering, dental health, fluoridation, zoonoses, cardiomyopathies, medical education, and health administration.

The section entitled "Reseñas" contained 58 abstracts of articles and publications and accounted for a total of 208 printed pages (an average of 17 pages per issue). Many varied subjects were represented, the objective being to reflect current developments and studies under way in the medico-public health and related fields in both the Americas and other regions. Among the subjects covered were: malaria and *Aedes aegypti* eradication; influenza, tuberculosis, poliomyelitis, and schistosomiasis; chronic and degenerative diseases; mental health; nursing and medical care administration; schools of public health; air pollution and traffic accidents. Special features in this section were the short summaries of articles of special interest selected from the WHO *Bulletin*.

The "Actualidades" section was devoted to news items and reports on current meetings and events of special interest in the public health field. A total of 38 items were published, accounting for 97 printed pages. Summary reports were made of the meetings of the U.S.-Mexico Border Public Health Association; the Seminar on Diagnosis, Classification, and Statistics in Psychiatry; the International Symposium on Mycoses; the Seminar on Health Education in the Central American Isthmus; and the Study Groups on Prevention of *Aedes aegypti*-borne Diseases and on Chagas' Disease. All meetings of the PAHO and WHO Governing Bodies were covered. In the April issue, this section was devoted entirely to the 1970 World Health Day topic "Cancer: Early Detection Saves Lives." Other regular features in this section were the Monthly Calendar of Meetings, the status reports on *Aedes aegypti* eradication in the Americas (in three issues), and notes on activities in the field of medical care administration (in three issues).

The book section, comprising 60 pages during the year, presented reviews of 91 PAHO and WHO publications and of 28 publications from other organizations and publishing houses. A list of PAHO Library acquisitions appeared regularly each month.

A one-volume *English edition of the Boletín* was again published in 1970. It contained a selection of articles

and reports that appeared in the monthly journal during the previous year, including the report and working documents of the Technical Discussions on "Participation of the Health Sector in Population Policy." The subjects dealt with in other articles were the work of international agencies in the food and nutrition field in Latin America; tuberculosis treatment; techniques and objectives of vaccination programs; hypovitaminosis A in Chile; arteriosclerotic heart disease; rodent control in ports in Colombia; and the integration of the health sector in development planning. The edition also contained abstracts on communicable diseases in the Americas, population and life expectancy in Latin America, mental health, and air pollution; and reports on several technical meetings sponsored by the Organization.

Volume 4 of the quarterly journal on medical education, *Educación médica y salud*, was published in 1970; the four issues comprised a total of 380 printed pages, with a pressrun of 5,000 copies each. Nos. 1 and 2 (January-June) presented the documents of the VI Conference of Directors of Schools of Public Health of Latin America, whose purpose was to analyze the role of the schools in the light of socioeconomic changes in the 1960's. Of special interest were the papers relating to the definition of the health sector, and specific activities of the schools; significant advances of the health sector in the decade; characteristics of the present status of health; need for a policy relating to health manpower training; present problems faced by the schools; and recommendations for better fulfillment of their responsibilities. The next issue presented the results of surveys on training and utilization of dental auxiliary personnel in Latin America and on the dental profession in Chile and Colombia. The last issue included the working papers of the round-table on medical education research which was held as a part of the Ninth Meeting of the PAHO Advisory Committee on Medical Research.

Each issue contained news items of interest to medical educators at the international level and reviews of books of special importance to medical education. To facilitate easy reference, the volume included an index by authors and another by subject.

The PAHO *Weekly Epidemiological Report* was issued regularly during 1970 in a bilingual English-Spanish edition.

Distribution of Publications

During 1970 the Organization distributed 543,880 copies of publications of both PAHO and WHO (Table

TABLE 53. PUBLICATIONS DISTRIBUTED, 1970.

Type of publication	Number of copies distributed	Total
<i>PAHO publications</i>		
Scientific Publications.....	113,145	
Official Documents.....	12,000	
Miscellaneous Publications.....	500	
<i>Boletín de la Oficina Sanitaria Pan-americana</i>	175,650	
<i>Boletín de la Oficina Sanitaria Pan-americana</i> —English edition.....	10,000	
<i>Educación médica y salud</i> , Vol. 3, No. 4; Vol. 4, Nos. 1-3.....	20,000	
<i>Gazette</i> —Spanish Vol. 1, No. 4; Vol. 2, Nos. 1-3.....	40,000	
English Vol. 1, No. 4; Vol. 2, Nos. 1-3.....	40,000	
<i>Weekly Epidemiological Report</i>	62,400	
Other PAHO publications.....	32,150	
Total PAHO publications.....		505,845
<i>WHO publications</i>		
Technical Report Series, Public Health Papers, Monograph Series, and Official Records.....	7,850	
Other WHO publications.....	30,185	
Total WHO publications.....		38,035
Grand total.....		543,880

53). This represents an increase of approximately 69,000 copies over 1969. The computerization of many of the basic mailing lists was accomplished during the year.

The volume of sales of PAHO publications increased to 23,125 copies (20,813 in 1969). Nevertheless, the great majority of the copies of PAHO publications continued to be made available free of charge as a service to official health services in the Americas.

INFORMATION

The public information activities were expanded during 1970, both in scope and in the number of events covered. This was especially reflected in a considerable increase in the number of press releases issued and amount of information literature distributed.

Media

Special events. Foremost among the meetings given coverage during the year was the XVIII Pan American

Sanitary Conference, held at Headquarters from 28 September to 8 October. Twenty news stories were prepared on the activities of this meeting, and all were carried by the major wire services as well as by the U.S. Information Agency. The meeting also received television and radio coverage by that Agency, for wide distribution throughout the Hemisphere. An analysis of news stories used by the media showed that the release on the goals of the Organization for the decade of the 70's received best coverage. Also well covered were stories on progress made in different areas of public health work and Canada's announcement of intention to join PAHO. Because of the newsworthiness of that announcement, it was made the subject of a mat feature entitled "Canada Moves to Join PAHO," which was distributed in English, Spanish, and French to editors in all parts of the Americas.

At the end of the Conference a press briefing, which had excellent attendance, was held to help clarify the meaning of the meeting for newsmen.

For the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, held in Buenos Aires in April, 14 news stories were released and were widely carried by national and international media.

Detailed coverage and special briefings were arranged for several scientific meetings that took place at Headquarters: the International Symposium on Mycoses, in February; the annual meeting of the PAHO Advisory Committee on Medical Research, in June; and the International Conference on the Application of Vaccines against Viral, Rickettsial, and Bacterial Diseases of Man, held in December. At all these meetings press briefings were arranged as a convenient way of facilitating the flow of information from the scientific community to the general public. For the vaccines meeting, briefings were held daily.



Press briefing during the International Conference on the Application of Vaccines against Viral, Rickettsial, and Bacterial Diseases of Man.

The celebration of World Health Day was again one of the important information programs of the year. To focus public attention on the 1970 theme "Cancer: Early Detection Saves Lives," and on WHO's twenty-second anniversary, a mat feature was released in English, Spanish, and French to approximately 3,000 editors. Also distributed were 3,250 press kits in those languages, and an additional 11,500 kits for the general public, along with a WHO-designed poster adapted and reproduced by the Washington office for use in the Americas.

News and feature releases. A total of 159 releases (42 more than 1969) were issued in English, Spanish, and Portuguese. Most of them dealt with meetings convened or sponsored by PAHO and WHO, the signing of new agreements with Governments, and World Health Day.

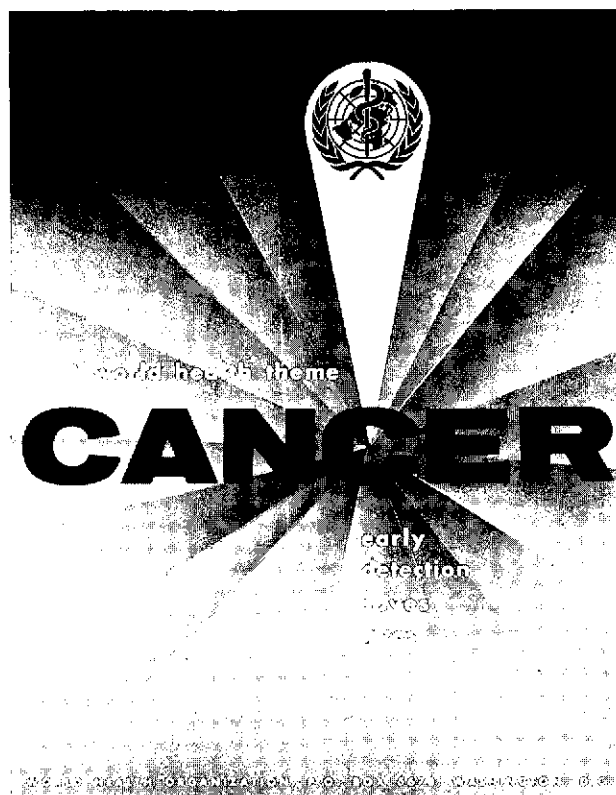
Radio and television. Four new radio programs in the Spanish-language series entitled *Salud para las Américas* were prepared and distributed to 275 stations. In addition, cooperation was given to reporters who interviewed officials of the Organization for their own programs. Among them were both radio and television interviews in which a high official explained WHO's position in regard to the cholera epidemic of 1970.

A three-minute TV newsclip on the Pan American Sanitary Conference, entitled *An Agenda for Health for the 70's*, was produced and sent, with script in English or Spanish, to some 50 stations in Latin America and the Caribbean area.

Information Literature

A thematic approach was developed for the quarterly magazine *Gazette*, which is published in English and Spanish editions. Each issue stressed a specific subject, the four issues published during the year highlighting, respectively, the medical textbook program of the Organization, the use of computers as tools for better health, the progress made by the Inter-American Investigation of Mortality in Childhood, and the XVIII Pan American Sanitary Conference. The last issue attempted to summarize and popularize for the general public the contents of the Quadrennial Report of the Director, 1966-1969. The circulation of the *Gazette* was increased from 10,000 to 11,000 copies in each language for the second and third quarter issues, to satisfy requests from the field and from the general public.

The Information Office also prepared a revised edition of the booklet *PAHO: What it is, What it does, How it works*. This was readied for publication in early 1971. An updated edition of the flyer titled *The Pan American Sanitary Bureau, the Story of Six Decades of Health*, was being prepared.



Other Activities

The Information Office answered an estimated 4,500 written and telephone inquiries from journalists and from the general public. Approximately 77,000 pieces of literature (14,000 more than in 1969) were distributed in information kits or in bulk shipments. Several hundred kits were sent in response to the WHO television spot originally distributed in the United States as part of the information program for the 1969 World Health Assembly in Boston.

A total of 116 loans of films were made to schools, citizen groups, government agencies, and other organizations. Talks on the work of the Organization, combined with occasional tours of the Headquarters building and film showings, were continued as a regular service.

VISUAL AIDS

The Organization, in collaboration with the National Medical Audiovisual Center of the U.S. Public Health Service, continued to produce color filmstrips, with accompanying scripts in Spanish, for use as teaching aids in schools of public health, medicine, veterinary medi-

cine, nursing, and sanitary engineering in Latin American universities. Copies are distributed free of charge to those schools.

In this series 48 filmstrips have been produced to date; the four new titles issued in 1970 (with an average of 74 frames each) were the following:

- No. 45: Incineración de basuras (Garbage Incineration)
- No. VET-46: Estomatitis vesicular (Vesicular Stomatitis)
- No. 47: La epidemiología de las infecciones estafilocócicas (Epidemiology of Staphylococcal Infections)
- No. 48: Epidemiología y transmisión del antrax (Epidemiology and Transmission of Anthrax)

In addition, the English version of filmstrip No. 39, entitled "The Pan American Health Organization and the World Health Organization," was prepared and distributed to all health authorities at the state or provincial level in the United States of America and Canada. This filmstrip was very well received. The New York State Public Health Department informed all high schools in that state of the existence of the filmstrip, suggesting that they request it for use in their classes on international health. In response, 250 requests were received from those schools and were promptly filled.

A total of 4,398 copies of filmstrips were distributed during 1970.

Two exhibits were prepared for display at the Annual Meeting of the American Public Health Association (Houston, Texas, 25-29 October 1970): one on the general activities of the Pan American Health Organization, and the other on PAHO's program in the field of research.

The volume of other work produced by the Visual Aids Unit was as follows: 1,421 maps, charts, graphs, forms, and drawings; 3,241 copies of drawings; 784 signs and captions; 3,889 projection slides; 118 original designs for filmstrips; 4 posters; and distribution of 686 photo-

graphs. Illustrations for 80 documents and publications were made and 916 printer's negatives were supplied.

LIBRARY

The Library directed its activity to building up its collection in order to give maximum service to Headquarters staff, the Zone and field offices, Member Governments, and institutions and individuals working in public health. During the year, it acquired and processed the following literature: 1,349 books and filmstrips, 5,926 copies of periodicals, 490 pamphlets, 4,587 WHO documents and publications, and 172 agreements for the archives; 15,344 cards were added to the card catalogs. A total of 2,466 items were discarded or donated to other libraries and to the U.S. Book Exchange.

Requests for reference and bibliographic assistance received and answered amounted to 4,459. Although the largest number of requests came from the Headquarters staff, many were from outside the Organization. Six bibliographies were compiled on request.

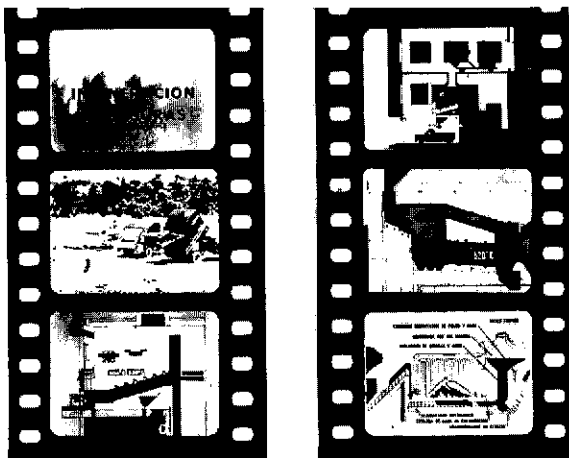
A total of 1,825 items were circulated. As a supplement to the loan service, 17,785 Xerox pages were supplied. Approximately 1,309 persons visited and used the Library.

The Monthly Calendar of Meetings sponsored, assisted, or attended by PAHO, and the PAHO Library acquisitions list were prepared regularly during this period.

TRANSLATIONS

The Translation Service continued to meet requests of the publications and information programs, as well as those of all the technical departments of PASB. In addition, staff members rendered language services during meetings of the PAHO Governing Bodies and in technical conferences and seminars sponsored by the Organization.

The number of translations completed by the staff (exclusive of work performed during meetings) was as follows: 4,679 pages into Spanish; 1,154 pages into English; and 1,927 pages into Portuguese, or a total of 7,760 pages. Another 6,641 pages were translated under contract outside of the Bureau.



VII. EXTERNAL RELATIONS OF THE ORGANIZATION

THE ORGANIZATION WITHIN THE INTER-AMERICAN SYSTEM

The Organization has continued to work in continuous and close concert with other agencies of the Inter-American System, particularly with the General Secretariat of the Organization of American States.

Organization of American States

Notable examples of cooperation between the OAS and PAHO are mutual consultation in the award of fellowships and the conduct of joint meetings and projects on such matters of common interest as housing, social security, environmental sciences, and population.

Revised Charter of the OAS. The Protocol of Buenos Aires, which revised the Charter of the OAS approved in Bogotá in 1948, entered into force on 27 February 1970, ushering in a new stage in the life of the inter-American system.

The first Special Meeting of the General Assembly of the OAS, held in July, approved the Statutes of the three Councils (Permanent Council, Inter-American Economic and Social Council, and Inter-American Council for Education, Science, and Culture) and adopted other decisions for bringing the new structure into operation. A PAHO observer participated in this meeting.

Inter-American specialized organizations. The revised Charter of the OAS introduces certain changes into the system of specialized inter-American organizations. Under the new provisions, agreements such as those formerly entered into between the Council of the OAS and the organization concerned will henceforth be within the competence of the Secretary General, although subject to prior authorization by the General Assembly. The specialized organizations continue to enjoy technical autonomy but are required to take the recommendations

of the Assembly and the three Councils into account. The annual reports, budgets, and accounts of specialized organizations will be transmitted to the General Assembly instead of the Council.

The Organization prepared a document on the position of the Pan American Health Organization within the Inter-American System in which, after a general historical reference, it is concluded that the system of relationships between the OAS and the specialized organizations, as it has operated with respect to PAHO, has been and continues to be good, and that there is no reason why it should be changed in essence. A similar view was expressed regarding the practical aspects of coordination between the Organization, the OAS, and other specialized organizations of the System, although, at least in theory, the mechanisms for coordination could be improved.

This document was transmitted to the Chairman of the Permanent Council for distribution to the working group responsible for preparing proposed standards for application and coordination of the provisions of the Charter of the OAS relating to inter-American specialized organizations.

Inter-American Emergency Aid Fund. The Organization participated actively in the work of this Fund, with the Director of PASB taking part in the Inter-American Emergency Aid Committee.

Following the 31 May earthquake in Peru, the Organization coordinated its relief activities with those of the Fund, maintaining appropriate contacts for that purpose with many international agencies that participated in the emergency activities, and subsequently in the rehabilitation work in the affected area. It also carried out a substantial amount of technical work in connection with the supply of drugs, biologicals, and medical equipment.

The OAS and PAHO/WHO also collaborated with the OAS and the Fund in the emergency programs in Honduras and El Salvador for the rehabilitation of the border areas.

As a member of the Fund, the Organization was represented at all its meetings.

Inter-American Committee on the Alliance for Progress. As in previous years, the Organization participated in the annual meeting of CIAP (Twenty-First Meeting, Washington, D.C., 1-4 September) and in several of the meetings that dealt with the country reviews.

It also participated, together with the Secretariat of CIAP, in the preparation of the studies for the country reviews, by providing technical assistance to the health authorities in the presentation of their investment programs, by giving them technical support, and by assisting the Secretariat in preparing the necessary data for the inclusion of the health sector in the documentation for each country review. The first assistance of this type was rendered in connection with the Paraguay country review, and the second with that of Panama.

The Organization plans to participate in many of the national studies that will serve as a basis for the CIAP country reviews.

Other activities. The Organization was represented at the VIII Special Meeting of the Inter-American Economic and Social Council, held in Caracas, 20-24 April.

Inter-American Development Bank

1970 saw the completion of the first 10 years of activity of this banking institution, a period during which the Organization provided technical and professional support for the Bank's investments in the health sector. The two institutions have continuously worked together on such matters as foot-and-mouth disease, family planning, centers for medical and public health education, medical textbooks, and very particularly, water supply and sewerage systems, a field in which the Bank made its first loan, for \$3,900,000, in 1961 to the city of Arequipa, Peru.

The XVIII Pan American Sanitary Conference associated itself with the tribute rendered to the IDB on the occasion of its tenth anniversary and recommended (Resolution XLI) that the Bank increase the volume of loans for water supply, foot-and-mouth disease, zoonoses, hospitals, medical education, and production of biologicals; that it approve loans for new health activities already included in the Bank's policies; and that it analyze all loans for social and economic development to identify the health components and include financial support for them as an integral part of the total projects.

It is noteworthy that the volume of health lending by international financial institutions in 1970 was at its highest level since 1962. In 1970, the IDB made three loans totaling \$6,850,000 to the Dominican Republic,

Haiti, and Peru for rural water supply programs, and by the end of the year its cumulative lending for urban and rural water supply and sewerage systems in Latin America amounted to almost \$500 million.

The Organization was represented at the meeting of Governors of the IDB held in Punta del Este, Uruguay, 20-24 April.

Meeting of the Central American Public Health Council

The IV Regular Meeting of the Central American Public Health Council, XV Meeting of Ministers of Public Health of Central America and Panama, was held in Managua, Nicaragua, 12-14 November, with the Ministers of Health of all the Central American countries except Honduras present. Officials of the Organization attended the meeting, at which stress was laid on the urgent need to examine the present pattern of financing in the health sector, since a number of governmental agencies are responsible for carrying out activities for the prevention and cure of disease. Such an analysis would make it clear that it is possible to obtain a much greater yield from the present amount of investment and also to identify projects in which external capital is indispensable.

The Council expressed appreciation to the PASB for its valuable assistance in the implementation of the Council's programs and activities. It also adopted various resolutions requesting technical and financial assistance of PAHO/WHO, particularly in connection with malaria eradication, water supply and sewerage, maternal and child health, and statistics.

Conference of Health Ministers of the Caribbean

The Second Conference of Health Ministers of the Caribbean was held in Barbados, from 28 April to 2 May. It was attended by representatives of Antigua, the Bahamas, Barbados, Bermuda, the British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts-Nevis-Anguilla, St. Lucia, St. Vincent, and Trinidad and Tobago. Also present were observers from the Netherlands Antilles, the United Kingdom, the United States of America, and from the University of Guyana, the University of the West Indies, and other international and national organizations.

The Organization participated in the meeting, which adopted resolutions calling for the institutionalization of the Conference, as well as on professional and para-

medical education, systems of personnel appointments, medical care resources, drug control and purchase activities, family planning, maintenance of hospital equipment, nutrition, and medical care in rural areas.

It was subsequently decided to incorporate the secretariat of the Conference into the existing regional organization of the Caribbean Governments, situated in Guyana.

THE ORGANIZATION WITHIN THE UNITED NATIONS SYSTEM

The year 1970 marked the beginning of the Second United Nations Development Decade. Economic growth and the problems arising from industrialization, urbanization, and international trade will continue to play a paramount role in the efforts to bridge the gap separating the developing from the developed countries. All of these problems have public health implications which the Organization is examining with a view to maintaining the health of the peoples of the Americas at the highest possible level.

The relations of PAHO/WHO with various United Nations organs and agencies were continued and, in some respects, intensified during the year.

United Nations Development Program

The support provided by UNDP to projects requested directly by the Governments and the regional and inter-regional activities undertaken by UNDP for the benefit of the countries of the Americas have acquired such importance that the XVIII Pan American Sanitary Conference, when examining the over-all program and budget of WHO for the Americas, considered with special interest the portion of that budget to be implemented with funds of UNDP.

In Resolution XXVI, the Conference urged the Governments to increase the proportion of health activities in the total number of projects for which financial assistance of UNDP was requested. The Conference also endorsed and recommended UNDP approval of those regional projects proposed for the Americas for 1971-1972 in connection with environmental sanitation, *Aedes aegypti* eradication, and health education in the Caribbean area; administration of health services; studies and investigations of water resources; teaching of behavioral sciences; biostatistics education and population dynamics; and the

Pan American Center for Health Planning. It also recommended to UNDP approval of proposed inter-regional projects that foster public health throughout the world, particularly those in which the Governments of the Americas may participate. And it recommended to the Member Governments that they make known to UNDP their interest and endorsement in regard to regional and interregional projects. In the same resolution the Conference requested the Director to continue to provide the Ministries of Health with advisory services in preparing projects for submission to UNDP, and to remind them that requests for health projects may be presented at any time during the year.

The relations between the Organization and UNDP were examined from an administrative standpoint during 1970. While the channels of communication between PAHO, the Geneva Headquarters, and UNDP are clearly established, ways were sought of providing greater flexibility and effectiveness to relationships between the respective offices in Washington, D.C., the Zones, and the countries.

United Nations Children's Fund

In 1970, as in previous years, UNICEF and PAHO/WHO participated jointly in a large number of health activities, with the former providing, as a general rule, materials and equipment, and the latter technical assistance.

UNICEF provided assistance to the malaria eradication programs in Colombia and Paraguay and, together with the U.S. Agency for International Development (AID), cooperated in revising those in Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama with the object of establishing the new world strategy sought by WHO. In the field of sanitation, it participated in programs carried out in Cochabamba and Tarija in Bolivia; the Cayes area of Haiti; and Paraguay. UNICEF also took part in a rural public health program in Uruguay and other health activities in Piura and Tumbes, Peru. Under the tripartite agreement between Brazil, UNICEF, and PAHO/WHO, plans of operations were prepared for the development of health service networks in the States of Paraíba, Pernambuco, Rio Grande do Norte, and Sergipe.

In human resources development, UNICEF participated in courses for the training of nursing auxiliaries in Brazil, and for lay midwives in two health zones and for statistics officials in Peru.

Following the earthquake in Peru, UNICEF devoted

a total of \$1.5 million to rehabilitation of health, education, social welfare, and agriculture in that country.

Other United Nations Agencies

The World Food Program (WFP) and its important assistance to PAHO/WHO projects have already been mentioned in the section relating to the Organization's nutrition activities.

The Organization followed with interest the meetings of the Economic Commission for Latin America (ECLA) and attended the V and VI Special Meetings of its Committee of the Whole, the second of which examined the very serious situation created by the earthquake in Peru.

Multiple-Agency Collaboration

As in previous years, the Organization cooperated with the United Nations, OAS, UNESCO, FAO, and ILO in the Regional Center for Functional Literacy in Rural Areas for Latin America (CREFAL).

PAHO/WHO also collaborated in the health aspects of the program established by the Government of Chile for the development of the less-favored rural areas along the coast and in the lake region, in the Provinces of Valdivia and Osorno. The United Nations Social Development Department, UNICEF, ILO, FAO, and UNESCO also participated in this program, which includes nutrition, basic sanitation, medical care, maternal and child care, and training of personnel.

These same international organizations, along with PAHO/WHO, are considering an expansion of the rural public health program within the comprehensive rural development project for Uruguay, to begin in 1971. The rural health and development projects being carried out by the National Social Welfare Board of Honduras are receiving assistance from FAO, WFP, UNESCO, and PAHO/WHO. The FAO, UNICEF, and PAHO/WHO cooperated in 1970 with the Brazilian Association for Rural Credit and Welfare in matters related to agriculture, social welfare, and strengthening of rural services.

The FAO, IDB, and PAHO/WHO cooperated in the organization of the School of Veterinary Technicians in Haiti, which began activities in October. Together with UNICEF and UNESCO, PAHO/WHO furnished assistance to the program of vocational schools in Haiti.

Technical personnel of FAO, UNESCO, UNICEF, and the Organization carried out an evaluation of the program

of food assistance to the school population of the São Francisco River Valley in Brazil, which is a WFP project.

The IDB, the World Bank, UNDP, AID, the Canadian International Development Agency, and the British Overseas Development Division participated in the preinvestment studies, design, and construction of water supply and sewerage systems in the Caribbean area.

Meeting at the WHO Regional Office for Southeast Asia

A PAHO official attended the meeting held in Bangkok from 12 to 14 October to discuss the subject of national health planning. He presented a working document describing the different actions that led the American States to introduce chapters dealing with health as an integral part of the development process in the Charter of Punta del Este.

RELATIONS WITH NATIONAL AND INTERNATIONAL INSTITUTIONS

The health activities of PAHO/WHO often arouse the interest of public and private institutions, which frequently support particular programs through grants and in other ways.

The Foundations

In 1970, the W.K. Kellogg Foundation, the Rockefeller Foundation, the Milbank Memorial Fund, and the Research Corporation were some of the principal foundations that provided assistance to programs of nutrition, intensive patient care, and training of personnel.

Pan American Health and Education Foundation. This Foundation began its activities in February 1970, one of its purposes being to further the basic aims of the Pan American Health Organization. It has a nine-member board of trustees and an executive secretariat.

Although an independent institution, it works in close cooperation with PAHO in fostering the improvement of health and education in the Americas.

The PAHEF signed a cooperative agreement with PAHO in April, providing that the Foundation will examine and take into consideration such projects as are proposed by the Organization; request the opinion and technical approval of PAHO for all projects not proposed

by the latter; notify PAHO of all projects and revisions thereof which the Foundation may sponsor or support; and provide information to the Organization regarding its projects or other related matters.

PAHO and PAHEF may undertake joint projects, and the program approved in March provided for six such projects, ranging in duration from one to four years and representing a total investment of \$800,000.

The Foundation will accept contributions from any source provided their purposes are compatible with its policy and objectives. The United States Internal Revenue Service ruled in June that the Foundation was exempt from federal income tax. Contributions to the Foundation are deductible for the purposes of U.S. federal taxes on income, inheritances, and gifts.

The principal activity on which PAHO and PAHEF are cooperating is the medical textbook program, for which a \$2 million loan was received from the IDB.

Associations and Universities

Among the associations with which the Organization again collaborated in 1970 were the Inter-American Association of Sanitary Engineering (AIDIS), whose XII Congress, held in August, was devoted to the topics of urban sanitation and industrial hygiene, and the Association of Professors of Veterinary Public Health and Preventive Medicine of the United States and Canada, which designated the Department of Human and Animal Health of PAHO as its executive secretariat.

PAHO/WHO maintains cooperative and working relations with a large number of Latin America's universities, particularly the schools of medicine and their departments of preventive medicine, public health, and pediatrics, as well as with the schools of dentistry, veterinary medicine, engineering, and nursing. A reading of the section of this *Report* devoted to human resources development will suffice to show the breadth and intensity of the Organization's continued participation in university activities in the health sector.

United States-Mexico Border Public Health Association. Special mention should be made of this Association, which held its XXVIII Annual Meeting in Mexicali, Baja California, from 16 to 20 March, and for which the PAHO Field Office in El Paso, Texas, serves as Secretariat.

The meeting examined the questions of the participation of auxiliary personnel in health programs and the relationship between the environment and individual health, and approved a series of recommendations in

regard to vigilance against rabies and other zoonoses; continuing education and exchange of nursing personnel; establishment of binational committees on the environment and utilization of resources; health in adolescence; increase and evaluation of laboratory resources; bilingual personnel in health services; venereal diseases; tuberculosis control; control of tobacco smoking; and family planning in homes where there are persons with tuberculosis. Recommendations were also approved on special meetings on veterinary public health and participation of organized groups in health programs on both sides of the border.

During the meeting, an interview was held between the Minister of Health and Welfare of Mexico, the Surgeon General of the U.S. Public Health Service, and the Director of PASB, at which the following points were examined: *Aedes aegypti* control; the rabies control program; epidemiological surveillance in border areas; tuberculosis control; air pollution; and the international sanitary landfill project in the two Nogales.

Other Institutions and Societies

The PAHO/WHO program also receives support from other national institutions and private firms whose interest lies primarily in the progress of particular lines of research, for instance nutrition.

Prominent among the national institutions are the U.S. Agency for International Development, the U.S. National Institutes of Health and Public Health Service, and the U.S. National Library of Medicine. The AID continued in 1970 to provide substantial support to the malaria eradication programs in a number of countries, as well as to maternal and child health programs in Paraguay, family planning programs in El Salvador, sewerage programs in Panama, and the construction of 50 health stations in Chile.

The National Institutes of Health collaborated, as in previous years, in programs of mental health, virus research, and the relationship between malnutrition and mental development in children. The National Library of Medicine continued to render assistance to the PAHO Regional Library of Medicine in Brazil.

The contributions in the form of technical assistance, fellowships, grants, or equipment, depending on the need in each case, covered the entire gamut of public and private institutions concerned with health. In some cases, such as those of the Adolfo Lutz and Oswaldo Cruz Institutes in Brazil, this cooperation has extended over a period of many years. In others, it has been stepped up

in recent years as a result of the orientation given to the Organization's programs. An example of the latter is found in the family planning activities, which have made for closer collaboration between the Latin American Center for Demography in Santiago, the Population Dynamics Research Center in São Paulo, which is undertaking research on fertility, and the Latin American Center for Perinatology and Human Development in Montevideo.

PAHO/WHO maintains active and mutually reinforcing working relationships with health sector institutions. In some cases, public or private institutions provide support, mainly financial, for health programs of PAHO/WHO, while in others the Organization contributes, chiefly by means of technical assistance, to the strengthening of public or private institutions directly or indirectly pursuing health objectives. In either case, the cooperation advances the cause of health in the Hemisphere.

VIII. ORGANIZATION AND ADMINISTRATION

GOVERNING BODIES

In 1970 the following meetings were held at Headquarters in Washington, D.C.: the XVIII Pan American Sanitary Conference (28 September-8 October); the 64th Meeting of the Executive Committee (29 June-9 July); and the 65th Meeting of the Executive Committee (8 October).

Pan American Sanitary Conference

At the XVIII Pan American Sanitary Conference, XXII Meeting of the Regional Committee of the World Health Organization for the Americas, all the Governments of the Organization were represented. The Government of Canada appointed official observers. The Executive Committee was represented by its Chairman. Also present were the Director-General and Assistant Director-General of WHO, and observers from the Organization of American States, the Inter-American Development Bank, the United Nations, the Economic Commission for Latin America, the United Nations Children's Fund, the United Nations Development Program, and the Food and Agriculture Organization of the United Nations. Observers from 14 nongovernmental organizations and other institutions also attended.

Dr. José Renán Esquivel, Minister of Health of Panama, was elected President, and Dr. Adán Godoy Jiménez, Minister of Public Health and Social Welfare of Paraguay, and Dr. José de Jesús Mayz Lyon, Minister of Health and Social Welfare of Venezuela, were elected Vice-Presidents. Dr. Ramón Alvarez Gutiérrez, Delegate of Mexico, was appointed Rapporteur.

After a short preliminary session, the Conference held its inaugural session on 28 September, which was pre-

sided by Dr. Sylvia E. Talbot, Minister of Health of Guyana, in her capacity as President of the XIX Meeting of the Directing Council. Statements were made during the session by Mr. Galo Plaza, Secretary General of the Organization of American States, Dr. Jesse L. Steinfeld, Surgeon General of the U.S. Public Health Service, Dr. M.G. Candau, Director-General of WHO, Mr. Felipe Herrera, President of the Inter-American Development Bank, and Dr. Abraham Horwitz, Director of the Pan American Sanitary Bureau.

The Conference held an inaugural session, 10 plenary sessions, and a closing session; Committee I held seven sessions and Committee II six sessions. The General Committee met on seven occasions and the Committee on Credentials on two. Of the 43 resolutions approved, the following deserve special mention.

Amendments to the Rules of Procedure. In accordance with Rule 64 of its Rules of Procedure and as a result of a proposal made by the Directing Council and the Executive Committee, the Conference amended its Rules of Procedure so as to reduce the time limit for convening the Conference to 60 days, fix the quorum for plenary



Plenary session of the XVIII Pan American Sanitary Conference.

sessions, establish the post of Rapporteur and his role and participation in the General Committee, appoint a representative of the Executive Committee and define his role, and establish other procedures relating to the distribution of reports, adoption of amendments, and elections.

It also requested the XX Meeting of the Directing Council to consider the recommendations included in Resolution II of the 64th Meeting of the Executive Committee, defining the role of the Representative of the Executive Committee at meetings of the Directing Council.

Official reports. The Conference reviewed and approved the Annual Report of the Chairman of the Executive Committee and the Annual and Quadrennial Reports of the Director of the Bureau for 1969 and 1966-1969, respectively.

Participation of Canada in PAHO. After noting the intent of the Government of Canada to join the Organization, which had been supported as early as 1949 by the III Meeting of the Directing Council, the Conference expressed its pleasure with the declaration of that Government and requested the Director to provide all available assistance in order that Canada might join the Organization without delay.

Election of Members to the Executive Committee. The Conference declared the Governments of Brazil, Honduras, and the United States of America elected to the Executive Committee for a period of three years. At the same time it thanked the Governments of Nicaragua, Trinidad and Tobago, and Uruguay for the services rendered to the Organization by their Representatives on the Executive Committee.

Election of the Director of the Pan American Sanitary Bureau. The election took place in accordance with the provisions of Article 4-E and 21-A of the Constitution and Rule 45 of the Rules of Procedure. The Conference reelected the incumbent Director for a period of four years to begin on 1 February 1971, and resolved to inform the Executive Board of WHO of his designation for appointment as Regional Director for the Americas.

Budget and finance. In Resolution XXII, the Conference appropriated for the financial year 1971 an amount of \$16,950,165 to be financed from assessments to Member Governments and Participating Governments and from miscellaneous income. The assessments were established in Resolution XXIII.

It also approved an increase in the appropriation level in an amount to be determined by the Executive Committee but not to exceed \$300,000, in recognition of the probability that the United Nations General Assembly would approve a professional salary increase in 1971

and of the lack of provision for carrying out the recommendations of the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control for an additional appropriation for \$300,000 to cover the needs of the Pan American Zoonoses Center.

The Conference endorsed the revisions to the 1971 Program and Budget Estimates for the WHO regular program in the Americas (Resolution XXIV); approved the Proposed Program and Budget Estimates of WHO for the Region of the Americas for 1972 (Resolution XXV); examined the WHO program and budget for 1973 (Resolution XXVII); and agreed to transmit them to the Director-General for inclusion in the WHO Program and Budget for those years.

In addition, the Conference took note of the provisional draft of the Proposed Program and Budget Estimates of PAHO for 1972, requesting the Director to use it as a basis for preparation of the Proposed Program and Budget Estimates for 1972, after further consultations with Governments, and likewise requesting the Executive Committee to make a detailed examination of it and to submit its recommendations thereon to the XX Meeting of the Directing Council.

After considering the Financial Report of the Director and the Report of the External Auditor for the fiscal year 1969, the Conference approved the reports and commended the consistent pursuit of long-term financial policies which have enabled the Organization to achieve and maintain a sound financial position. At the same time it urged the Governments to pay their quotas as soon as possible to assure maximum fulfillment of the program of the Organization.

In considering the report on the collection of quota contributions, the Conference expressed concern about



Officers of the XVIII Pan American Sanitary Conference.

the number of Governments in arrears more than two years, and recommended to the Executive Committee and the Director that they analyze the problem and promote compliance with Article 6-B of the Constitution. At the same time, it expressed its thanks to those Governments which had already made payments in 1970, and requested the Director to continue to inform the Governments on the status of quota collections and bring to their attention the importance of unanimous support of the program of the Organization through the full and prompt payment of their quota contributions.

Health conditions. In plenary sessions of the Conference, the delegates of Governments gave an account of the health situation in their countries and the progress made in the interval since the XVII Conference. The reports revealed a wealth of experience and led to a fruitful exchange of information which confirmed, once again, that this item is one of the most important ones on the agenda of the Conference. Nevertheless, to ensure maximum utilization of each country's experience by all the Governments, the Conference, in Resolution XIII, requested the Executive Committee to study, together with the technical staff of the Bureau and in consultation with the Governments, ways and means of facilitating the formulation, presentation, and discussion of their reports.

The PASB in turn submitted a report on *Health Conditions in the Americas, 1965-1968* (Scientific Publication 207), the sixth in the series begun in 1954. The report evaluates the progress made in the health field and establishes the bases for future health programs. The Conference not only approved the report but recommended that the series be maintained; and it urged the Governments to take the necessary actions for the improvement of vital and health statistics.

General Program of Work, 1973-1977. This program was prepared in accordance with the recommendations embodied in Resolution WHA23.59, taking into account the changes in the order of priority of national and regional health programs, the trends observed in recent years in PAHO activities, and the recommendations of WHO and Resolution XV of the 64th Meeting of the Executive Committee on long-term planning and evaluation. The program was approved by the Conference, which resolved to transmit it to the WHO Director-General so that he might take it into account in preparing the Fifth Program of Work of WHO for the period 1973-1977 insofar as it relates to the Region of the Americas.

The Conference also urged the Governments to continue and increase their efforts to gain more knowledge of the health status of the population and to develop and

strengthen the health infrastructure, including information systems, research, planning, administrative improvements, and coordination of national health systems; to continue and strengthen their basic sanitation programs and give the necessary attention to the emerging problems of industrialization and urbanization, including the definition of new indicators in this field; and to continue and strengthen studies on health resources, especially human, technical, and financial resources, so as to ensure that national health plans are properly carried out. It also urged the Governments and the Director to continue their efforts for joint programming of the activities of the Organization and to collaborate in the development and improvement of the system of quadrennial projections.

Emergency situations. The Conference took note of the expression of thanks by the Government of Peru for the assistance received on the occasion of the earthquake which occurred in its territory on 31 May 1970. It requested the Director, in consultation with the health authorities and in accordance with the information to be provided in due course, to introduce appropriate changes in the program being carried out in Peru with the assistance of the Organization in order to adapt it as far as possible to the new circumstances. It also instructed him to make available to the Peruvian Government, subject to budgetary limitations, the technical assistance necessary for carrying out studies to determine the kind and amount of assistance required for the rehabilitation of the health infrastructure in the devastated areas.



Hospital damaged by the earthquake of 31 May 1970 in Peru.

On the initiative of the Peruvian Government, the Conference recommended to the Governments, and especially those of countries situated in geographic areas in which natural disasters are more frequent, that they make provision in their plans for the establishment of the necessary agencies in order to cope with emergency situations caused by natural disasters, or for their improvement if they already exist, and that they pay special attention to the planning of health measures to be taken in emergencies, assigning this due priority. It also requested the Director to study the method of collaborating with the Governments and provide them with the assistance they deem necessary for studying the situation, establishing the necessary agencies, and planning the work to be carried out; to study existing external assistance arrangements and, in collaboration with the authorities of the health sector of the countries, to attempt to establish a procedure for coordinating and channeling regional assistance in the event of disasters exceeding the operating capacity of the affected country.

Communicable diseases. In Chapter I-A of this *Report*, mention has already been made of the resolutions dealing with *Aedes aegypti* and smallpox. With regard to malaria, the Conference (Resolution XXXI) took note of the XVIII Report of the Director on the status of the eradication program in the Americas, and expressed its satisfaction with the steps taken pursuant to Resolution WHA22.39 of the Twenty-Second World Health Assembly on the re-examination of the global strategy of the eradication of this disease. It drew the attention of Governments to the importance of incorporating the malaria eradication program into that part of the national development plan dealing with the health sector, and of giving suitable priority to the appropriation of funds for it. It also recommended the strengthening of research aimed at devising more efficient methods of interrupting malaria transmission, and of evaluating the economic impact of the eradication of the disease. Furthermore, it reaffirmed the need to strengthen the coordination of national malaria eradication services and general health services, and emphasized the desirability of increasing, with the assistance of PASB, health education activities designed to reduce as much as possible factors that limit the effectiveness of the attack measures used. Finally, it thanked PAHO/WHO, UNICEF, and AID for their assistance to the Governments in carrying out malaria eradication programs, and requested international agencies to continue to provide their valuable collaboration in order to achieve the goal of eradicating the disease, which is hindering the economic development of areas still infected.

As for cholera, the Conference urged the Governments

to intensify their surveillance efforts in order to provide the earliest possible warning in case the disease appears in the Americas, and recommended that, in applying the measures provided for in the International Sanitary Regulations with regard to international travelers, they not go beyond the scope of those Regulations. With reference to zoonosis, the Conference took note of the final report of the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control; expressed its thanks to the ministries of agriculture for their efforts to solve the problems connected with these diseases and to reduce their impact on the socioeconomic development of the countries; reiterated the importance of supporting the activities of the Pan American Foot-and-Mouth Disease and Zoonoses Centers; and emphasized the need for international organizations to provide the countries with more technical assistance in coordinating their campaigns to control animal diseases.

Multinational centers. The Conference carefully examined and approved (Resolution XXXIII) the guidelines for the establishment and operation of multinational centers which had been recommended by the 64th Meeting of the Executive Committee. For the purpose of those guidelines, a multinational center was defined as "an institution or center administered by international staff and supported to a significant degree by international funds, which provides services for all the countries in the Region, or a group of them in a particular area." The establishment and operation of multinational centers was to be based on the priorities arising out of the planning of the PAHO/WHO program, and each country's appraisal of its health problems would determine the extent and nature of the international assistance that would best serve to support the health programs of the Member Countries.

These centers, which are created only when there are no adequate national institutions, should support, assist, and supplement the programs of the countries and should promote international cooperation for the solution of common problems.

In planning a multinational center, the PAHO should seek financial and other support from extrabudgetary sources, in addition to the regular budget, and the Host Government should provide premises and, as far as its resources permit, also contribute supplies, personnel, and funds.

Control of cigarette smoking. The Conference recommended to the Governments that they intensify and coordinate the efforts of health authorities, scientific associations, and the community to combat tobacco consumption; commended PASB on its initiative in planning a



Technical Discussions held during the XVIII Pan American Sanitary Conference.

survey on the characteristics of the smoking habit; and requested the Director to establish a clearinghouse for receiving and transmitting information concerning smoking and health in order to promote and facilitate the exchange of experiences and educational materials among agencies in the Region interested in this matter.

PAHO Award for Administration. After examining the proposal submitted by the 64th Meeting of the Executive Committee, the Conference approved the procedure and criteria for the PAHO Award for Administration, as an incentive to individuals who do outstanding work in the field of administration in the health sector or in the form of written papers on administrative topics that are applicable to the health sector (Resolution XVIII).

Other resolutions. Other items examined by the Conference were the subject of resolutions to which reference is made elsewhere in this *Report*. Among the other important ones are those relating to nursing, health legislation, man-environment relationships, long-term planning and evaluation, long-term financial indicators, and financing of the textbook program for medical students. On the initiative of the Delegation of Venezuela, the Conference paid tribute to the Inter-American Development Bank on the occasion of its tenth anniversary.

The Conference also took note of the resolutions approved by the Twenty-Third World Health Assembly on the following topics: training of national health personnel, community water supply, international monitoring of adverse reactions to drugs, drug dependence, measures taken in pursuance of the revised global strategy of malaria eradication, health consequences of smoking, and general program of work covering a specific period.

Technical Discussions. The Technical Discussions held during the Conference dealt with the topic "Venereal

Diseases as a National and International Health Problem." The Conference took note of the Final Report; expressed its satisfaction with the discussions; expressed its thanks to the officials of the other international agencies and nongovernmental organizations who participated; recommended to the Director that he give the report the widest possible distribution, and that subject to budgetary limitations, he provide the Governments, upon request, with assistance in implementing the recommendations contained in the report.

The Conference selected the topic "Environmental Pollution" for the Technical Discussions to be held at the XX Meeting of the Directing Council, XXIII Meeting of the Regional Committee of WHO for the Americas.

Executive Committee

The 64th Meeting of the Executive Committee was held from 29 June to 9 July. It was attended by the Representatives of the Governments of Argentina, Costa Rica, Guyana, Mexico, Nicaragua, Peru, Trinidad and Tobago, Uruguay, and Venezuela; by observers from France, the Kingdom of the Netherlands, and the United States of America; and by observers of the Organization of American States, the Inter-American Development Bank, the International Hospital Federation, and the Milbank Memorial Fund.

Under the chairmanship of the Representative of



64th Meeting of the Executive Committee.

Argentina, the Committee held 17 plenary sessions and a closing session, and approved 31 resolutions.

Eleven sessions were devoted to the examination of the Proposed Program and Budget Estimates of PAHO for 1971, the Proposed Program and Budget Estimates of WHO for the Region of the Americas for 1972, and the Provisional Draft of the Proposed Program and Budget Estimates of PAHO for 1972. The Committee made a number of amendments to its own Rules of Procedure and transmitted to the Conference several proposed amendments to the Rules of Procedure of that body, with a recommendation for their approval. It also recommended to the XX Meeting of the Directing Council the favorable consideration of amendments to its Rules of Procedure similar to those recommended for the Conference.

Other resolutions approved by the Committee referred to administrative or financial matters—the Financial Report of the Director and Report of the External Auditor for 1969, the report on the collection of quota contributions, advance information to Governments on future quota contributions, amendments to the Staff Rules, representation of the Committee at the Conference, and PAHO Award for Administration.

The Committee likewise approved resolutions on the following topics: smallpox eradication, *A. aegypti*, III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, nursing, long-term planning and evaluation, health legislation, multinational centers, and assistance in emergencies.

The 65th Meeting of the Executive Committee, after electing its Chairman, Vice-Chairman, and Rapporteur, considered the resolutions of the Conference of direct interest to the Committee and approved a resolution amending the financial procedure for the operation of the supply services offered to Governments.

ADMINISTRATIVE MANAGEMENT

The year 1970 saw increased emphasis on administrative management, particularly during the second half. Procedures of long standing were challenged to determine their continuing applicability, and the concept of cost effectiveness was being applied whenever practicable.

With the advent of a digital computer in the latter part of the year, beginnings were made on the integration of basic administrative processes such as payroll and personnel, as well as greater use of the manipulative ability of the computer.

Work measurement studies based on work sampling techniques were launched to measure the application of staff time and form the basis for a more rational use of human resources.

Budget and Finance

The program and budget document (*Official Document 98*) issued in 1970 continued to be presented by: program activity, object of expenditure, source of funds, appropriation part, organizational unit, geographic breakdown into Zones and countries, and individual projects. The initiation of country quadrennial projections raised expectations for progressive improvement in forward planning and consequently a more solid base for the preparation of the program and budget of the Organization.

The total amount of funds budgeted for 1970 (*Official Document 98*) was \$30,115,457, representing an increase of 5.2 per cent over the budget for 1969 (Table 54). The total amount of funds obligated was \$27,713,624, an increase of 11.8 per cent over the previous year. The relatively greater increase in the amount obligated came about largely because quota collections during the year made it possible for the PAHO regular budget to be almost fully implemented. In 1969 lagging collections had necessitated a prudent holding of expenditures below the authorized level.

The total of all funds available during the year was 3.0 per cent more than the total funds budgeted. This was in large part due to increased support from the UNDP. Also, grants and contributions to PAHO for special projects exceeded the level anticipated in the budget.

The Organization's successful policy of investing its reserve funds (particularly fruitful in 1970 owing to high interest rates), along with a modest surplus in quota collections over the budgeted expenditure, made possible an \$836,948 addition to the Working Capital Fund. This was a partial replacement of the \$1,803,180 used to finance the previous year's deficit.

The serious problem of financing the malaria program, over the next several years, remained. During 1970 utmost economy was exercised in the expenditure of malaria funds. That action, to limit expenditures and to use other fund sources as much as possible, resulted in a year-end balance in the Special Malaria Fund of \$513,091.

Contributions to the Community Water Supply Fund amounting to \$175,694 were received from agencies responsible for water supplies in several countries. Those

VIII. ORGANIZATION AND ADMINISTRATION

TABLE 54. PAHO/WHO FUNDS: AMOUNT BUDGETED, AVAILABLE, AND OBLIGATED, 1970.

Source of funds	Budget 1970		Amount available 1970 (U.S. dollars)	Amount obligated 1970	
	Amount (U.S. dollars)	Per cent increase or decrease from 1969		Amount (U.S. dollars)	Per cent increase or decrease from 1969
Pan American Health Organization					
Regular budget (Parts I through VI)	13,852,119	10.0	13,852,119	13,833,821	13.9
Special Malaria Fund	1,111,991	-38.2	763,067	699,976	-38.8
Community Water Supply Fund	238,863	59.4	202,957	157,607	177.8
Special Zoonoses Fund	—	—	30,278	30,278	566.2
Grants and other contributions	3,849,033	4.6	3,741,016	2,815,422	39.0
INCAP/Regular budget and grants received	1,009,892	-14.1	1,537,917	1,293,338	1.4
Pan American Health and Education Foundation	—	—	69,540	48,444	100.0
Special Fund for Health Promotion	—	—	46,468	46,468	100.0
Total	20,061,898	3.4	20,243,362	18,925,354	13.7
World Health Organization					
Regular Budget	6,643,600	5.9	6,799,350	6,729,677	8.0
Malaria Eradication Special Account	—	-100.0	—	—	-100.0
UNDP-Technical Assistance	1,661,347	17.6	1,859,556	1,068,924	15.4
UNDP-Special Fund	1,631,977	37.1	1,917,482	809,475	20.3
Other	116,635	-26.5	189,486	180,194	26.1
Total	10,053,559	8.8	10,765,874	8,788,270	7.8
PAHO/WHO total	30,115,457	5.2	31,009,236	27,713,624	11.8

* \$250,000 shown under PAHO Regular Budget.

amounts were directly related to consultant services and training provided to those agencies to improve the organization and management of water systems.

The medical textbook program continued to make progress. Since the start of the program textbooks costing \$355,000 have been purchased, and another \$168,750 were on order at the end of 1970. Sales by that date totaled \$227,220, and the year-end inventory was \$188,568. Expanded support for the program was achieved when the Inter-American Development Bank agreed to make a \$2,000,000 loan to the Pan American Health and Education Foundation (PAHEF) for carrying out the activities, jointly with PAHO. For the purpose of completing the loan arrangements, the XVIII Pan American Sanitary Conference, in Resolution XXIX, approved the form of application and agreement for a commercial letter of credit between the Pan American Sanitary Bureau and the Riggs National Bank of Washington, D.C., and authorized the Director to undertake the obligations necessary to ensure the successful outcome of the operation.

The PAHEF, in addition to its role in the textbook program, received during 1970 grants totaling \$69,540, of which \$48,444 was expended in cooperation with

PAHO, largely for human resources programs. The Foundation was attracting additional support and a greatly expanded program was anticipated for 1971.

During the year automatic data processing was extended to cover budgetary control accounting; the application to general accounting, which began in 1969, was continued. Also, the computer was used for the preparation of the 1971-1972 budget document.

Personnel

Staff strength of the Organization on 31 December 1970 was 1,290 (1,236 in 1969), including 21 temporary employees and 24 short-term consultants. Of the 1,245 regular staff members, 308 were stationed at Headquarters and 937 in the field.

During the year 1,425 persons were appointed. This included 96 professionals and 100 general service employees appointed as regular staff members; 1,005 short-term consultants and temporary advisers; and 224 temporary conference and other employees hired during peak work periods and during meetings of the Governing Bodies of the Organization.

The 364 post classifications completed during the year for Headquarters and field installation positions included 105 initial classifications, 70 reclassifications, 49 redefinitions, and 140 revisions.

Local salary scale revisions were effected for Ramos Mejía-Buenos Aires, Caracas, Guatemala City, Mexico City, Paramaribo (ad hoc), Port-of-Spain, Lima, Rio de Janeiro, El Paso, and Washington, D.C.

Post adjustment classes for professional staff were revised for 26 countries and other areas on the basis of cost-of-living studies.

Amendments to the Staff Rules of the Pan American Sanitary Bureau included: clarification of the provision on eligibility for payment of the education grant, allowing for the travel of a dependent child attending school, in combination with other authorized travel of the staff member or his dependents, to permit three reunions with the staff member in two years; provision for one complete medical examination before an offer of appointment is issued, to protect both the Organization and the candidate for employment by ensuring medical fitness before an offer is made; and an amendment of the rule on maternity leave to permit a staff member, based on medical advice, to take less than six weeks prior to confinement, with corresponding increase of post-confinement leave. These amendments were similar to those adopted by the World Health Organization. The 64th Meeting of the Executive Committee approved the amendments (Resolution XIV), and the XVIII Pan American Sanitary Conference took note of them and also endorsed the plan to provide an appropriate administrative tribunal for those staff members who do not at present have access to an external tribunal (Resolution XVII).

As part of a continuing effort to improve the performance of the staff, greater emphasis was placed upon additional inservice training activities. During the year, a Spanish-language and an English-language training program were introduced, an improved-reading seminar was held, and a workshop on advanced report writing for the technical staff was conducted.

Services and Supply

The Organization continued to render procurement services to Member Governments, in addition to providing for its own needs. The procedure was simplified and the service thus improved by elimination of letters of credit as one of the modes of making deposits for purchases. This change was authorized by the Executive Committee at its 65th Meeting.

The workload for the year included the issuance of almost 3,000 purchase orders covering about 10,500 line items for a total value of almost \$4 million. Although the number of line items processed was somewhat less than average, the dollar value was one of the highest recorded.

A number of Governments made urgent requests for purchases of vaccines and drugs against the Emergency Revolving Fund. Cholera vaccine was purchased for Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Panama, Paraguay, Surinam, Trinidad and Tobago, Uruguay, and Venezuela. Poliomyelitis vaccine was purchased for Brazil, Colombia, Honduras, Mexico, and Paraguay. Other emergency purchases included BCG vaccine for Chile and Honduras; dapzone tablets for Chile and Honduras; hemophile for Jamaica; influenza vaccine for Mexico and Surinam; measles vaccine for Peru; DPT vaccine for Mexico; BAC respiratory vaccine for El Salvador; and tuberculin syringes and needles for Venezuela.

Drugs, vaccines, and other urgent supplies provided under the regular purchasing services, with advance deposits, included 50,000 doses of poliomyelitis vaccine and 10,000 of measles vaccine for Bolivia; 400,000 doses of poliomyelitis vaccine for Ecuador; 10,000 of poliomyelitis vaccine and 2,000 of measles vaccine for Colombia; and 3,000,000 doses of poliomyelitis vaccine and 3,000 prefilled syringes of tetanus immune globulin (human) for Mexico.

During the emergency situation created by the earthquake in Peru, the Organization purchased and air-shipped to Lima 750,000 doses of poliomyelitis vaccine; 90,000 of measles vaccine; 5,000 of typhus vaccine; 24,000 of tetanus toxoid; 500 prefilled syringes of tetanus immune globulin (human); 150 vials of 5,000 units each of tetanus antitoxin; 200 vials (20,000 units each) of tetanus antitoxin; 200 vials (20,000 units) of gas gangrene antitoxin; 50,000 vials (1,000,000 units) of penicillin G crystalline; 360,000 disposable hypodermic needles; and 490,000 disposable syringes.

The Organization also purchased additional vaccines, supplies, and equipment to relieve the emergency situation in Honduras and El Salvador.

During its first full year in operation, the offset duplicating equipment purchased in 1969 to handle the inhouse reproduction work produced 7,403,706 impressions. This represented an increase of 64.4 per cent over the prior year's inhouse production. To meet the demonstrated need for adequate duplicating facilities, offset equipment was also installed at the Pan American Foot-and-Mouth

Center in Rio de Janeiro and at the Center for Sanitary Engineering and Environmental Sciences (CEPIS) in Lima.

Areas of the Headquarters building that formerly had been used for storage, as well as a portion of the garage, were suitably renovated and air conditioned to accommodate the IBM 360 computer and associated equipment.

Communications of the Organization were improved with the installation of Telex service in Zones III (Guatemala) and VI (Buenos Aires). Thus, only Zone II (Mexico City) remained without Telex connection.

Conference Services

Conference services activities continued to expand during 1970, when a total of 74 meetings were held requiring these services in varying degrees—among them the meeting of the Governing Bodies of the Organization, seminars, courses, and other technical and administrative meetings convened at Headquarters and in various countries of the Hemisphere.

Major attention was devoted to the organization and direction of secretariat and documentation services for the XVIII Pan American Sanitary Conference and the 64th and 65th Meetings of the Executive Committee, held in the Headquarters building.

The greater scope of the annual Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control (Buenos Aires, Argentina, 14-17 April 1970) required increased participation in arranging for and coordinating the various activities involved.

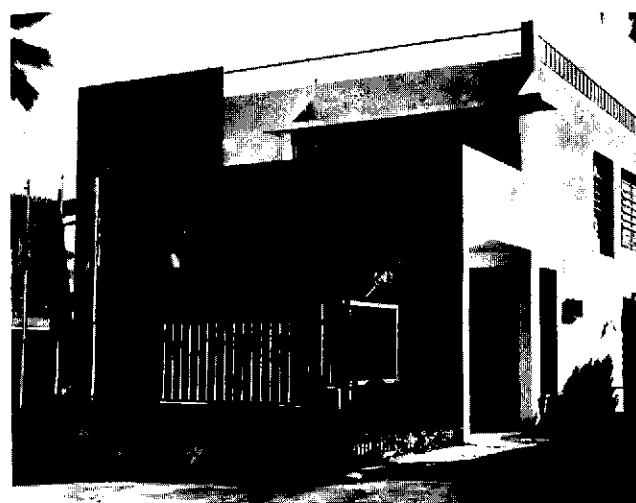
Among other PAHO-sponsored meetings that received advisory and/or administrative assistance were those related to: *Aedes aegypti*-borne diseases; dengue; mycoses; nuclear medicine; nutrition; population dynamics; medical research; microbiology; sanitary engineering; techniques and mathematical models in water resources; molluscicide testing and evaluation; parasitology; drug control; cholera; malaria; occupational health; hospital

planning and design; Chagas' disease; and vaccines against viral and rickettsial diseases.

ZONE AND FIELD OFFICES

The administration of Zone Offices, Centers, and other field offices, including those of PAHO/WHO Country Representatives, continued with no significant change. The centralized administrative and financial services are intended to simplify administrative activities in the field, and this system continued to function satisfactorily.

New quarters were purchased for the Zone I Office in Caracas; the house that was purchased and remodelled now provides adequate space of excellent quality in a convenient location. Also during the year 87 square meters of additional rental space were obtained for the Zone VI Office (Buenos Aires) in the same building where the Organization owns space.



New building of the Zone I Office in Caracas, Venezuela.

IX. PROJECT ACTIVITIES

-- None.
 * Does not include inter-Regional projects (world).

Country or AMRO projects	PROTECTION OF HEALTH										PROMOTION OF HEALTH										DEVELOPMENT OF HUMAN RESOURCES																		
	Communicable diseases										Environmental health			General services							Specific programs																		
	General (Epidemiology)	Malaria	Smallpox	Tuberculosis	Leprosy	Zoonoses	Foot-and-mouth disease	Other	Parasitic diseases	General	Water supply	Aedes aegypti	Housing	General public health																									
														General public health	Nursing	Laboratory	Health education	Statistics	Administrative methods	Health planning	Maternal and child health	Nutrition	Mental health	Dental health	Radiation protection	Food and drugs	Medical care	Health and population dynamics	Rehabilitation										
0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	2100	2200	2300	2400	3100	3200	3300	3400	3500	3600	3700	4100	4200	4300	4400	4500	4600	4700	4800	4900	5000	6000	6100	6200	6300	6400	6500	6600	6700	Total
Argentina.....	1	1	1	1	1	3				1	1	1	1	3	1	1	1	2				1	1	1	1	1			2		1	1	1	1	1	1	1	1	27
Barbados.....																																						6	
Bolivia.....	1	2	1	1	1				1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	
Brazil.....	1	1	1	1	1	2		2	2	3	3	1		6	1	1	1	1	2	1	4	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1	32	
British Honduras.....	1	1	1	1	1									1	1	1	1	1																			2		
Canada.....														2																								2	
Chile.....		1	1	1	1	1				1	1	1	1	4	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2									29	
Colombia.....	1	1	1	1	1	2		2		2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2		1	1	1	1	1	1	1	26	
Costa Rica.....	1	1	1	1	1	1		1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	
Cuba.....	1	1	1	1	1	1		1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	
Dominican Republic.....	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	
Ecuador.....	1	1	1	1	1	1		1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21	
El Salvador.....	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	
French Antilles and Guiana.....																																						4	
Guatemala.....	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12		
Honduras.....	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	
Jamaica.....	1	1	1	1	1	1		1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	
Mexico.....	1	1	1	1	1	1		1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19	
Netherlands Antilles.....																5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Nicaragua.....	1	1	1	1	1	1		1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Panama.....	1	1	1	1	1	1		1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	
Paraguay.....	1	2	1	1	1	1		1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	
Peru.....	1	1	1	1	1	2		1	1	1	1	2	1	3	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	
Surinam.....	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	
Trinidad and Tobago.....	1									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	
United States of America.....										1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						

IX. PROJECT ACTIVITIES

This chapter contains information on projects begun, continued, or completed in the Americas in 1970 with PAHO/WHO assistance. Unless otherwise specified, the information applies to the calendar year.

Country projects are arranged alphabetically, followed by AMRO (intercountry or interzone) and interregional projects. Project numbers in parentheses correspond to a previous classification.

A *country-project* purpose states the objective for which the project was undertaken by the Government concerned and is not related to the form or extent of PAHO/WHO assistance. An *AMRO-project* purpose states the goal, or goals, sought by the Organization.

As to projects that include *Fellowships* in the title, the awarding of fellowships itself constitutes the objective of each of these projects; other fellowship awards are shown within the project of which they are part.

The Pan American Sanitary Bureau operates basically with funds from the regular budgets of the Pan American Health Organization and the World Health Organization. Monies received from other sources are channeled through either PAHO or WHO. Below each project description the sources of funds are shown at the left and cooperating agencies at the right, as applicable. For projects that were completed during the year, the cooperating agencies are shown at top right in parentheses. Except where otherwise indicated, percentages mentioned in the section *Work done* represent degrees of accomplishment of annual targets.

The following acronyms are used to identify the sources of funds:

PAHO/RB	Regular Budget of the Pan American Health Organization
PAHO/CWSF	Community Water Supply Fund
PAHO/PAHEF	Pan American Health and Education Foundation
PAHO/SFHP	Special Fund for Health Promotion
PAHO/SMF	Special Malaria Fund
PAHO/OF	Other Funds

WHO/RB	Regular Budget of the World Health Organization
WHO/UNDP	United Nations Development Program
WHO/OF	Other Funds

Other acronyms—and the corresponding full names—used in the *Report* appear on page 318 and in the index.

ARGENTINA-0100, Epidemiology

Purpose: Reduction of morbidity, mortality, and disabilities caused by communicable diseases to a point where they will cease to be public health problems.

Probable duration: 1969-1973.

Assistance provided: 1 medical officer, and advisory services by the epidemiologist assigned to project AMRO-0106; 2 short-term fellowships.

Work done: The Department of Medical Care, which has responsibility for health protection activities, established a group charged with carrying out epidemiological activities. Epidemiologists were assigned to 6 of the 8 health regions in the country and to all provincial health services. A new system was put into operation for the reporting, registration, analysis, and publication of morbidity data; in addition to the weekly report, which is limited to cases of epidemiological interest, a monthly report, containing expanded information and analyses of the major communicable disease problems, was being issued. A procedure was set up for the conduct of multipurpose serological surveys aimed at gaining fuller knowledge of the more important communicable diseases, especially those preventable through vaccination, as a contribution to the establishment of epidemiological surveillance systems. The program of training in epidemiology was carried forward and included 2 1-week seminars for 47 professionals and 2 5-week intermediate-level courses for 35 physicians. The School of Public Health of the National University in Buenos Aires offered a second diversified course in epidemiology, for 8 physicians. A national meeting on standards for gonorrhea control was held.

PAHO/RB

ARGENTINA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1959-

IX. PROJECT ACTIVITIES

Assistance provided: 1 medical officer; entomological supplies and antimalaria drugs.

Work done: The areas in the consolidation and maintenance phases, containing 97.4% of all the population of the malarious zones, were extended to embrace 99.5% of the area originally subject to the disease. The annual parasite incidence for the entire malarious area was 0.03 per 1,000 inhabitants. During the year 86 cases were discovered (65.2% less than in 1969); of these, 70 were in the consolidation-phase area in Salta Province. All the infections were caused by *P. vivax*. In the attack-phase area (which includes only a narrow strip in Misiones Province), 9,239 houses were sprayed during the 1st cycle (96% of the target); 55% of the target was achieved during the 2nd cycle. The slide positivity rate in this area was reduced from 0.2% in 1969 to 0.1% in 1970.

The sector chiefs, evaluators, and sanitary inspectors of the rural health program in Formosa Province received training in epidemiological surveillance activities. The Secretariat for Public Health issued a resolution to integrate the malaria eradication program with the rural health program in Jujuy Province.

PAHO/RB

UNICEF

ARGENTINA-0300, Smallpox Eradication

Purpose: Eradication of smallpox from the country through vaccination of 90% of the population over a period of 5 years.

Probable duration: 1967-1972.

Assistance provided: 1 short-term consultant, and advisory services by staff of projects AMRO-0106 and -0306; equipment and supplies.

Work done: A total of 4,044,357 vaccinations were performed, almost 5 times the number administered in the first two years of the program (not counting the vaccination routinely carried out by the local health services, which were estimated at 1,800,000 for 1970). The program was extended to 11 provinces not previously covered. A group of national technicians were given training in the maintenance and repair of jet injectors, and training in various aspects of the program was provided through epidemiology courses. A total of 44,350,325 doses of freeze-dried and 5,880,000 of glycerinated vaccine were produced, and 10,000,000 doses were delivered to the PAHO/WHO vaccine bank in Brazil. An outbreak of smallpox in Province Misiones resulted in 24 cases and 1 death.

WHO/RB

ARGENTINA-0400, Tuberculosis Control

Purpose: Execution of a tuberculosis control program through the country's general health services.

Probable duration: 1960-1971.

Assistance provided: Advisory services by the epidemiologist assigned to project AMRO-0106; 4 short-term fellowships.

Work done: A control program was set up in the 13 hospital districts in the Greater Buenos Aires area, which contains a population of close to 8 million. An international

symposium on chemotherapy of tuberculosis, held under the auspices of the Secretariat of State for Public Health, reviewed the progress made in this field.

WHO/RB

ARGENTINA-0700, Pan American Zoonoses Center

Purpose: Strengthening of the Pan American Zoonoses Center and expansion of its technical facilities for research, training, and development of studies and field demonstration programs, in order to provide Argentina and other Member States with better advisory services in animal health.

Probable duration: 1966-1971.

Assistance provided: 1 project manager, 3 public health veterinarians, 2 epidemiologists, 5 scientists, 1 serologist-immunologist, 3 short-term consultants, 8 temporary advisers, and advisory services by staff of project AMRO-0700; equipment and supplies; and 9 short-term and 1 long-term fellowships.

Work done: The main features of the rabies control program were the preparation of guidelines for human post-exposure antirabies immunization, control of vaccine, immunofluorescent diagnosis of rabies, control of bovine rabies, and study of vampire bat ecology.

In regard to hydatidosis, a collaborative project was prepared to investigate the value of immunological and mass radiological surveying techniques and to study epidemiological factors influencing human infection. Serological diagnostic techniques were taught to project staff and were applied extensively in the endemic areas of Argentina.

In cooperation with the Argentine Secretariat of State for Agriculture and Livestock (Health Campaign Services) a bovine tuberculosis survey was carried out among 11,400 cattle in 11 ecological areas.

Activities in the field of food microbiology included the investigation of problems connected with meat export and the contamination of meat, milk, water, and seafood with coliform organisms.

The staff of the Center participated in numerous international, regional, and national seminars and courses.

(See also Chapter I.A. of this Report and project AMRO-0700).

PAHO/RB, WHO/UNDP

ARGENTINA-0701, Bovine Rabies Control

Purpose: Evaluation of vaccines used for the control of bovine rabies.

Probable duration: 1965-1973.

Assistance provided: Advisory services by staff of Headquarters and of project AMRO-0700.

Work done: Four rabies vaccines were tested in bovines, which were then exposed to a virulent virus. Owing to the severity of the exposure, only one of the vaccines proved effective, protecting 50% of the animals vaccinated. The Health Campaign Services of the Secretariat of State for Agriculture and Livestock tested another 4 rabies vaccines commonly used in Argentina, by administering them to 1,201 bovines. This experiment indicated wide antigenic differences among the various types of vaccine.

ARGENTINA-0703, Antirabies Vaccine (1968-1970) WHO/RB

The purpose was to establish a center for the production of antirabies vaccine for human use, in order to meet emergency needs in the Hemisphere. The Organization provided consultants, advisory services by staff assigned to project AMRO-0700, a grant, and some supplies.

In cooperation with the Government of Argentina, a center was established in the National Institute of Microbiology, Secretariat of State for Public Health, for the production of vaccine. By virtue of an agreement with PAHO, the Institute holds in reserve 5,000 doses of irradiated (suckling-mouse brain) vaccine, for distribution to the Governments in emergency situations. During 1970 the Institute produced 205,807 doses of vaccine for human use; 73,400 doses were distributed to the Governments of Bolivia (3,200), Brazil (2,000), Mexico (51,800), and Paraguay (16,400). Each batch of vaccine was submitted for quality testing to the Pan American Zoonoses Center.

ARGENTINA-2100, Engineering and Environmental Sciences

Purpose: Strengthening of the environmental sanitation services.

Probable duration: 1967-1975.

Assistance provided: 1 sanitary engineer and 1 temporary adviser; a limited amount of supplies.

Work done: The Secretariat of State for Public Health and the Ministry of Social Welfare increased their allotments considerably for the 12 programs which the Secretariat's Department of Environmental Sanitation was carrying out in the country. Agreements were signed with 12 provinces for the improvement of 2,151 rural houses for the benefit of 10,800 persons. In the refuse disposal program, delivery of the equipment purchased for Buenos Aires Province began; a bill was under consideration to authorize the establishment of an agency to exercise central responsibility for refuse disposal in all 19 municipalities of Greater Buenos Aires; and agreements were concluded for the institution of similar activities in the Provinces of Córdoba, Mendoza, and Santa Fe. In water pollution control, work continued on the sampling of water from the Riachuelo, Matanza, and Reconquista Rivers in Greater Buenos Aires and in the Salí River basin in Tucumán Province. Activities were also carried out in the fields of industrial hygiene, occupational safety in rural areas, and food control.

PAHO/RB

ARGENTINA-2200, Water Supplies

Purpose: Provision of water supply service to 11% of the rural population living in villages of 100 to 300 inhabitants (217 water supply systems), through household connections and financially self-supporting facilities.

Probable duration: 1960-1971.

Assistance provided: 1 sanitary engineer.

Work done: A total of 71 projects prepared by the provincial services were approved, and construction began on 108 new facilities. Ninety-five water supply systems were

turned over to communities and 196 to cooperatives, local associations, or community consortia, which were operating them efficiently. By these means piped water was made available to some 235,000 persons. An additional \$2,437,366 was received from IDB, raising disbursements from its loan to \$4,307,000 (86% of the loan). An application was filed with the IDB for another loan in the amount of \$10,000,000, which would finance 50% of the cost of 250 water supply systems to be built over a period of 3 years. Advisory services were provided in connection with organization of administrative systems, water supply rates and collection systems, and project administration. Supplementary agreements were signed with 19 provinces to strengthen their water supply budgets, and an incentive program, based on percentage of target achievement, was established for the staff. By law of 20 October 1969, the personnel and equipment of the National Water Supply and Rural Sanitation Service (SNAP) were transferred from the Secretariat of State for Public Health to the Secretariat for Hydraulic Resources. The personnel of the program was increased by 3 sanitary engineers, 1 civil engineer, 4 public accountants, 1 anthropologist, 1 senior construction supervisor, 1 electrical technician, 9 accounting assistants, and 4 administrative assistants.

Two courses were offered for 81 operator-administrators, and 1 short course in health education for 25 promoters from the provincial services.

Publications during the year included papers on treatment filters, development of community leaders and a manual for the course on health education. The 2nd seminar on the national rural water supply program was held in San Salvador, Jujuy, 6-8 December.

WHO/RB

ARGENTINA-3100, Health Services

Purpose: Improvement in the organization and effectiveness of the national, provincial, and local health services; and promotion of the planning and regionalization of health services.

Probable duration: 1965-1972.

Assistance provided: 1 medical officer and 4 short-term consultants; 1 grant; 6 short-term and 1 long-term fellowships.

Work done: The National Development Council (CONADE) of Argentina, the Planning Secretariat of Bolivia, and the IDB prepared plans for performing a study on coordination of work in border areas, aimed at obtaining basic information concerning the prevailing situation in the border region of the two countries in relation to economic conditions, hydrological development, and health. In regard to health, the study would serve as a basis for applying the recommendations contained in the agreement on work and coordination signed by the health authorities of the 2 countries in La Paz, Bolivia, 29 April 1968. Both Governments requested the Organization to cooperate in the health aspects of the study.

Initial advisory assistance was rendered to the national health authorities in northwestern Argentina and the provincial authorities of Jujuy, Salta, and Tucumán, which adopted and attempted to complete the forms designed by

IX. PROJECT ACTIVITIES

PAHO for the quadrennial projections. Although some of the data were not obtained, a preliminary report was prepared and submitted by the national authorities to CONADE for transmittal to the IDB.

From Bolivia, the forms for the border Departments of Tarija, Potosí, Chuquisaca, and Santa Cruz were received.

These activities will indicate the existing gaps in health information and the mechanisms that need to be systematized in order to provide the essential basic information required for planning, revision, and updating of health work at the various levels.

PAHO/RB, WHO/RB

ARGENTINA-3101, Fellowships

Ten short-term and 5 long-term fellowships were awarded.

PAHO/RB, WHO/RB

ARGENTINA-3102, Health Services in the Northwest (1957-1969) WHO/UNDP

Obligations incurred during the operation of the project were paid.

ARGENTINA-3400, Health Education Planning

Purpose: Determination of trends in health education in the schools; preparation of plans; and establishment of coordination between the Ministries of Health and Education.

Probable duration: 1970-1971.

Assistance provided: Advisory services by Zone VI Office staff.

Work done: A survey of attitudes, knowledge, and opinions concerning health education of 25,000 persons (parents, teachers, and children) in the capital and 9 provinces was completed; 4 other studies on the same topic were begun. A joint commission on health education, composed of three representatives of each Ministry (Health and Education), was established and promoted a number of activities. All of the provinces except Jujuy had a health education unit. In the private sector, outstanding work was done by the Argentine Committee for Health Education of the Public, which helped to promote activities throughout the country through 14 affiliated institutions.

ARGENTINA-3500, Health Statistics

Purpose: Establishment and modernization of systems for the production of vital and health statistics of the country.

Probable duration: 1960-1971.

Assistance provided: Advisory services by project AMRO-3506 staff; 1 long-term fellowship.

Work done: Emphasis was placed on increasing the production of statistical data, and their inclusion in publications of the Secretariat of State for Public Health. Supervisory and advisory procedures were established on an institutional basis for all of the country's statistical services; and for this purpose data collection techniques were revised and new standards were adopted. The National Department of Health Statistics increased its operating capacity through the recruitment of additional technicians.

The 5th national meeting on health statistics, held during the year, reviewed the program of vital and hospital statistics, adopted a standard clinical history form, and reviewed the programs of supervision and personnel training. A mid-year evaluation of the national program showed definite progress in all of its aspects. Collection of statistics on reportable diseases was begun. Planning of all the national tables of vital and health statistics was completed through an effort involving some 5,500 man-hours; and an additional 1,200 man-hours were devoted to computing the data for the tables. The statistics for 1968 were completed and those for 1969 were being produced. The 15 courses held for the training of auxiliary personnel, attended by 358 hospital employees, raised the number of persons trained since the start of the program in 1967 to 836 in 360-hour courses and to 1,251 in 180-hour courses. Ninety intermediate-level technicians were graduated during the year, bringing the total since the commencement of the program to 325. Seventeen publications in various series of the National Department of Health Statistics were issued and distributed.

PAHO/RB

ARGENTINA-3504, Computer Center for Health

Purpose: Establishment of a Computer Center for Health which will: provide training in systems analysis, programming, and general administration of computer units; conduct research on systems, techniques, and programs for the processing of medical and health data; provide advisory services to health institutions on the use of the computer at all stages; process population data and vital, hospital, and other health statistics.

Probable duration: 1968.

Assistance provided: 1 consultant in systems analysis and computerization and 1 short-term consultant; equipment and supplies.

Work done: The Computer Center for Health, created through an agreement between the School of Medical Sciences of the National University of Buenos Aires, the Secretariat of State for Public Health, and PAHO, was officially inaugurated in April in the José de San Martín Hospital. Computer equipment was received and put into operation. The analysis and programming of vital statistics and data on hospital discharges were completed in October. A pilot study of a hospital information system was initiated. Courses on systems analysis and programming were conducted for 187 students. A proposal to obtain UNDP support was prepared.

WHO/RB

ARGENTINA-4300, Mental Health

Purpose: Establishment and implementation of a national program in social psychiatry, within the National Institute of Mental Health; planning and development of community mental health activities.

Probable duration: 1966-1972.

Assistance provided: 1 medical officer (beginning in September), and advisory services by Headquarters staff.

Work done: A review was made of the operation of

6 psychiatric hospitals, in Corrientes, Córdoba, Santiago del Estero, and Tucumán. Five intensive seminars were conducted for a total of 523 psychiatrists, psychologists, psychiatric social workers, psychiatric nurses, occupational therapists, and hospital administration staff, representing 24 institutions in 13 provinces.

PAHO/RB, PAHO/OF

ARGENTINA-4500, Radiation Protection

Purpose: Reduction of the somatic and genetic risks caused by the use of X-ray equipment in science, medicine, technology, and industry.

Probable duration: 1967-1973.

Assistance provided: Advisory services by project Argentina-2100 staff; 1 grant; supplies.

Work done: Of the 610 X-ray units inspected (61% of target), 20% were found to be below the safety standards. The applications of 1,500 candidates for posts of equipment operators were examined. The dosimetry service was initiated for 200 persons (out of 10,000 to be covered in 3 years).

Activities for recording sources of radiation covered a total of 6,138 units and an exposed population of 9,444 in 1970.

Ten thousand pocket dosimeters were manufactured and plans for installing a laboratory in 1971 were under study.

The Radio-Sanitary Control Service signed agreements with 4 provinces for expanding the program throughout the country.

PAHO/RB

ARGENTINA-4601, Air Pollution

Purpose: Control of air pollution.

Probable duration: 1967-1973.

Assistance provided: Advisory services by staff of projects Argentina-2100 and AMRO-2114.

Work done: Air pollution monitoring continued to be carried out in the cities of Buenos Aires, Córdoba, Mendoza, Santa Fe, Rosario, and Tucumán. Suspended and settling particles were found to be the principal cause of the problem. A legislative bill on air pollution control was drafted.

ARGENTINA-4800, Medical Care Services

(1966-1970) PAHO/RB

The purpose was to conduct studies and research on medical care problems, manpower, and available materials; to organize medical care facilities and integrate them with general health services; and to train personnel in hospital administration and organization.

The Organization provided the services of 1 nurse, 1 short-term consultant, and advisory services by staff of Headquarters and of projects AMRO-3206, -4803, -4806, and Argentina-4803; equipment and supplies; and 5 long-term and 1 short-term fellowships for training specialists in hospital administration and construction, care of premature infants, and administration of medical services.

The Secretariat of State for Public Health drew up

medical-architectural programs calling for the preparation of plans for five 490-bed, one 580-bed and one 60-bed hospitals, to be located in various provinces. Technical advisory services were extended to the José de San Martín Teaching Hospital of the National University in Buenos Aires; the Centenario Hospital and the Fernández Hospital of the University of Rosario; Ciudadela and San Martín Hospitals, both in Buenos Aires Province; and the Naval Hospital in Buenos Aires. A study was made of the availability, utilization, and distribution of resources in the Department of Nursing of the School of Medical Sciences in the National University of Buenos Aires. In Córdoba, inservice training was given to the staff of the Institute for Premature Infants and a short practical course on care of the newborn was conducted for midwives at the Provincial Maternity Hospital. Two courses on nursing administration, supervision, and education were conducted: one in the Municipality of Buenos Aires, the other in San Miguel de Tucumán. The School of Public Health of the National University offered 5 intensive courses in hospital administration for hospital directors; the first 4 were attended by an average of 30 students and the fifth by 12. Two of the courses were given in the Federal Capital, and the other 3 in Chaco, Mendoza, and Río Negro Provinces. In addition, a course in hospital statistics was offered, lectures were given at the Nursing School of the National University, and assistance was provided during a seminar held at the San Martín Polyclinic Hospital (120 students).

ARGENTINA-4803, Latin American Center for Medical Administration

Purpose: Carrying out of advanced education and continuing education programs in administration of medical care services; and conduct of research on the utilization and financing of health services, the development of human resources, teaching, and administrative methods.

Probable duration: 1967-

Assistance provided: 1 medical officer (Director of the Center), 1 nurse, 4 short-term consultants, 2 temporary advisers, advisory services by Headquarters staff, and 1 secretary; grants for local expenses; equipment and supplies.

Work done: A 6-month introductory course on operational research methods was held for 11 members of the Center's teaching staff. A 2-week seminar on hospital planning and architecture was also held, for 31 architects (29 Argentine and 2 Chilean). The course in hospital administration for hospital directors (4 months) was given once at La Plata for 30 participants, twice in the Federal Capital for a total of 56 participants, and once in Paraná for 30 participants. A 1-month course in hospital administration for chiefs of services was also conducted in Buenos Aires, for 80 participants.

A hospital administration course for hospital directors was organized in Havana, Cuba, and another nursing seminar, attended by 50 participants, was held in Asunción, Paraguay.

As a practical exercise within the introductory course on operations research methods, the quality of medical care was surveyed through a questionnaire sent to 1,000 practicing physicians. The respondents supplied information concerning the colleagues they consulted in case of illness in them-

selves or their families and on the hospitals they had used. A second questionnaire was then sent to these physicians—about 4,000—who had treated other physicians, to determine what qualifications and studies had enabled them to become outstanding in their specialties. It was hoped that the information thus gathered would make it possible to draw useful conclusions for guiding the study programs of the schools of medicine and postgraduate courses.

The Center extended advisory services to the José de San Martín Teaching Hospital of the National University of Buenos Aires in connection with the organization of the Central Laboratory and the Nursing, Intensive Care, and Statistical Departments. Numerous inquiries from directors of Argentine hospitals were also handled.

PAHO/RB, PAHO/OF,¹ WHO/RB

ARGENTINA-5000 (-4801), Rehabilitation (1966-1970) WHO/UNDP

The purpose was to train instructors, technicians, and highly skilled operators in the field of orthotics and prosthetics and to organize a department of research for the production of orthopedic and prosthetic devices suited to various local conditions and based on the use of new techniques and locally available materials.

The Organization provided the services of 1 technician in orthotics and prosthetics; advisory services by staff assigned to project AMRO-5000 (-4807); equipment and supplies; and 2 short-term fellowships.

The expansion of the School of Prosthetics and Orthotics was completed, as were the planning and scheduling of its activities. All of its departments, workshops, and classrooms were fully equipped. The stockrooms were reorganized on the basis of a simplified system of inventory. In 1968, the School had its first graduating class—6 rehabilitation technicians and 6 equipment operators—and continued the program for the training of laboratory personnel. In 1969, 13 technicians finished their studies, and 3 orthotics and prosthetics operators and 2 orthopedic footwear specialists took complete courses. Five instructors who had finished their theoretical and practical course work in teaching methods were working at the School. In 1970, 11 students completed their final year. The results of an evaluation made at the year's end will determine whether or not the School will become a part of the National University of Buenos Aires.

ARGENTINA-6100, School of Public Health

Purpose: Strengthening of instruction and research at the School of Public Health of the National University of Buenos Aires with a view to improving the development of health manpower to meet the country's requirements.

Probable duration: 1958-1975.

Assistance provided: 2 short-term consultants; 4 temporary advisers, and advisory services by Zone VI Office staff; 1 grant; 1 long-term fellowship.

Work done: The Secretariat of State for Public Health will assign \$100,000 per year for 5 years to the School, which recently moved to new quarters almost three times as large

as the previous ones. The Department of Continuing Education began its activities. Seven regular courses were conducted for 315 students (including 19 fellows from abroad); 12 short courses were also held for 350 students, and 15 seminars for 523 professionals. Nineteen of the courses and seminars were held in the provinces. In addition, 2 undergraduate courses were held for a total of 2,442 medical students.

The School cooperated with 23 public and private institutions in Argentina, and its teaching staff participated in 3 national and 6 international congresses. Work was begun on 9 research projects.

Performance was at more than 100% of the target.

WHO/RB

ARGENTINA-6200, Medical Education

Seven short-term and 1 long-term fellowships were awarded.

WHO/RB

ARGENTINA-6201, Health Manpower Study

Purpose: Collection of data on the health situation as well as on health resources and their development and utilization, and examination of alternative health policies.

Probable duration: 1968-1971.

Assistance provided: 2 short-term consultants, 7 temporary advisers, and advisory services by staff of projects AMRO-3506 and -3715; 1 grant.

Work done: The programs were completed for the analysis of the population studies made in the country's 5 largest metropolitan areas. A start was made on analysis of unpublished data on internal migration gathered in the 1960 census. A house-to-house survey begun in the previous year was extended to cover the entire country, and all the tabulation and computerization plans were prepared. The clinical evaluation and follow-up surveys were initiated. The directory of physicians in Argentina was completed, and a sampling survey of nursing personnel was begun. Three monographs containing results of the census and of the survey of students in the School of Medicine of the National University of Buenos Aires were prepared and published, as were 3 papers on the structure, curricula, and student characteristics in the schools of medicine and dentistry. Some of the findings of the study on utilization of medical care resources were released. With the cooperation of other units responsible for processing data on the health sector, a comprehensive model providing a general framework for health sector analyses and projections was prepared; it was presented for discussion at an international seminar held in Buenos Aires.

WHO/RB

ARGENTINA-6202, Biostatistics and Demography Center

Purpose: Dissemination of knowledge of biostatistics and demography, and promotion of their application to medicine and health, through the educational, advisory, and research activities of the Biostatistics and Demography Center.

¹ Government of Argentina.

Probable duration: 1968-1971.

Assistance provided: 1 short-term consultant (project AMRO-6208), and advisory services by project AMRO-3506 staff; equipment and supplies; 1 long-term fellowship.

Work done: Fourteen courses in biostatistics were conducted for physicians, researchers, and professors from medical schools; and 9 courses and seminars on demography were held. In all the educational activities of the Center, 300 physicians and health officials were trained in biostatistics and 320 in demography. The Center collaborated in the solution of 45 medical research problems and provided assistance through its Department of Demography to all the schools of medicine, the School of Public Health, the national health survey, and the Secretariat of State for Public Health. Research continued on infant and perinatal mortality, fertility, and interprovincial migration.

PAHO/RB

ARGENTINA-6400, Sanitary Engineering Education

Purpose: Strengthening of instruction and promotion of research at the Sanitary Engineering Institute of the National University of Buenos Aires, to help ensure proper implementation of the national engineering and environmental sanitation programs.

Probable duration: 1961-

Assistance provided: Advisory services by staff of Headquarters and of projects Argentina-2100 and -2200 and AMRO-3122 and -2106; 1 grant; supplies; 1 short-term fellowship.

Work done: The Sanitary Engineering Institute conducted 2 graduate courses in sanitary engineering and public health, for 10 students each; and 2 short intensive courses, on air pollution by motor vehicles and on microbiology of drinking water, for 40 and 38 students, respectively. The research project on the reduction of excessive arsenic and fluoride levels in water was completed, and others on dust pollution and stabilization ponds were in progress.

A short intensive course on water supply for industry and treatment of industrial wastes was offered at the University of Rosario.

Manuals were issued for the courses on pumps and pumping stations, stabilization ponds, and for the course for waterworks operations and maintenance supervisors.

PAHO/RB

ARGENTINA-6700, Training of Statistical Personnel

Purpose: Training of intermediate-level statistical personnel for work in the organization and administration of local and regional health statistics offices, departments of statistics, and medical and hospital records.

Probable duration: 1960-1971.

Assistance provided: Advisory services by project AMRO-3506 staff; 1 grant.

Work done: Ninety intermediate-level health statisticians, including 9 from other countries, were trained in the three 9-month courses (each comprising 1,200 hours of classroom work), held during the year.

PAHO/RB

BARBADOS-2100, Engineering and Environmental Sciences

Purpose: Control or elimination of hazards to health stemming from the environment.

Probable duration: 1970-

Assistance provided: 1 short-term consultant, and advisory services by the sanitary engineer of project AMRO-2101 and by 2 engineers of project AMRO-2107.

Work done: A preliminary review of the administration and management of the Waterworks Department was completed. A "team approach" study was designed and was under way by the year's end. Consultant services were provided in connection with a study of the refuse collection systems. Negotiations were begun with the IDB for assistance in financing a sewage disposal scheme for Bridgetown (costing approximately \$3,000,000).

PAHO/RB

BARBADOS-2300, Aedes aegypti Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1969-1971.

Assistance provided: Advisory services by project AMRO-2301 staff; equipment and supplies.

Work done: The campaign completed its 2nd year of activities. Four and a half cycles of treatment with Baytex and Abate were completed. At the year's end, 27 localities continued to be negative and the index in the other 34 initially-positive localities had dropped to 0.5%.

PAHO/RB

BARBADOS-3100, Health Services

Purpose: Improvement, expansion, and integration of the curative and preventive health services of Barbados.

Probable duration: 1968-

Assistance provided: Advisory services by project AMRO-3107 staff; common services; 4 short-term and 7 long-term fellowships.

Work done: The quadrennial projections of activities were prepared. Assistance was given in connection with the preparation of staff for expanded maternal and child health services and for the 5 district hospitals that were undergoing reorganization. A Health Education Commission was organized. Compulsory immunization of school entrants was introduced, in accordance with the regulations on communicable disease control. Regulations on food handling and on refuse collection and disposal were prepared.

PAHO/RB

BARBADOS-3300, Laboratory Services

Purpose: Establishment of a regular 2-year course (intermediate level) for the training of laboratory technicians, beginning in 1971.

Probable duration: 1970-1973.

Assistance provided: Advisory services by the PAHO/WHO Country Representative; audiovisual equipment.

Work done: The senior laboratory technician at the Queen Elizabeth Hospital, who will serve as senior instructor for the

IX. PROJECT ACTIVITIES

local course, underwent six months of training in the United Kingdom.

PAHO/RB

BARBADOS-4200, Nutrition

Purpose: Improvement of the nutritional status by means of an applied nutrition program.

Probable duration: 1967-

Assistance provided: Advisory services by project West Indies-4200 staff; supplies.

Work done: A pilot project area was established where approximately 1,000 children under 5 years of age were weighed, a 2-week training program was conducted for 50 persons, and the Ministry of Agriculture distributed piglets to 4-H Clubs. Elsewhere in the country, 8 nutrition education lectures were delivered by health educators. The planned home economics curricula for primary schools (not yet implemented) was revised. Other activities, carried out in cooperation with the nutritionist-dietitian of the Caribbean Food and Nutrition Institute and the public health nutritionist of the Ministry of Health, included lectures on nutrition to 86 student nurses, 24 cooks and food-service supervisors, and 300 school-lunch personnel. The food service of 4 district hospitals and of the Mental Hospital was reviewed and recommendations submitted. However, since none of the objectives originally established for this project were being accomplished, its reorganization was under consideration.

WHO/RB

FAO, UNICEF

BARBADOS-4801, Hospital Administration

Purpose: Organization and operation of the Queen Elizabeth Hospital as the central medical institution of Barbados.

Probable duration: 1965-1974.

Assistance provided: 4 short-term consultants, and advisory services by the PAHO/WHO Country Representative and by staff of projects AMRO-3107 and -4801; 1 long-term fellowship.

Work done: The reorganization of the medical stores at the Queen Elizabeth Hospital was completed. Advisory services were provided on the development of the laundry at St. Michael Infirmary to function as a central service for the other 4 district hospitals. The appraisal of the role of all 5 district hospitals was continued. With these activities, 100% of the year's targets for the project were met.

WHO/UNDP

BOLIVIA-0100, Epidemiology

Purpose: Determination of the prevalence and characteristics of communicable diseases in Bolivia, and control of such diseases through joint and coordinated planning by all public health institutions.

Probable duration: 1968-1972.

Assistance provided: 1 epidemiologist; supplies.

Work done: A number of epidemiological studies and research projects were carried out at various health units. Work was started on the processing of national and local statistics on poliomyelitis, and arrangements were made for

poliomyelitis vaccination throughout the country; up to 30 August, 111,797 doses were administered to children under 5 years of age. A total of 17,393 doses of measles vaccine were administered by 31 August to children under 4 years.

The Biostatistics Department of the Ministry of Social Welfare and Public Health, with the cooperation of the National Communicable Disease Institute, brought about a substantial improvement (by 50%) in the reporting of communicable diseases. The systems of epidemiological surveillance against rabies, *Aedes aegypti*, and foot-and-mouth disease were also improved. The National Institute of Health Laboratories was reorganized.

A short course on nursing was offered at the Evangelical Nursing School, another on poliomyelitis epidemiology at Cochabamba, and one on measles epidemiology at Sucre. Inservice training was given to personnel at Cochabamba, Sucre, Yotala, Tarija, and Potosí.

See also projects Bolivia-0300, -0400, and -0901.

PAHO/RB, WHO/UNDP

BOLIVIA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1957-

Assistance provided: 1 medical officer and 1 sanitary inspector; 1 grant; drugs and other supplies; 1 long-term fellowship.

Work done: The malarious area comprises 821,346 km² and contains 1.8 million inhabitants. Normal development of operations has been hampered since 1966 by financial and administrative problems, and the situation has become progressively worse. The number of cases reported increased from 1,373 in 1966 to almost 7,000 in 1970.

During the 1st cycle in 1970, 43,232 houses in 1,770 localities were sprayed with DDT (2 gm/m²); and only 20,441 houses in 1,062 localities were scheduled for spraying in the 2nd cycle. The reduction in operations was due to a shortage of funds and supplies.

A program of drug distribution was begun in 7 selected areas of Zone VI (Tarija).

See also project Bolivia-0201.

PAHO/RB

UNICEF

BOLIVIA-0201, Mass Drug Treatment for Malaria Eradication

Purpose: Elimination of malaria from foci in southern Bolivia by means of treatment with a combination of drugs at 60-day intervals.

Probable duration: 1970-1971.

Assistance provided: Advisory services by project Bolivia-0200 staff; 1 grant.

Work done: This research project was carried out in 7 areas of Zone VI (Tarija) of the National Malaria Eradication Service. It is based on the distribution of a combination of 3 drugs (chloroquine, primaquine, and pyrimethamine) in regular cycles. During the 1st coverage cycle, visits were made to all 150 scheduled localities and to 3,997 houses (95.9% of the target number); 15,389 blood smears were

taken. Preliminary data indicated a low coverage in the medication. The epidemiological findings were still unavailable at the year's end.

PAHO/SMF

BOLIVIA-0300, Smallpox Eradication

Purpose: Maintenance of the smallpox-free status of Bolivia and reduction of tuberculosis morbidity and mortality rates by means of simultaneous smallpox-BCG vaccination.

Probable duration: 1962-1974.

Assistance provided: Advisory services by project Bolivia-0100 staff; vaccines and other supplies.

Work done: The program of smallpox vaccination in La Paz achieved a coverage of 74.5%; the record of takes was 95.8% in persons vaccinated for the first time and 81.6% in revaccinees. Sequelae were found in 3% of the population. BCG vaccination had a coverage of 88.5%, and sequelae were found in 2% of the population.

In Santa Cruz Department smallpox vaccination achieved a coverage of 59.2%; the takes recorded were 96% in persons vaccinated for the first time and 87% in revaccinees. No sequelae were found.

Integration of these activities into the health units was achieved only in Cochabamba Department (33% of the target).

In the training of personnel in smallpox and BCG vaccination techniques, 75% and 100% of the targets, respectively, were attained.

Two inspection visits were made to the Santa Cruz airport and one to the La Paz airport (75% of the target). Presentation of the International Certificate of Vaccination was made compulsory in 4 border posts (66%). A total of 235,250 doses of freeze-dried vaccine (meeting the WHO requirements) were produced (100%).

WHO/RB

BOLIVIA-0400, Tuberculosis Control

See project Bolivia-0300.

WHO/RB

BOLIVIA-0901, Typhus

Purpose: Conduct of a serologic survey and field evaluation of a Strain E vaccine, with a view to establishing a typhus control program to include also the application of insecticides.

Probable duration: 1967-1972.

Assistance provided: 1 sanitary inspector (2 months), 1 temporary adviser, and advisory services by project Bolivia-0100 staff.

Work done: The first 2 phases scheduled—reconnaissance of the area and health education, and taking of blood smears (prevaccinal)—were completed. In the serologic survey a reconnaissance of the work area was carried out (100%) and the following goals were achieved: census in 11 localities (100%); 6,964 persons included in the censuses (100%); 11 plans prepared (100%); and 1,529 blood smears taken from 20% of the population, by family groups (more than

100%). A total of 1,500 smears were sent to the reference laboratory in Baltimore (USA) for analysis.

PAHO/RB

BOLIVIA-2100, Engineering and Environmental Sciences

Purpose: Improvement of environmental health and sanitation levels of the urban and rural population as a means of protecting health and furthering socioeconomic development.

Probable duration: 1969-

Assistance provided: 1 sanitary engineer and advisory services by Headquarters staff; 1 grant.

Work done: A study of environmental sanitation conditions was conducted with the participation of various decentralized agencies. As an outgrowth of this work, an Inter-agency Committee on Environmental Sanitation was established, comprising representatives of the Bolivian Mining Corporation, the Bolivian Government Petroleum Company, the National Land Settlement Institute, and the National Railway Company, among other institutions. The Committee will be responsible for proposing activities to be carried out on a coordinated basis by the various entities active in environmental sanitation.

PAHO/RB

BOLIVIA-2200, Water Supplies

Purpose: Provision of water supply and sewerage service to urban and rural communities.

Probable duration: 1960-1971.

Assistance provided: Advisory services by staff of the Zone IV Office and of project Bolivia-2100; supplies; 4 short-term fellowships.

Work done: A Department of Urban Planning and Housing was established, one of its responsibilities being to coordinate and supervise water supply programs for urban areas. A national rural water supply plan was being prepared. The water supply systems of the cities of La Paz, Sucre, and Santa Cruz were expanded and improved. The Municipal Water Supply, Sewerage and Drainage Service of Cochabamba started construction of a water supply system for the city, and the studies for expansion of the system in Potosí were completed. A sewerage system and treatment plant were built for Santa Cruz. The National Water and Sewerage Corporation (CORPAGUAS) constructed 9 water systems in rural areas. As part of the environmental sanitation program for rural areas, 26 wells were drilled, 122 were dug, and 3 water systems were under construction. This program, initiated in the pilot areas of the Departments of Cochabamba and Tarija, was extended to Santa Cruz Department, where the public works authorities were preparing to initiate a well-drilling program (160 wells) in conjunction with the Ministry of Social Welfare and Public Health.

Arrangements were made for providing advisory services to CORPAGUAS in administrative methods.

PAHO/RB, PAHO/CWSF

BOLIVIA-3100, Health Services

Purpose: Development of the health services and training of technical and auxiliary personnel in line with requirements.

Probable duration: 1955-1975.

Assistance provided: 2 medical officers (one of them the PAHO/WHO Country Representative) and 1 nurse; supplies; common services; 11 short-term and 7 long-term fellowships.

Work done: An amendment of the project, to extend it to decentralized agencies conducting health activities, was drawn up. An institutional diagnosis of the health sector was formulated. A basic document was prepared setting the strategy for gradual coordination of social security institutions and government health agencies. Various food-assistance projects (totaling about \$10 million), using the World Food Program resources, were prepared.

The National Nursing Congress, held under the auspices of the National Association of Professional Nurses, brought together 96 nurses from all of the country's departments; and 80 nurses and teachers participated in a seminar on nursing education. Nursing activities in tuberculosis control were organized under a pilot program, begun in Potosí, for coordination between the Ministry of Social Welfare and Public Health and other public health agencies.

Sixty nursing auxiliaries (100% of the target) received training in the Children's Hospital in La Paz; 10 auxiliaries (100%) began their training for leprosy control, and 30 (50%) for work in the Potosí and Tupiza health services. A total of 50 nurses (100%) attended 3 short courses on the role of nursing personnel in tuberculosis control, held in the health units of Tarija, Santa Cruz, and Potosí.

In the Ministry, a survey of nursing personnel was made and the situation was examined on the basis of the data collected (50% of the target).

PAHO/RB, WHO/RB, WHO/UNDP**BOLIVIA-3102, Fellowships**

Four short-term and 4 long-term fellowships were awarded.

WHO/RB**BOLIVIA-3104, Health Services (Cochabamba, Tarija, etc.)**

Purpose: Development of health services in several departments of the country.

Probable duration: 1966-1973.

Assistance provided: 1 sanitary engineer and 1 short-term consultant; 1 grant; 1 long-term fellowship.

Work done: Environmental sanitation activities were extended to Santa Cruz Department. All the equipment supplied by UNICEF for Cochabamba and Tarija, and 80% of that supplied by it for Santa Cruz and Beni, was distributed. In Cochabamba, Tarija, and Santa Cruz 122 wells (47% of the target) and 51 septic tanks (100%) were constructed and 968 latrines (48%) were installed. In Cochabamba (Vinto Chico, Tiquipaya, and Suticollo) work was started on the installation of water supply systems (40%). These activities benefited 26,680 inhabitants (69%).

Thirty-two sanitation technicians (160%) were being trained in Tarija.

Revolving funds for basic sanitation were established in Cochabamba, Tarija, Santa Cruz, and Beni.

PAHO/RB, WHO/UNDP**UNICEF****BOLIVIA-3500, Health Statistics**

Purpose: Reorganization of the national and local biostatistics services.

Probable duration: 1968.

Assistance provided: 1 statistician and advisory services by project AMRO-6708 staff; equipment and supplies; 1 long-term fellowship.

Work done: The National Department of Biostatistics was reorganized and its equipment improved. A system for the collection of statistical data on health activities was instituted to provide 70% coverage. Personnel with suitable technical training was recruited and assigned to the health units of La Paz, Cochabamba, Santa Cruz, and Chuquisaca. A clinical history form was developed for use in all health services of the Ministry of Social Welfare and Public Health and the decentralized agencies. The National Department of Biostatistics published a preliminary report on health statistics for the first half of the year. A 4½-month course was conducted for 18 statistics auxiliaries.

WHO/UNDP**BOLIVIA-4500, Radiation Protection**

Purpose: Reduction of all unnecessary exposure to radiation among the general population and among persons exposed by reason of their occupation; organization of a radiation protection service so that radiation-emitting equipment in Bolivia can be used without endangering public health and safety, private property, or persons directly engaged in operating such equipment; and training of professional and technical personnel in this field and in the use of radioisotopes in clinical medicine.

Probable duration: 1967-1974.

Assistance provided: Advisory services by staff of projects Bolivia-2100 and AMRO-4507.

Work done: The Coordinating Council for Radiation Control was established. Installation of facilities for the protection service was completed, and 200 pocket dosimeters were distributed. Draft regulations for the National Occupational Health Institute (INSO) were prepared, and the Institute's radiation control department was reorganized. A short-term fellowship for study of film dosimetry was awarded to an INSO official (under project Bolivia-3102). The film dosimetry service continued its activities in the Departments of La Paz, Oruro, Potosí, and Chuquisaca.

BOLIVIA-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters staff and by the PAHO/WHO Country Representative.

Work done: The program proceeded in the country's 3 medical schools (La Paz, Cochabamba, and Sucre); 106 copies of the textbook *Bioquímica*, 59 of *Tratado de patología*, 60 of *Fisiología humana*, and 60 of *Manual de farmacología* were sold. For 1971 Bolivia requested 212 copies of *Bioquímica*, 150 of *Tratado de patología*, and 70 of *Pediatría*.

BOLIVIA-6200, Medical Education

Purpose: Reorganization of the teaching of medicine at the medical schools of La Paz, Cochabamba, and Sucre, so as to adapt the instruction to the country's needs and socio-economic conditions.

Probable duration: 1968-

Assistance provided: 1 temporary adviser, and advisory services by staff of projects Bolivia-3100 and AMRO-6204.

Work done: A document was prepared on medical education in the country, with an analysis of problems related to teaching staff, students, and curricula. Programs were drawn up for courses and seminars to train teaching staff, but owing to the closing of the universities these could not be carried out.

WHO/RB

BOLIVIA-6300, Nursing Education

(23 November-4 December 1970) PAHO/RB

The purpose was to afford nurse educators and heads of nursing services an opportunity to increase and bring up to date their knowledge of nursing education methods.

A national seminar on nursing education was held at the School of Nursing of the University of San Andrés for 80 nurses, including professors of nursing schools, teachers of auxiliary courses, and nurses in charge of inservice training programs. The Organization provided advisory services by nurses assigned to projects Bolivia-3100, Ecuador-6300, and AMRO-3204 and a grant to defray part of the cost of the seminar, including transportation and per diem of participants and supplies.

BOLIVIA-6400, Sanitary Engineering Education

Purpose: Strengthening of sanitary engineering instruction in the country's engineering schools, in order to increase the number and improve the training of professional and auxiliary sanitary engineering personnel.

Probable duration: 1964-1973.

Assistance provided: 3 short-term consultants, and advisory services by staff of Zone IV Office and of projects Bolivia-2100 and -3104 and AMRO-2114; 1 grant; 1 short-term fellowship.

Work done: Four short courses were conducted: 2 at the National School of Engineering of the Technical University of Oruro, on planning techniques and engineering analysis and on drilling, drainage, and use of explosives; and 2 at the School of Civil Engineering of the University of San Andrés, La Paz, on water treatment plants and the use of electronic computers in sanitary engineering. A 4-month

training course in environmental sanitation techniques was offered in the city of Tarija for personnel of the Ministry of Social Welfare and Public Health, the National Land Settlement Institute, and the Bolivian Mining Corporation. A course was begun for the training of sanitation technicians for the Bolivian Government Petroleum Agency.

PAHO/RB

BOLIVIA-6600, Dental Education

Purpose: Improvement of the quality of dental education reorganizing the programs of studies, including both theory and practice, and by updating the knowledge of the teaching staff at the School of Dentistry.

Probable duration: 1968-1972.

Assistance provided: 2 short-term consultants, and advisory services by project Bolivia-3100 staff.

Work done: To further the integration of the various courses of study making up the curriculum, the departments of basic sciences, pathology, oral diagnosis and medicine, and preventive and social dentistry were reorganized. The oral surgery curriculum was brought up to date and related to the other subjects. Plans were made for the establishment of a school of dental auxiliaries. A survey on the incidence of dental caries, covering 10% of the school population of La Paz, was carried out with the assistance of 160 dental students.

WHO/RB

BRAZIL-0100, Epidemiology

Purpose: Strengthening of the institutional infrastructure of the health sector with a view to organization and administration of epidemiological services for the country.

Probable duration: 1969-1972.

Assistance provided: Advisory services by staff of Zone V Office and of project Brazil-0300; 1 grant.

Work done: A Division of Epidemiology and Statistics was established in the Ministry of Health to serve as a regulatory agency. Smallpox epidemiology surveillance units were set up in 22 states, 1 territory, and the Federal District as the first stage in the development of state epidemiology services. The *Boletín Epidemiológico* continued to be published on a fortnightly basis.

PAHO/RB

BRAZIL-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1958-

Assistance provided: 5 medical officers, 1 sanitary engineer, 1 engineering assistant, 2 entomologists, 2 administrative methods officers, 3 sanitary inspectors, and 1 secretary; antimalaria drugs, equipment, and other supplies; 2 long-term fellowships.

Work done: During the first half-year, 3,484,045 houses in the attack-phase area were sprayed with DDT (2 gm/m²), accounting for 91.3% of the target. The operations scheduled for the second half could not be carried out, owing to administrative problems; up to October only 43.5% of the

IX. PROJECT ACTIVITIES

scheduled work had been done. In the course of the year 1,269,080 blood smears were examined, with 52,452 (4.1%) yielding positive findings. In the consolidation-phase areas, 709,526 smears were examined and 560 (0.07%) were positive. Performance in those areas was at 100% of the target. The areas in the consolidation and maintenance phases (with a combined population of 14.6 million) remained free of transmission.

Activities were continued under the plan to integrate the Malaria Eradication Services with the General Health Services in the State of Rio de Janeiro. The evaluation auxiliaries of the campaign and some of the guards from the former National Department of Rural Endemic Diseases, performed multiple functions, including malaria surveillance (collection of 33,381 blood smears), smallpox vaccination (34,523 doses administered), poliomyelitis immunization (12,159 doses), a census of children who had not received the triple DPT vaccine (128,507 children registered), a sanitation survey (46,094 houses), and such other activities as the inclusion of the population visited in the vital statistics registry. Advances included the interruption of malaria transmission in 154 municipalities of the attack-phase area and inclusion of 74 of them (with 1 million inhabitants) in the consolidation-phase area. The slide positivity rate declined in 18 of the 28 administrative sectors of the campaign and in the State of São Paulo.

PAHO/SMF, WHO/RB

BRAZIL-0300, Smallpox Eradication

Purpose: Eradication of smallpox from Brazil.

Probable duration: 1958-1972.

Assistance provided: 3 medical officers, 1 statistician, and 1 short-term consultant; 1 grant; equipment and supplies; 1 short-term fellowship.

Work done: Eighteen major political subdivisions of Brazil completed their large-scale vaccination programs; 30 million persons (90% of the target) were vaccinated during the year. In an evaluation of the coverage achieved, it was found that a cumulative total of 76 million persons (83% of the total population) had been vaccinated. The proportion of takes among persons vaccinated for the first time was 95%. The vaccine produced in São Paulo and Pôrto Alegre met the requirements of WHO.

The number of cases of smallpox reported in Brazil was 1,771, the lowest in many years. In the 18 subdivisions where large-scale vaccination was completed, 793 cases were reported (84% less than in the corresponding period of 1969 and 71% below 1968). By the year's end, 23 additional surveillance stations had been established in those areas as part of a national network (100% of the target).

WHO/RB, WHO/OF

BRAZIL-0400, Tuberculosis Control

Purpose: Reduction of the risk of sickness and death from tuberculosis.

Probable duration: 1966.

Assistance provided: 2 short-term consultants, and advisory services by project Brazil-0300 staff; equipment and supplies; 2 short-term fellowships.

Work done: Plans were made for a study on the intradermal administration of BCG. Systematic use of BCG vaccine was being established in Canoas, Rio Grande do Sul. Control methods were under study in Ceará as a joint project of the Federal University, the Ministry of Health, and the Organization. Intradermal BCG on a nation-wide scale was expected to alter the tuberculosis control policy.

WHO/RB

BRAZIL-0700, Veterinary Public Health

Purpose: Development of veterinary public health services, with special reference to zoonoses control and food protection.

Probable duration: 1969.

Assistance provided: 1 public health veterinarian, 1 short-term consultant, and advisory services by staff of Headquarters and of projects Brazil-6500 and AMRO-0700 and -0800; local costs; equipment and supplies; 4 short-term fellowships.

Work done: Advisory services were continued for the strengthening of zoonoses control units in the States of Paraná and Rio Grande do Sul. A course was held in Salvador on the preparation and control of antigens and vaccines for brucellosis, for 16 professionals from several states. Another course in São Paulo on care of laboratory animals was attended by 23 professionals.

WHO/RB

BRAZIL-0701, Rabies Control

Purpose: Development of the national and state health services needed for producing vaccines, applying human antirabies treatments, and carrying out rabies control programs.

Probable duration: 1959-1975.

Assistance provided: 2 short-term consultants, and advisory services by staff of Headquarters and of project AMRO-0700; equipment and supplies; local costs.

Work done: In the Municipality of São Paulo, 252,375 dogs were vaccinated during the first stage of the large-scale rabies vaccination campaign, and revaccination was begun at the rate of 24,000 vaccinations per month. Canine rabies diminished 54.2% in comparison to 1969, its incidence being the lowest in 10 years. Five cases of human rabies were reported, compared to 21 in 1969.

In Curitiba, Paraná, where 12 rabies cases in humans occurred, a control program was begun and 4 independent services were merged into a unified program. A similar arrangement was initiated in Vitória, Espírito Santo, under the coordination of the State Ministry of Health. A plan was drawn up for a study of the vampire bat, a major reservoir of the disease.

WHO/RB

BRAZIL-0901, Plague Research

Purpose: Study of the epidemiology of plague in Brazil.

Probable duration: 1965-1971.

Assistance provided: 1 medical officer (3 months), 1 short-term consultant, and advisory services by project Brazil-0200 staff; a limited amount of supplies.

Work done: Studies performed at the Research Center in Exu, Pernambuco, confirmed that plague in Brazil is strongly prevalent among wild rodents living in islets where climatic conditions allow the disease to remain dormant over certain periods, only to emerge from time to time. In times of full epizootic activity, plague from these foci tends to spread to adjoining territories but only for a short period, since the spread is limited by the size of the habitat.

The discovery of caves of rodents of the species *Zygodontomys pixuna* seems to indicate that these are factors in the endogenous preservation of the plague bacillus.

During the year 101 cases of plague were reported.

See also Chapter V of this Report.

WHO/RB

BRAZIL-0903, Poliomyelitis

(1970) PAHO/OF (American Cyanamid Co.)

The purpose was to help control poliomyelitis in Brazil through the establishment of a laboratory to prepare for distribution vaccine received in concentrated form from production laboratories approved by the Organization.

The Organization assisted in the acquisition of equipment and supplies necessary for the establishment of the laboratory.

BRAZIL-1000, Schistosomiasis

(1966-1970) PAHO/RB

The purpose was to gain further knowledge of the epidemiological characteristics of the disease in relation to its intermediate host.

The Organization provided short-term consultants for the duration of the project, equipment and supplies, and in 1970 a grant to the School of Medicine, Mogi das Cruzes, São Paulo, for a study of chemotherapy for prevention of severe forms of the disease.

The principal activity was the planning for and execution of the national pilot control program, which was set up in 4 endemic areas. Although much effort was expended in getting the program launched, it faded rapidly after its start owing to financial difficulties.

Although the purpose was not achieved, some very useful analyses were made of the status of schistosomiasis and of ways to control it. The information gathered and recommendations formulated will serve to guide any future campaign. At the year's end the project activities and funds were transferred to project Brazil-0100.

BRAZIL-1001 (-0902), Chagas' Disease

(1967-1970) PAHO/RB

This project started with the provision of a grant for a retrospective study of the progress of the disease in four clinical centers (Salvador, Goiânia, Bambuí, and Uberaba). In 1968-1970 it was continued with the purpose of promoting an improved control program. In 1968 supplies and equipment were furnished to the Departments of Microbiology

and Pathology of the School of Medicine of Ribeirão Preto. During 1969 and 1970, additional supplies and equipment went to that same School as well as to the Schools of Medicine of the Universities of São Paulo (city of São Paulo), Bahia, and Minas Gerais, and to the São Paulo State Division for Control of Malaria and Chagas' Disease and the Institute of Tropical Medicine of the University of São Paulo.

Taking into account the limited expenditure incurred, the stimulus given to better diagnosis, better control, and better understanding of the disease was far greater than could have been expected.

The activities and funds of this project were transferred to project Brazil-0100.

BRAZIL-2100, Engineering and Environmental Sciences

Purpose: Strengthening of sanitation activities in Brazil.

Probable duration: 1952-1973.

Assistance provided: 2 sanitary engineers, 3 short-term consultants, and 1 secretary; 1 long-term fellowship.

Work done: The Basic Sanitation Technology Center of the State of São Paulo continued to carry out its assigned programs, began work on its proposed expansion of physical facilities, and performed the evaluation of field and laboratory activities in the areas of sanitation biology, water-quality control in the São Paulo distribution system, and laboratory activities in bacteriology (90% of the target).

See also projects Brazil-2101 and -3110.

PAHO/RB

BRAZIL-2101, Air and Water Pollution Control

Purpose: Implementation of a program for the control of air and water pollution in the State of São Paulo, especially in the area of Greater São Paulo.

Probable duration: 1963-1971.

Assistance provided: 1 sanitary engineer; 1 short-term and 1 long-term fellowship.

Work done: The program established in the Municipalities of Santo André, São Bernardo, São Caitano, and Mauá continued to be carried out satisfactorily, principally in regard to air pollution control. Responsibility for water pollution control was assigned in 1969 to the State Basic Sanitation Fund. Air pollution monitoring activities attained 55% of the target for the year; surveillance and control activities, 71%; and information and training activities, 80%.

The State of São Paulo submitted an application to UNPD/SF for technical assistance in implementing a program for the control of pollution (water, air, and soil).

PAHO/RB, WHO/UNDP

BRAZIL-2102, Development of the São Francisco River Basin

(1969-1970) WHO/OF

The purpose was to identify some of the health problems involved in the study of the São Francisco River basin made by the Government and FAO and propose solutions to them. The Organization provided 1 short-term consultant in 1969 and 1 in 1970. In the latter year, consultants carried out a

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study with a view to the execution of a schistosomiasis control program in the area of the basin. The relevant reports were submitted to the authorities in charge of the basin survey.

BRAZIL-2200, Water Supplies

Purpose: Strengthening of water supply activities in Brazil.

Probable duration: 1962-1973.

Assistance provided: 2 short-term consultants, and advisory services by staff of Headquarters, Zone V Office, and project AMRO-2200.

Work done: The study on population served by water and sewerage services in 1965 and 1967 was published in March. An agreement was signed for technical and administrative reorganization of the water and sewerage administration of the capital of São Paulo State, making it possible to begin work on project Brazil-2201.

In Rio Grande do Sul State, a program was drawn up to determine the quality of water in the Guaíba River and to train the personnel required for the purpose (100% of the target). A similar program was prepared for the Water and Sewerage Department of Paraná State (100%), where a revision was also made of the program for assessing the quality of the water distributed in Curitiba and other interior cities served by that Department (50%).

The activities of this project are coordinated with those of projects Brazil-3101 and -3107 in the northeast region, and Brazil-3110 in the southeastern region of the country.

WHO/RB

BRAZIL-2201, Water Supplies (São Paulo)

Purpose: Technical and administrative improvement of the Water and Sewerage Administration of the city of São Paulo.

Probable duration: 1969-1972.

Assistance provided: 1 administrative methods consultant, 16 short-term consultants, and advisory services by staff of Headquarters and of Zone V Office; local costs; supplies.

Work done: Several areas of activity of the Water and Sewerage Administration were reviewed, with emphasis on administration and management, engineering, and economic and financial aspects. The diagnosis was brought up to date, recommendations were made, and manuals of methods and procedures were prepared.

PAHO/CWSF

BRAZIL-2202, Water Supplies (Belo Horizonte)

Purpose: Improvement in the organization and administration of the Water and Sewerage Department of Belo Horizonte.

Probable duration: 1970-

Assistance provided: Advisory services by staff of Headquarters, Zone V Office, and project AMRO-2200.

Work done: The advisory services for establishment of a water-rates schedule for Belo Horizonte were completed. An administrative diagnosis of the city's Water and Sewerage Department was made and appropriate recommendations were submitted.

BRAZIL-2300, Aedes aegypti Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1970-1973.

Assistance provided: Advisory services by Zone V staff; equipment and supplies.

Work done: The *A. aegypti* eradication campaign was resumed, owing to reinfestations in Belém (Pará), São Luis (Maranhão), and Ribamar. The indices of household infestation in those cities were reduced from 5.6, 6.5, and 3.8 in 1969, to 0.4, 0.4, and 0.0, respectively. The services began full operation in July 1970. In order to prevent the spread of the vector to other populated centers in Brazil, the campaign included extensive inspection of ocean-going and river ships, overland vehicles, and aircraft.

PAHO/RB

BRAZIL-3101 and -3107, Health Services in States and Territories

Purpose: Improvement of the institutional infrastructure of the health sector for the planning and administration of programs in northeastern Brazil.

Probable duration: 1958-1971.

Assistance provided: 1 medical officer, 1 sanitary engineer, 1 administrative methods consultant, 1 statistician, and 1 nurse; common services; 1 short-term and 1 long-term fellowship.

Work done: The attainment of goals for the year was at 75% in regard to technical and administrative reorganization of the Ministries of Health of the States of Pernambuco, Ceará, Paraíba, Sergipe, Bahia, Maranhão, and Rio Grande do Norte; 25% in the coordination of health sector institutions; 80% in the development of a uniform system of statistics; 70% in the establishment of nutrition advisory services and supervision at the level of the Ministries; 84% in the area of basic sanitation; and 20% in the program for construction of rural water services with active community participation in Maranhão State.

The system of regionalization was adopted by all the northeastern states, where 35 Regional Executive Centers were established (70% of the target). A seminar held in Recife formulated proposed standards for the establishment and operation of such Centers. A survey of health education in the schools was carried out in Recife with a view to preparing a document defining a new orientation to be given to the integration of the health component into the general curriculum at the primary and intermediate levels.

The Rector of the Federal University of Pernambuco authorized the establishment of a committee to prepare plans for reorganizing the work of the Regional Center for Research and Teaching in Hygiene and Public Health.

The Superintendency for Development of the Northeast (SUDENE) conducted the first meeting of the Divisions of Health and of Agriculture and Supplies, for the purpose of formulating a regional nutrition policy.

See also projects Brazil-2100, -2200, -3700, and -4200.

PAHO/RB, WHO/RB

UNICEF

BRAZIL-3104, Health Services (São Paulo)

Purpose: Improvement of the health infrastructure by means of technical and administrative reorganization of the State Ministry of Health, the agency in charge of planning and administering health activities, with emphasis on executive regionalization and decentralization.

Probable duration: 1969-1971.

Assistance provided: 1 short-term consultant, and advisory services by Zone V Office staff; 1 short-term fellowship.

Work done: Progress toward administrative reorganization of the State Ministry of Health was slowed down by a number of political and administrative problems. A Superintendency of Environmental Sanitation was established (30% of the target). Planning activities progressed satisfactorily. Using available information, basic guidelines were laid down for development of the health sector. A health diagnosis of São Paulo State was begun (10%).

Seven million persons in the state were vaccinated against smallpox (87.5% of the target), and an epidemiological surveillance program was organized (80%). Production of freeze-dried smallpox vaccine at the Butantan Institute was raised to 2 million doses per month (100%). The first stage of the large-scale program for the vaccination of dogs against rabies was concluded and an epidemiological surveillance unit was installed. Treatment in rabies foci was also instituted (80%). A rabies prevention unit was established within the Ministry of Health, as an initial part of the veterinary public health unit (60%).

WHO/RB

BRAZIL-3105, Fellowships

Fifteen short-term and 5 long-term fellowships were awarded.

WHO/RB

BRAZIL-3108, Health Services in Rural Areas

Purpose: Coordination of the system of the Brazilian Rural Credit and Assistance Association (ABCAR) with those of institutions active in the fields of nutrition, health, and education, with a view to planning for adequate utilization of resources.

Probable duration: 1969-1973.

Assistance provided: 1 medical officer.

Work done: The rural health programs executed under agreements between ABCAR and state health institutions organized 50 health stations; administered smallpox vaccine to 159,991 persons (43%), poliomyelitis vaccine to 68,862 children, and DPT vaccine to 76,711 children (40%); improved 2,883 water supply systems (100%); installed 12,382 latrines (270%); administered 41,725 treatments against verminosis (23%); provided prenatal and postnatal care to 9,688 mothers (100%); and trained 6,007 professors (January to August).

An analysis of the health sector was made in several states with a view to defining a strategy for rural health programs.

WHO/RB

FAO, UNICEF

BRAZIL-3109, Health Services (Amazon Basin)

Purpose: Integration of the necessary health services into the recently established National Integration Project for Amazonia, the purpose of which is to integrate the Amazon region into the country's economy so as to offer persons in the northeast, especially those in the areas most seriously affected by frequent droughts, an opportunity to relocate in that region.

Probable duration: 1970-1974.

Assistance provided: Advisory services by staff of projects Brazil-3108 and -3700.

Work done: The project includes, in its initial stage, construction of 2 highways: the Trans-Amazonian Highway to connect the northeast seaboard with the Territory of Acre, crossing all of Amazonia; and the Cuiabá-Santarem Highway, which will also provide access to the interior of the region and a link with neighboring regions. There are also plans for colonization and agrarian reform along the length of these highways.

The governmental authorities prepared the preliminary plans for services to the population. The Ministry of Health will be responsible for the necessary health activities, including constructing of all infrastructure facilities and protecting the health of existing towns and those to be established along the highways.

The project has not been completely defined as yet, and only preliminary activities were carried out.

BRAZIL-3110, Health Services in the Southeast

Purpose: Improvement and expansion of health services in the States of Paraná, Rio Grande do Sul, and Santa Catarina as part of the process of socioeconomic development.

Probable duration: 1968-1973.

Assistance provided: 1 medical officer, 1 sanitary engineer, 1 administrative methods officer, 1 statistician, and 1 short-term consultant; equipment and supplies and 1 long-term fellowship.

Work done: To further the technical and administrative reorganization of the Ministries of Health of the three southeastern states, a plan was drawn up to develop the sanitation services of the State of Rio Grande do Sul (30% of the target); a project was prepared for the improvement of the structure and operation of the Ministry of Health of Paraná (85%); and in Santa Catarina a refresher course was conducted for directors of health centers and stations as a preliminary step toward reorganizing the Ministry of Health. Institutionalization of the health planning process was initiated in the first two states mentioned above, and a preliminary study of statistical services was made in all 3 (100%). Courses were held on administration, water treatment, medical instruction, and zoonoses control, and studies were made on the financing of the health sector (100%).

PAHO/RB, WHO/RB

BRAZIL-3200, Nursing

Purpose: Improvement in the organization and administration of nursing services and in the system for the training of nursing personnel.

Probable duration: 1953-1974.

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Assistance provided: 2 nurses (1 part-time); local costs; and costs of 1 seminar.

Work done: The School of Nursing of the Federal University of Rio Grande do Sul, in Porto Alegre, prepared a set of regulations for the School and revised the curriculum. The II Seminar on Nursing Education was organized and held at the School of Nursing of São Paulo, in Ribeirão Preto. It was attended by 43 teaching nurses, 9 nurses in active service, and 22 4th-year nursing students.

PAHO/RB

BRAZIL-3302, Yellow Fever Laboratory

Purpose: Provision of yellow fever vaccine for the continent-wide program, as well as diagnostic services.

Probable duration: 1950-1971.

Assistance provided: Advisory services by staff of project Brazil-0300; 1 grant; and equipment and supplies.

Work done: The Oswaldo Cruz Institute produced 5 million doses of yellow fever vaccine (100%) compared to 1,200,000 doses in 1969, and supplied vaccine to countries where there were outbreaks of jungle yellow fever, as well as areas threatened by the risk of such outbreaks (100%).

PAHO/RB

BRAZIL-3400, Health Education

Purpose: Reorientation of the health education process in the country's technical health education units and teaching centers.

Probable duration: 1968-1972.

Assistance provided: 1 health education adviser, and 3 short-term consultants; 1 short-term and 1 long-term fellowship.

Work done: Work continued on collection of data on health education resources (60% of target). The First Brazilian Seminar on Health Education, held during the year, reviewed the theory and practice of health education activities (100%). A National Health Education Division was established (100%). A total of 216 instructors from the 2 principal schools of public health and management personnel from the Regional Health Units of São Paulo and Guanabara received inservice training in supervision techniques (200%). The School of Hygiene and Public Health of the University of São Paulo graduated 20 public health educators (100%).

A refresher course in school health education was held in Minas Gerais for 435 coordinators and supervisors in this field (100%).

WHO/RB

BRAZIL-3500, Health Statistics

Purpose: Establishment or improvement of statistical information systems, and training of personnel.

Probable duration: 1964-

Assistance provided: 1 statistician, and advisory services by staff of projects AMRO-6208, -6708, and Brazil-4800; 1 grant; and 1 long-term fellowship.

Work done: A Division of Epidemiology and Statistics

was established in the Ministry of Health. The health statistics records of the States of Paraná, Santa Catarina, and Rio Grande do Sul were evaluated, and medical records services were organized in the university hospitals of Salvador, Guanabara, and Recife.

Volume I of the *International Classification of Diseases* in Portuguese, printed in 1969, was widely distributed; its use was strengthening morbidity and mortality statistics in many parts of the country. Volume II was translated into Portuguese at the School of Medicine of Ribeirão Preto.

The Regional Health Statistics Center for the Northeast (CRESNE) was fostering the improvement of health statistics in that area. Courses in elementary and advanced statistics were given in Fortaleza, Ceará, for personnel of medical schools and the health services (project AMRO-6108). A 4-month course in medical records and hospital statistics was conducted in the University Hospital of Salvador, Bahia (see project AMRO-6708).

WHO/RB

BRAZIL-3700, Health Planning

Purpose: Establishment of health planning systems at the federal, macroregional, state, and municipal levels to operate on an integrated basis and in coordination with the general development planning process.

Probable duration: 1968-1972.

Assistance provided: 1 medical officer and 1 secretary.

Work done: A new administrative structure in the Ministry of Health was established by decree of 22 May for the purpose of decentralizing activities and improving planning (50%). A Basic Health Law to establish a coordination mechanism for this sector was being prepared. Goals and directives were issued to guide the Government's action in the health sector during 1970-1973. The Ministries of Health of the northeastern and southern states carried out their activities aimed at the modernization of their technical and administrative structures (50%). Implementation of the health planning process made more progress in the northeastern and southern macroregions (30%) than at the federal level. Training of personnel in planning techniques was strengthened with the establishment of regular courses at the Schools of Public Health of Rio de Janeiro and São Paulo and of annual courses at Recife.

PAHO/RB

BRAZIL-3701, Planning for Health Services in the Northeast

Purpose: Improvement of health services for the northeastern region, by strengthening the planning process in the states composing this extensive region and by training officials in techniques of planning and administration of services.

Probable duration: 1958-1973.

Assistance provided: 1 health planner.

Work done: Planning activities increased in most of the 9 northeastern states. Partial diagnoses were made in 3 states (25%), and the health plan for Paraíba was completed. In Minas Gerais, a model was designed for the diagnosis and for subsequent preparation of a strategy for

relating health to the other economic and social sectors (100%). Statistical information on the extensive north-eastern region was improved in regard to coverage and promptness of data collection (80%). Agreements were signed by the Superintendency of Development of the North-east (SUDENE) and the Ministries of Health of the north-eastern states for the strengthening of administrative structures (75%). Thirty-five Regional Executive Centers were in operation (70%). A plan for emergency action against droughts and floods was drawn up, in view of the disasters that occurred in the region during the year (80%).

WHO/UNDP

BRAZIL-4100, Training Center in Nursing and Midwifery (1967-1970) PAHO/RB, WHO/RB

The purpose of this project was the establishment and development of an International Training Center in Nursing and Midwifery, over a period of 5 years, to improve maternal and child health through the training of Brazilian personnel and subsequently, from other American countries. The Organization provided 1 nursing education consultant (1968), 1 nursing services consultant (1970), and both in 1969, as well as 4 short-term consultants, advisory services by staff of Zone V Office and project AMRO-4109; 2 grants (1968 and 1969), 4 short-term and 1 long-term fellowships; and equipment and supplies for carrying out 3 macroregional seminars.

A program of activities, including plans for supplementary courses, was prepared; studies in clinical fields were begun; the Maternal and Child Care Department of the Ana Neri School of Nursing was organized; and the curriculum in this area of study was reorganized.

By means of 6 refresher courses and 3 macroregional seminars on maternal and child nursing care, held between 1968 and 1970, a total of 235 Brazilians—195 nurses and 40 midwives, including 23 coordinators (67% of the target for 5 years) were trained. These training activities were primarily for persons at the operational level, who were later assigned to service in the northeast, south, and central-west, and in the States of Guanabara and Rio de Janeiro. Initial evidence of their impact on educational institutions was provided by the initiation of projects for improvement of teaching and nursing care at the Maternal and Child Health Department of the Ana Neri School in the Federal University of Rio de Janeiro, the School of Nursing at the Federal University of Pernambuco, the School of Nursing Auxiliaries of the Ministry of Health of the Federal District, the Fernando de Magalhães Maternity Clinic and the Fernandes Figueira Institute in Rio de Janeiro, the Premature Ward in the Clinical Hospital at Niterói, and the Midwifery Association Clinic.

During 1970, 10 nurses and 8 midwives received guidance in curriculum planning and preparation and in educational administration.

The scheduled supplementary courses in nursing and midwifery were not held. Owing to a shortage of funds, teaching personnel, and other facilities, the Center did not develop into an inter-American institution, and the project was terminated in 1970.

BRAZIL-4200, Nutrition

Purpose: Development of programs to improve the nutritional status of the population through the maximum utilization of local resources and the teaching of good dietary habits; organization of nutrition courses for professional and auxiliary personnel of health, education, and agricultural services; and promotion of applied research.

Probable duration: 1960-

Assistance provided: 1 medical nutritionist; 1 short-term fellowship.

Work done: Public health nutrition activities were integrated into the health plans of 2 states (75%), and nutrition education was improved in 2 schools of medicine (50%). The first course on improvement and planning of applied nutrition was held for 30 professionals from the Brazilian Rural Credit and Assistance Association (ABCAR) and 10 from other institutions (100%), and training in nutrition and health was given to 2,739 technicians (100%), 50,819 rural leaders (100%), and 793 lay midwives (22.5%). A total of 42,345 school and family vegetable gardens (95%) and 1,110 family farming plots (25%) were established.

WHO/RB

FAO, UNICEF

BRAZIL-4201, Nutrition Teaching in Medical Schools

Purpose: Creation of conditions for improvement of the teaching of nutrition to medical students.

Probable duration: 1965-1971.

Assistance provided: Advisory services by staff of project Brazil-4200; 1 grant.

Work done: The curricula of the 4 medical schools participating in the project (Botucatu, Brasília, Fortaleza, and Salvador) were revised to reflect the recommendations of the symposium conducted by the Brazilian Association of Medical Schools in 1965 in the Schools at Botucatu and Brasília (50%).

PAHO/RB

BRAZIL-4202, Nutrition Courses (São Paulo)

Purpose: Increasing the number of trained nutrition personnel for the national public health services of the Latin American countries.

Probable duration: 1966-1970.

Assistance provided: 1 short-term consultant, and advisory services by project Brazil-4200 staff; 1 grant.

Work done: A course in public health nutrition was offered at the School of Hygiene and Public Health of the University of São Paulo for 12 physicians and 11 nutritionists (100%).

PAHO/RB, PAHO/OF

BRAZIL-4203, Institute of Nutrition (Recife)

Purpose: Strengthening of the structure and activities of the Institute of Nutrition of the Federal University of Pernambuco, to enable it to better contribute to the solution of regional nutrition problems.

Probable duration: 1964-

IX. PROJECT ACTIVITIES

Assistance provided: 1 medical officer, 1 biochemist, and 3 short-term consultants; 1 grant; equipment and supplies.

Work done: The 7th course in public health nutrition for physicians, financed by the Superintendency of Development of the Northeast (SUDENE), was offered at the Institute of Nutrition of the Federal University of Pernambuco. A seminar to review the curriculum of the School of Nutritionists and a postgraduate course in public health nutrition for dietitians were also held.

The research activities included an analysis of the epidemiological factors involved in protein-calorie malnutrition in the northeast and a biochemical evaluation of the recovery of children assisted in the nutrition rehabilitation centers. In the State of Paraíba, the nutrition activities were included in the state health plan. A study group of the Bank of Northeast Brazil prepared projections on food consumption for 1970-1980.

PAHO/RB

BRAZIL-4300, Mental Health

Purpose: Reorganization of services with a view to improvement of mental health care.

Probable duration: 1970-

Assistance provided: 1 short-term consultant, and advisory services by Headquarters staff.

Work done: Advisory services were provided to the State of Rio Grande do Sul for the establishment of a plan of operations in mental health.

PAHO/RB

BRAZIL-4602, Toxicology of Pesticides

Purpose: Expansion of the pesticide studies at the Biological Institute of São Paulo.

Probable duration: 1968-

Assistance provided: 1 consultant in toxicology, and advisory services by Zone V Office staff; supplies.

Work done: Work continued on the installation and on initiating the operation of the laboratory for the study of toxic effects on mammals, as well as on the development of techniques for determining suitable procedures for the use of pesticides in agriculture and industry. The consultant assigned to the project completed his work during the year, and future assistance by the Organization will be provided through short-term consultants.

WHO/OF

BRAZIL-4800, Medical Care Services

Purpose: Improvement of medical care structures, in order to achieve wider geographic and population coverage.

Probable duration: 1966-1972.

Assistance provided: 1 medical officer and 2 short-term consultants; 1 grant; 2 short-term fellowships.

Work done: Work continued on implementation of the plans to restructure the hospitals of the Federal Universities of Pernambuco, Bahia, and Ceará, and of the University of Guanabara State (70%).

A seminar on university hospitals, attended by 95 repre-

sentatives from 34 schools of medicine and observers from the Ministries of Health and of Education and Culture, formulated a model for the country (100%).

Coordination of services at the federal level between the Ministry of Health and the National Social Assistance Institute was initiated (10%).

The Intensive Care Unit of the Belo Horizonte University Hospital served as a model for other regions in the country.

See also projects Brazil-3101 and -3110.

PAHO/RB

BRAZIL-5000, Rehabilitation (1969-1970)

The purpose of this project was the establishment of a plant in the National Social Assistance Institute of Rio de Janeiro to manufacture prosthetic devices. The Organization provided advisory services by staff of Zone V Office and of project AMRO-5000.

The agreement with the Ministry of Labor for installation of the plant was signed; the basic document for the project was prepared; and the head of the prosthetics and orthotics laboratory was selected. All activities related to this project were discontinued by the Institute in 1970.

BRAZIL-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters, Zone V Office, and project Brazil-6200 staff.

Work done: The program, which operates under the supervision and coordination of the Brazilian Association of Medical Schools (ABEM), was placed under uniform regulations and its activities were increased. Of 66 letter-agreements submitted for signature, 57 had been approved; and 51 schools of medicine were participating in the distribution of textbooks. The medical schools requested a total of 31,927 copies of the *Tratado de patologia, Bioquímica, Fisiología humana, the Manual de farmacología*, and the *Tratado de pediatria*, of which 12,430 copies were received. Receipts from the sale of books (85% of which were sold on cash terms) amounted to 179,848 cruzeiros (US\$35,403). Three Brazilian professors served on the selection committees for the textbooks on microbiology and parasitology. The ABEM extended technical advisory services to the local administrations of 56 medical schools.

BRAZIL-6100, School of Public Health (Rio de Janeiro)

Purpose: Improvement in the number and quality of the country's public health manpower, by increasing the effectiveness of the National School of Public Health in Rio de Janeiro.

Probable duration: 1957-

Assistance provided: Advisory services by staff of projects

Brazil-3400, -3500, -4800, and AMRO-6100; supplies; 1 long-term fellowship.

Work done: The Health Manpower Foundation, to which the National School of Public Health in Rio de Janeiro is attached, became a part of the Oswaldo Cruz Institute, under the name President Castello Branco Institute and now consists of two divisions: Manpower and Training.

Courses in general public health for engineers, and courses in health planning, biological research, and health statistics were conducted (100% of target). A curriculum was prepared for a course in public health dentistry, to be offered by the School in the near future.

PAHO/RB

BRAZIL-6101, School of Public Health (São Paulo)

Purpose: Improvement in the number and quality of highly trained public health personnel for the health, education, and research services in the Latin American countries, by strengthening and developing the programs of the School of Hygiene and Public Health of the University of São Paulo.

Probable duration: 1958-

Assistance provided: Advisory services by Zone V Office staff; 1 grant.

Work done: The School offered 3 regular postgraduate courses, 1 regular undergraduate course, and 35 special short and advanced training courses. The administrative and teaching reorganization, which has led to a fundamental transformation in the programs, was carried forward.

WHO/RB

BRAZIL-6200, Medical Education

Purpose: Strengthening of the medical education programs at all levels with a view to relating the system of medical education to the country's health needs; improvement of the curricula and programs of study; and promotion of the development of training centers for postgraduate and teaching personnel.

Probable duration: 1965-1973.

Assistance provided: 1 medical officer, 2 short-term consultants, 2 temporary advisers, and 1 secretary; 1 grant; a limited amount of teaching material; 5 short- and 3 long-term fellowships.

Work done: Plans for administrative and teaching reform were adopted at the university hospitals in Recife, Bahia, Fortaleza, and Guanabara, and a diagnostic study of those in Santos, Curitiba, and Juiz de Fora was begun (100%). Two seminars on establishment of educational objectives and curriculum planning were held in Recife and Brasília (100%). In Brasília, seminars were also held on structural planning and administration of medical schools (100%) and on educational evaluation. At the Recife Medical School, the curriculum reform study was continued (30%).

A Documentation Center for Educational Statistics for the Health Sciences, covering 185 schools of the health sciences, was established at the Brazilian Association of Medical Schools; the Center will begin its work by gathering information on medical students. Basic information has been compiled on the characteristics of 173 health science schools and 80 courses. Data on the characteristics and academic

rating of the students were also collected to meet the information requirements of national and international institutions (40%). The Association held its 8th meeting in Brasília in September.

The Integrated Nucleus for Health Manpower Studies signed an agreement with the National Institute of Pedagogical Studies of the Ministry of Education and Culture for conducting a survey of manpower in Brazil; 5 health manpower studies were under way (50%).

A survey was made of the teaching of preventive medicine at the School of Medicine of the Federal University of Rio Grande do Norte. A seminar on the teaching of the behavioral sciences was held at Ribeirão Preto, São Paulo; and one on scientific methods in the behavioral sciences was offered in Campinas, São Paulo. A training program for educational personnel of preventive medicine departments was prepared. Training was given to 13 librarians from medical schools (90%). A document entitled *Los requisitos mínimos para una biblioteca de medicina* (Minimum requirements for a medical library) was issued and distributed. Laboratories in Human Relations and Medical Pedagogy were held in Curitiba (Paraná) and Porto Alegre (Rio Grande do Sul).

PAHO/RB, WHO/RB

BRAZIL-6202, Pediatric Education (Recife)

(1963-1970) PAHO/RB

(UNICEF)

The purpose was to improve the teaching of pediatrics in the School of Medicine of the Federal University of Pernambuco (formerly the University of Recife), and to provide training in pediatrics, outside the regular medical courses, for professional and auxiliary personnel. The Organization furnished 2 medical officers, 1 long-term and 2 short-term consultants, and 1 grant.

The teaching of pediatrics and preventive medicine was integrated at the School, which served as a major pediatric center and provided courses and seminars for 212 physicians, 43 nutritionists, 40 nurses and 80 nursing auxiliaries, 404 medical students (198 third-year, 140 fourth-year, 45 fifth-year, and 21 interns), as well as a residency program for 18 students.

The reorganization of the Institute of Child Medicine in Pernambuco was completed. Outpatient consultant services were expanded, and 20 beds were put into service for pediatric surgery. A total of 1,016 patients received hospital care, and 38,509 outpatient consultations were held. The teaching programs of the Pediatrics Department were coordinated with those of the State Ministry of Health, the Brazilian Welfare Association, and the National Social Assistance Institute.

BRAZIL-6203, Research Training

(1965-1970) PAHO/RB

The purpose was to help increase the number and improve the quality of microbiology personnel for the health, education, and research services in the Latin American countries, by strengthening and developing the programs of the Institute of Microbiology of the University of Rio de Janeiro. The Organization provided 2 temporary advisers, 6 grants to the Institute, supplies and equipment, and fellowships as fol-

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lows: long-term—1 each to Argentina, Chile, El Salvador, Mexico, and Uruguay; 2 each to Colombia, Ecuador, Paraguay, and Venezuela; and 3 to Peru; short-term—1 to Chile, 2 to El Salvador, 3 to Paraguay, and 4 to Peru.

The Institute gave specialized training in microbiology to 25 paramedical workers and 32 professionals from Brazil; to 1 professional each from Argentina, Bolivia, El Salvador, and Guatemala; and to 2 professionals from Peru.

BRAZIL-6204, Teaching of Preventive Medicine

Purpose: Planning and organization of a Department of Preventive Medicine at the School of Medicine of the Federal University of Pernambuco.

Probable duration: 1967-1971.

Assistance provided: Advisory services by staff of projects Brazil-3101 and -6200; 1 grant.

Work done: The undergraduate and postgraduate courses in medicine and the undergraduate courses in nursing, pharmacy, industrial chemistry, and industrial engineering were continued (60% of target). The urban community program continued to be carried out with a group of 273 families in a district near the School, and a start was made on an evaluation of the medical care activities performed and the studies of morbidity observed during the period. Changes were made in the urban and rural community programs in order to pool the resources and activities of the School of Medicine, the Superintendency of Development of the Northeast (SUDENE), and Schools of Nursing and Social Service (30%).

Eight participants from various schools of medicine in the northeast completed the postgraduate course in preventive medicine (100%). The Regional Center for Research and Training in Hygiene and Public Health (CRIEHSP) offered 2 advanced and 3 intermediate courses and conducted 2 regional seminars (80%).

PAHO/RB

BRAZIL-6221 and -6222, Regional Library of Medicine

(1967-1970) PAHO/RB Grants to PAHO: Government of Brazil, The Commonwealth Fund, and U.S. National Library of Medicine

The Library reached a sufficient level of development in 1970 to commence services outside Brazil (see project AMRO-6221).

BRAZIL-6302, Training of Nursing Auxiliaries

Purpose: Increasing the supply of auxiliary nursing personnel and bringing the training systems up to date.

Probable duration: 1963-1973.

Assistance provided: 1 nurse; costs of the seminar and of some of the courses.

Work done: Over-all attainment of the targets for the year is estimated at 95%. Assistance was furnished to 33 schools in which 1,867 students were enrolled and 990 auxiliaries were graduated. Fifty-five nurses engaged as instructors in courses and schools for auxiliaries were trained in curricu-

lum development and administration, exceeding the target (110%).

The Federal Education Council authorized the holding of intensive courses for training auxiliaries in 11 months; and an administrative manual for the conduct of such courses was prepared.

A model integrated curriculum was developed to serve the schools as a guide in formulating their own programs of study.

A 2-week seminar, for 39 nurse educators and health service nurses, and a course on teaching techniques, for 36 nurses engaged as instructors in courses for auxiliaries, were held during the year.

PAHO/RB

UNICEF

BRAZIL-6400, Institute of Sanitary Engineering

Purpose: Development of an Institute of Sanitary Engineering with the capacity to monitor environmental pollutants; compile data required for the design of control systems and reporting such data to official agencies and professional groups; develop a training program to upgrade staff of this and other technical agencies in the country; and compile and publish technical information on sanitary engineering developments, obtained from research and from current literature.

Probable duration: 1964-1971.

Assistance provided: 1 sanitary engineer and 2 short-term consultants; 2 short-term fellowships.

Work done: Equipment of the Superintendency of Urbanization and Sanitation (SURSAN) was transferred to the Institute of Sanitary Engineering. The Institute's Laboratory Division was likewise strengthened by the transfer of 10 technicians from the Sewerage Department Laboratory. The storage facilities were also enlarged, and the Temporary Laboratory at Laguna Rodrigo de Freitas was completed.

Water analyses from the Rio de Janeiro distribution system were done at the rate of 20,000 specimens per quarter (100%).

The drive against air pollution was begun. Analysis of air samples was carried out with the cooperation of the Atomic Energy Commission.

Eight of the 9 scheduled courses for technicians were held for a total of 370 participants. In addition, 2 courses were conducted for students from the School of Engineering of the University of Guanabara.

The study on the incidence of schistosomiasis and the degree of infection among snails in the State of Guanabara was brought to completion. Ten publications were published and distributed.

WHO/UNDP

BRAZIL-6401, Sanitary Engineering Education

Purpose: Advanced training of engineers, other professionals, and subprofessional personnel active in the field of sanitary engineering and environmental sanitation, by means of short courses, seminars, applied research, and advisory services to engineering schools and other institutions.

Probable duration: 1965-1971.

Assistance provided: 8 short-term consultants, 2 temporary

advisers, and advisory services by staff of Zone V Office and of projects Brazil-2101, -3101, -3110, and -6400; equipment, supplies, and grants for courses and research.

Work done: Twelve short courses and 2 seminars were held and were attended by more than 420 professionals. They included: 3 courses (2 at São Paulo and 1 at Pôrto Alegre) on new water treatment techniques; 1 course on control of air pollution caused by incinerators (at the Inter-municipal Commission for the Control of Air and Water Pollution, in São Paulo); 1 course on statistics for sanitary engineers and 1 on economic feasibility and managerial techniques (at the Basic Sanitation Technology Center); 2 courses on fluoridation of water supplies (1 in Belo Horizonte and 1 in Recife); 1 course on water disinfection (at the School of Hygiene and Public Health in São Paulo); courses on groundwater (in Salvador, Bahia) and water rates (Belo Horizonte); seminar on air pollution caused by industry (Belo Horizonte); and a seminar on administration of water supply services (Basic Sanitation Technology Center, São Paulo).

The scheduled number of courses were held, and the number of professionals trained, more than 420, was well above the target. The School of Hygiene and Public Health completed its study on water meters under the IDB-PAHO agreement and continued its study on waste disposal and treatment of toxic residues from cassaba flour mills.

PAHO/RB

BRAZIL-6500, Veterinary Medical Education

Purpose: Improvement of the teaching of veterinary public health and preventive medicine in the schools of veterinary medicine of the country.

Probable duration: 1960.

Assistance provided: 3 short-term consultants, 1 temporary adviser, and advisory services by staff of Headquarters and of project Brazil-0700; 1 grant for local costs; 1 short-term fellowship.

Work done: The third course in epidemiology and zoonoses control, held in Pôrto Alegre, Rio Grande do Sul, was attended by 28 professionals from 9 schools of veterinary medicine, the Ministry of Agriculture, and the Army Veterinary Service (100% of target).

The Brazilian Association of Schools of Veterinary Medicine held its II Meeting in São Paulo and its III Meeting in Niterói, Rio de Janeiro. The discussions centered on the impact of the university reform, the new curricula, teaching at the basic cycle, the departmental structure and professional education, training of teaching personnel, and university-level research (100%). Work plans were made for an assessment of educational manpower and materials, with a view to preparation of a development program embracing all the schools in the country (60%).

A course on the breeding and care of laboratory animals was held at the University of São Paulo for 27 professionals from various schools, the Ministry of Agriculture, and official and private institutions (100%). A course on poultry diseases was given at Belo Horizonte, Minas Gerais, for 16 professionals (100%), and one on preparation and control

of brucellosis antigens and vaccines was offered at Salvador for 16 professionals from various states (100%).

PAHO/RB

BRAZIL-6600, Dental Education

Purpose: Strengthening of the dental education system to relate it to the dental health needs of the country; and promotion of the development of training centers for post-graduate and teaching personnel.

Probable duration: 1963-1971.

Assistance provided: 2 short-term consultants, and advisory services by staff of project Brazil-6200; supplies; 1 short-term and 1 long-term fellowship.

Work done: The Center for Research in Social Dentistry at Pôrto Alegre continued its programs of administration, professional practice, educational studies, technical and professional instruction, and research. The University of Brasília completed its educational project for integrating its dental courses with the medical curriculum. Technical assistance was furnished to the School of Dentistry of Pernambuco, Recife, in connection with its administrative and academic organization.

PAHO/RB

BRAZIL-6700, Biostatistics Education and Population Dynamics

(1966-1970) PAHO/OF, WHO/RB

The purpose was to establish, at the School of Hygiene and Public Health of the University of São Paulo, a center for teaching and research focusing on the interrelationship of health and population dynamics and their influence on social and economic development. The Organization provided 5 grants and supplies and equipment.

The Center for Population Dynamics Studies (CEDIP) was established and carried out an extensive program of research, teaching, and advisory services. Four 3-month courses in health and population dynamics were given for professionals in various fields. A study of human reproduction was completed in the District of São Paulo, and the findings were in the process of being published. Other research studies included those on the effect of lactation on the regulation of fertility, juridical standards, and fertility in Brazil, abortions in São Paulo, and a history of the Brazilian population.

BRITISH HONDURAS-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1956-

Assistance provided: 1 sanitarian, and advisory services by staff of projects AMRO-0200 and -0203; antimalaria drugs; other supplies.

Work done: During the year, 15,522 blood smears taken throughout the country were examined and 33 malaria cases (0.21%) were detected, all of them *P. vivax*. Two cases were classified as imported from Guatemala, one as imported from Mexico, and one from Honduras. The Corozal district, bordering on Mexico, accounted for a major portion of the

cases (14). Belize, the only district in the consolidation phase, reported 5 cases, while Stann Creek was the only district that remained negative during 1970.

Two cycles of residual house-spraying were carried out, using DDT; 11,443 houses in the attack-phase areas were sprayed during the first cycle, and 7,782 during the second cycle.

Emergency spraying was carried out in 188 houses in the consolidation-phase area to protect a population of 1,296.

PAHO/RB

UNICEF

BRITISH HONDURAS-3100, Health Services

Purpose: Improvement of the health services and extension of their coverage to the entire population.

Probable duration: 1962-1973.

Assistance provided: 1 medical officer, 2 short-term consultants, and advisory services by staff of projects AMRO-0103, -0703, -3203, -3503, -3603, and -4703; equipment and supplies; 2 short-term and 3 long-term fellowships.

Work done: The year's activities included the formulation of the quadrennial projections, which were accepted by the Government. Thirty-nine wells were drilled in the Corozal district, 31 of which were equipped with hand pumps (54% of the target); 1 rudimentary water supply system was completed and 2 more were under construction in the Orange Walk district (100% of the target); and 1,241 latrine slabs and 738 latrine risers were produced in the Cayo district (68% and 48%, respectively). Of the targets for BCG vaccinations, 76% was accomplished in the preschool-age group, but only 0.3% among first grade schoolchildren and those in the last primary grade; none of the target for vaccination of the newborn was met. Accomplishment of targets for smallpox vaccinations was 23% among children; for DPT, 24% as regards primary inoculation and 19% for boosters; and for poliomyelitis, about the same percentages were reached. The limited achievements in the vaccination activities appeared to be due to the absence of a formal program for this work.

The proportions of targets reached in other activities were as follows: general outpatient consultations, 50%; consultations for expectant mothers, 87%; child care, 100%; family education in responsible parenthood, 100%; supply of equipment for laboratories, 100%; training of laboratory technicians, 80%; and postgraduate training for the pathologist and senior laboratory technician, 100%. In statistics, 75% of the recommendations of consultants were implemented. In nursing, all the targets were met for the training of auxiliaries (40) and of graduate nurses abroad (2).

One of the short-term consultants made a study of nursing education, assisted in solving some of the problems identified by the national nurses, helped to identify other problems, and made excellent recommendations which were being implemented. The other consultant organized and conducted a short course in medical records for statistical clerks and helped to organize the Medical Records and Statistics Department.

WHO/RB

UNICEF

CANADA-3100, Consultants in Specialized Fields

Purpose: Study of special health problems.

Probable duration: 1959.

Assistance provided: 1 short-term consultant.

Work done: The Director of the Department of Pathology of Sherbrooke University in Quebec attended the meeting of the Working Group on Pediatric Pathology held in São Paulo, Brazil.

WHO/RB

CANADA-3101, Fellowships

One long-term fellowship was awarded.

WHO/RB

CHILE-0300, Smallpox Eradication

Purpose: Keeping the country free of smallpox by immunizing 80% of the population.

Probable duration: 1957-1972.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by staff of project AMRO-0106.

Work done: First vaccinations totaling 227,762 (98% of target) were administered to infants under 1 year of age, and 592,382 (37%) revaccinations to children above age 5. A total of 4,603,500 doses of glycerinated and 721,000 of freeze-dried smallpox vaccine were produced.

CHILE-0400, Tuberculosis Control

Purpose: Reduction of tuberculosis morbidity and mortality through a control program to be carried out by the country's general health services.

Probable duration: 1964.

Assistance provided: Advisory services by the PAHO/WHO Country Representative; 2 short-term fellowships.

Work done: From January to June, 192,980 photofluorographic examinations and more than 250,000 bacilloscopies were performed. More than 550,000 children were vaccinated with BCG. The program for treatment of ambulatory cases from remote rural areas continued to be expanded. Bacteriological research was encouraged; and the national network of Koch Laboratories was enlarged to include 175 laboratories throughout the country. The 3rd clinical-epidemiological course on tuberculosis (3 months) was attended by 21 physicians.

PAHO/RB

CHILE-0600, Venereal Disease Control

Purpose: Control of venereal diseases in 5 provinces; and establishment of a demonstration area for the training of medical and paramedical personnel from Chile and other countries in control techniques.

Probable duration: 1965-1973.

Assistance provided: 2 short-term consultants and advisory services by the PAHO/WHO Country Representative and by staff of project AMRO-0106.

Work done: The control program continued in Santiago

and other major cities and ports in Chile. Action was taken to improve reporting and registration of cases. A course on venereal diseases was held for 8 Chilean physicians (heads of control programs) and 2 physicians from abroad. A course for survey workers was also held.

WHO/RB

CHILE-2100, Engineering and Environmental Sciences

Purpose: Integration of sanitation programs into the country's development plans; establishment of a national waste disposal program; and development of a policy for air pollution control in the Greater Santiago area.

Probable duration: 1969.

Assistance provided: 1 sanitary engineer; supplies and equipment; 5 short-term fellowships.

Work done: Work began on a study to establish a national waste disposal plan for cities with more than 50,000 inhabitants. In the Greater Santiago area, a technico-economic feasibility study of a waste disposal program was nearing completion, and a report was prepared to serve as a basis for the study on establishing a policy on air pollution control. A survey of environmental sanitation research programs was carried out. Arrangements were made for a seminar on minimum housing standards and low-cost housing developments.

In the urban area, sewerage service was provided to 50,000 persons, raising the total number of persons thus served to 2,430,000 (38% of the urban population). In the rural area, latrines were constructed for 15,000 inhabitants (6.4%).

A program of inservice training for intermediate-level personnel (operators and administrators of sanitation facilities) was begun with the holding of 2 courses in which 80 technicians were trained.

WHO/RB

CHILE-2200, Water Supplies

Purpose: Adoption of a national water resources policy, including measures to control environmental pollution; integration of sanitation works programs into the country's development plans; and provisions (over 6 years) of water connections for 80% of the urban population, 80% of the concentrated rural population, and 50% of the dispersed rural population, of sewerage services for 50% of the urban population, and of latrines for 30% of the rural population.

Probable duration: 1970-1971.

Assistance provided: Advisory services by staff of project Chile-2100.

Work done: An environmental pollution control committee established during the year issued its first report on this problem. A survey was made of the Aconcagua River basin, and a bill for the establishment of the Aconcagua Corporation was discussed in Parliament. Creation of a single sanitation works agency was under consideration.

In the urban area, water supply service through house connections was available to 66% of the inhabitants. The proportion of the concentrated rural population (persons in

towns with 200 to 1,000 inhabitants) provided with water service was 23%, while the corresponding proportion for the dispersed rural population was 5.5%, the over-all proportion of the rural population benefited being 8.8%.

CHILE-3100, Health Services

Purpose: Strengthening of administration in the national health services.

Probable duration: 1959-1976.

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 administrative methods consultant, 6 short-term consultants, and advisory services by staff of projects AMRO-3506, -3606, and -3706; common services; 2 long-term fellowships.

Work done: The evaluation of the results of the 1969 programs, including those for establishments and for health areas, was completed. The health programs for 1970 were published, and technical standards were prepared. The model for the formulation of the 1971 programs was completed, and the relevant rules, forms, and instructions were distributed to the zones, areas, and establishments. A study was made on resource availabilities and requirements for yearly programs (1968-1969-1970). An evaluation of the program of activities for the first half of 1970 was carried out and submitted to the Technical Council of the National Health Service for consideration.

Initial work was done on a study aimed at adapting the statistical system to the information needs for all stages of the planning process adopted by the Government; preliminary drafts of revised statistical forms were prepared. A study was made on possible introduction of computers for use in the health planning system.

A Studies and Programs Office was organized in the Supply Center. As a result, a program was put into operation for the processing of data to determine the demand and consumption trends for various materials and develop information on suppliers, distribution, etc.; the supply catalog was revised and brought into line with the national drug formulary; inventory control procedures were revised; a system of yearly inventories was introduced in all the central and regional laboratories; and guidelines were developed for the establishment of a similar system in hospital facilities.

A manual of organization and operations for zonal and local recruitment offices was prepared. A total of 54 inservice training courses (3,514 hours) were conducted for 896 administrative officials of the National Health Service.

PAHO/RB, WHO/UNDP

CHILE-3101, Fellowships

Seventeen short-term and 4 long-term fellowships were awarded.

PAHO/RB, WHO/RB

CHILE-3105, Studies of Human Resources in Health and Their Performance

Purpose: Determination of manpower requirements in relation to social and economic development plans, and

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formulation of standards for coordination and increased productivity in the health sector.

Probable duration: 1968-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative; 1 grant; supplies.

Work done: Analysis of the information on the projected demand for services in 1978-1988 was completed. The projections were made on the basis of alternative health policies and their effects. Tabulation of the results of the 1969 survey on availability of professional personnel was completed, and the final reports were prepared. Studies on performance and staffing standards for hospital facilities were begun and completed. A book entitled *Recursos humanos en Chile—Un modelo de análisis* was published.

PAHO/RB

CHILE-3106, Rural Development

Purpose: Integrated development of communities through the application of policies for social improvement in rural areas and use of existing resources, including improvement of health conditions in rural communities in Valdivia and Osorno Provinces.

Probable duration: 1970-1972.

Assistance provided: Advisory services by the PAHO/WHO Country Representative.

Work done: A survey was made of the diets of 181 families in 2 representative localities in the Provinces of Valdivia and Osorno. Twenty-nine hand-operated pumps were installed in the San Juan de la Costa area, and a program for the installation of water pumps and latrines in 60 schools and health stations was initiated. Ten physicians and 3 midwives were recruited for service in rural areas; this provided the necessary personnel for increasing the number of rural stations from 30 to 64.

Two courses for rural nursing auxiliaries (attended by 26 and 30 students), 1 for elementary schoolteachers, and 1 for the training of volunteer workers for rural development programs were held during the year.

Seven rural health posts were built with funds provided by Valdivia Province, the Municipality of Panguipulli, AID, and the respective communities and were put into operation; another 6 posts were under construction, and 3 were remodeled.

FAO, ILO, UNDESA, UNESCO, UNICEF

CHILE-3200 (-41), Nursing Services (1960-1970) WHO/RB

The purpose was to improve the quality and increase the quantity of nursing care in the health services by progressively increasing the professional and auxiliary personnel resources through training in basic courses, in-service educational programs, and advanced education. The Organization provided 1 nurse from 1960 to 1965, 6 short-term consultants between 1963 and 1970, and advisory services by staff of project AMRO-3206; small amounts of supplies; and beginning in 1965 2 long-term and 3 short-term fellowships.

A survey of nursing needs and resources was carried out in the first stage and the results were published; these served as a basis for the planning of a nursing program. In 1960 there were 5 schools of nursing with 351 students, and in 1970 10 schools with 1,649 students. In 1960 there were 6 auxiliary training centers which graduated 308 auxiliaries; in 1965 there were 25 which graduated 970 students. In the 10-year period, 8,345 nursing auxiliaries were trained. A total of 184 Chilean nurses and an undetermined number of nurses from other Latin American countries were graduated from the course on administration of nursing services at the School of Public Health of the University of Chile; the 184 graduates represented 90% of the nurses who held responsible positions in the health services in 1970. The course for health educators was initiated in 1965 for the purpose of training instructors for the schools of nursing and obstetrics. As of 1969 51 nursing instructors had completed the course.

Near Santiago an experimental center was established in a 100-bed hospital to study the factors affecting nursing care of hospitalized patients.

The School of Nursing of the University of Chile conducted short courses at the graduate level on teaching methods, manpower requirements, psychosocial and anthropological studies, and supervision. Inservice training programs were conducted for nurses in positions of intermediate-level responsibility; 60% of these participated in continuing education programs.

During the 10 years of the project 13 seminars and 3 technical meetings were held. In 1970 the 3 nursing schools of the National Health Service were transferred to universities.

CHILE-3300 and -3301, Laboratory Services

Purpose: Reorganization of the Institute of Bacteriology and development of a network of laboratories at the various levels of the country's health organization.

Probable duration: 1966-1974.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by staff of project AMRO-3606; equipment and supplies; 3 short- and 1 long-term fellowships.

Work done: Preliminary regulations were drawn up for the Institute of Bacteriology, defining its structure, functions, and work priorities. Administrative rationalization of the Institute was begun, and a start was made on improving its plant and facilities and reorganizing its personnel. A Staff Training Department was established, and installation of a new Culture Media Center was completed. New techniques were introduced and procedures revised in the Bacteriological Food Analysis, Immunology, and Veterinary Virus Sections. The use of fluorescent antibodies was made a routine procedure in rabies and syphilis diagnosis. Research activities were begun on immunofluorescence in syphilis diagnosis; production of hyperimmune gamma globulin; determination of gamma globulin levels; and production of foot-and-mouth disease vaccine in tissue cultures.

WHO/RB

CHILE-3701, Research on Needs for Medical Care Services

Purpose: Investigation of the factors underlying the demand for and utilization of medical services: accessibility of services, prevalence and patterns of morbidity and symptom complexes, social characteristics of individuals and groups, and attitudes toward health and medical services.

Probable duration: 1968-1971.

Assistance provided: Advisory services by staff of project AMRO-3715; 1 grant.

Work done: The information from 1,200 cards reflecting the results of 2,400 interviews was coded and checked for consistency. The initial results were analyzed, and a final scheme of analysis, based on 6 major categories of variables, was prepared.

PAHO/RB

CHILE-4100, Maternal and Child Health

Purpose: Development of a program of professional education and research on biological and social aspects of human reproduction and child growth and development; and improvement of maternal and child health services.

Probable duration: 1967-1972.

Assistance provided: 1 temporary adviser, and advisory services by Headquarters staff, by the PAHO/WHO Country Representative and by staff of project Colombia-4900; 1 grant; bibliographic material.

Work done: The Second Latin American Course on Maternal and Child Health, held from 19 October to 28 November, was attended by 27 participants: 10 from Chile and 17 from abroad (including 13 PAHO fellows from 10 countries). The public health course at the university level offered by the School of Medicine of the University of Chile for 36 participants (22 from local health institutions) included aspects of maternal and child health and family planning.

The tabulation of basic information from the survey of growth and development during infancy, conducted in the preceding five-year period, was completed. A research project on care of the newborn child and attendant hazards, designed to be carried out in a hospital district of Santiago, was begun.

PAHO/RB

CHILE-4103, Clinical and Social Pediatrics Courses

Purpose: Intensive training in clinical pediatrics and in administration of infant health services.

Probable duration: 1967-1973.

Assistance provided: 3 short-term consultants, 1 temporary adviser, and advisory services by Headquarters and Zone VI Office staff and the PAHO/WHO Country Representative; 1 grant; equipment and supplies; 2 short-term fellowships.

Work done: Ten resident physicians—2 from Bolivia, 1 from Costa Rica, 1 from Honduras, 1 from Panama, 1 from Paraguay, 2 from Peru, and 2 from Uruguay—were trained in integrated pediatrics at the Roberto del Río Hospital.

The 9th clinical and social pediatrics course (27 April-31

July) was attended by 26 professionals, including 21 PAHO fellows: 2 from Argentina, 2 from Brazil, 1 each from Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, and Nicaragua, 7 from Panama, 2 from Peru, and 2 from Venezuela.

WHO/RB

CHILE-4201, Training in Nutrition and Human Growth and Development

Purpose: Training of Latin American research workers in nutrition and human growth and development.

Probable duration: 1968-1972.

Assistance provided: 2 short-term consultants and advisory services by the PAHO/WHO Country Representative and Zone VI staff.

Work done: The research on brain development in undernourished children was completed. The project was given a new orientation and began to offer two types of training: basic research and applied research.

PAHO/RB

CHILE-4300, Mental Health

Purpose: Development and application of community mental health techniques and procedures in a health district of Santiago, with a view to subsequent application in the rest of the country; and conduct of epidemiological studies on mental disorders.

Probable duration: 1965-1972.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative; 1 grant; equipment and supplies.

Work done: Integration of the central mental health unit and its peripheral clinics with the area health programs, including school health clinics, was strengthened as a result of efforts by the Area Coordinating Council, committees operating at various levels, and the Joint Health and Education Commission. Training in mental health continued to be provided to primary schoolteachers. Coordination with the Children's Psychiatric Service of the Roberto del Río Hospital was initiated; the program was extended to the area served by the Quinta Bella Clinic, where 1 psychiatrist, 1 psychologist, and 1 social worker were assigned. The Psychiatric Hospital Workshops worked on the rehabilitation of 53 psychotic patients. Material on the prevention and control of alcoholism was included in the curriculum of the schools in the area. Advisory services in this field were furnished to community organizations and leaders, and the clinics provided 4,085 consultations (1,118 of which were first consultations). Red Cross volunteers and members of Rehabilitated Alcoholics Clubs and Abstainers' Clubs of Chile cooperated in the work of assisting these persons. Establishment of groups consisting of friends and relatives of alcoholics was encouraged, as a means of further rehabilitation.

Community psychiatry demonstration techniques were used in the training of personnel in the San Felipe, Los Andes, and Valparaíso mental health services.

In the research program, a comparative survey of the

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clinical characteristics of alcoholism in men and women was carried out and the results of treatment in both groups were evaluated.

PAHO/RB

CHILE-4500, Radiation Protection

Purpose: Development of a national program of protection against the hazards of exposure to radiation; and coordination of the programs of clinical research in which radioisotope techniques are used.

Probable duration: 1969-1974.

Assistance provided: Advisory services by Headquarters staff; equipment and supplies for the Institute for Occupational Health and Air Pollution Research and the School of Medicine of the University of Chile.

Work done: 1,400 specimens of air, 270 of milk, 10 of rainwater, and 44 of settled dust were collected to determine their levels of radioactivity. The film dosimetry services examined some 1,200 persons exposed to radiation in their work. The Chilean Nuclear Energy Commission and the National Health Service (SNS), through their Joint Office, prepared basic radiation protection standards and a set of regulations to govern the issuance of permits for installation and operation of radiation-emitting equipment.

PAHO/RB

CHILE-4601, Institute of Occupational Health and Air Pollution Research

Purpose: Reduction of the risks of illness and death from work accidents, occupational diseases, and the presence of air pollutants; a search for the most effective ways of adapting man to his work environment; and a study of the effects of air pollution on the health of the inhabitants of metropolitan Santiago.

Probable duration: 1961-1972.

Assistance provided: Advisory services by the staff of project Chile-2100; equipment and supplies; costs of printing.

Work done: The Institute participated in the search for a solution to the problems of occupational health at the national, regional, and university levels. Assistance was furnished in the holding of 3 courses for professional experts, attended by 90 students, and 4 courses for non-professional experts, attended by 120 students. The report of an epidemiological study of the prevalence of chronic bronchitis in 2 areas of Santiago (1 urban and 1 rural), conducted in 1969, was completed. Collection of data was completed for a study of the influence of psychological factors on accident proneness. A seminar on occupational disease and toxic environment legislation was held from 25 to 31 October for 120 participants from the public, private, and labor sectors; the recommendations and conclusions of the seminar will be reviewed and submitted to the authorities by the Permanent Commission established for this purpose.

An interregional WHO seminar on occupational health education and training for developing countries was held

from 23 November to 4 December for 6 participants from Africa and 14 from the Americas.

See also project AMRO-2114.

WHO/RB, WHO/UNDP

CHILE-4800, Medical Care Services

Purpose: Adequate organization of medical care services; training and research in this specialty; and establishment of intensive care units.

Probable duration: 1966-

Assistance provided: Advisory services by the PAHO/WHO Country Representative; supplies.

Work done: Activities at the intensive care unit of the José Joaquín Aguirre Hospital of the University of Chile were improved. Factors in this progress were better coordination with other services, commencement of general activities for intensive care, and training and addition of a new group of nurses. Educational activities at the level of the 5th year of the medical curriculum were conducted for nurses and for physicians holding fellowships. An intensive 2-week course was conducted for nurses.

Three hospitals, 1 rural health center and buildings for 10 clinics, and 82 health posts were constructed and started operating throughout the country, 51 with AID cooperation and 25 with assistance from the World Food Program.

PAHO/RB

CHILE-4802, Cancer

Purpose: Execution of a program for the control of cervical cancer through its early detection in the susceptible female population, beginning in Santiago and progressing at a subsequent stage to other large population centers in Chile.

Probable duration: 1965-1971.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative; 1 grant; 2 short-term fellowships.

Work done: In 1970, 83,046 cervical examinations were performed in 73,000 women under surveillance (50% of the target). Regional centers were organized in Santiago, Valdivia, and Punta Arenas, and coordination was established with 5 cervical pathology centers in Santiago and 1 in Valdivia. Four physicians and cytotechnologists were trained in individual programs of advanced instruction (ranging from 1 to 4 months in duration) on the detection of cervical cancer. The first formal course in cytotechnology (7 months) was attended by 5 students. A total of 140 physicians, biologists, gynecologists, obstetricians, midwives, social workers, and 100 medical students attended classes in early detection of cervical cancer.

PAHO/RB

CHILE-5000 (-4801) Rehabilitation

Purpose: Implementation of a nation-wide medical rehabilitation program, including the coordination of all available resources; establishment of a rehabilitation center in Santiago, including a prosthetics workshop and facilities

for training personnel for the entire country; and establishment of rehabilitation services in several provinces.

Probable duration: 1960-1972.

Assistance provided: 5 short-term consultants and advisory services by the PAHO/WHO Country Representative; supplies.

Work done: Operating standards were established for physical medicine and rehabilitation services and for physiotherapy and occupational therapy units in hospitals of the National Health Service (SNS). Physical medicine and rehabilitation services were established in the San Francisco de Borja and Traumatology Hospitals, and a physiotherapy unit in the Ezequiel González Hospital.

A workshop for the assembly of simple devices was set up in the SNS Children's Rehabilitation Center, where children and adolescents are treated and rehabilitated, for use in retraining patients and helping them to develop work habits before they are transferred to the Professional Rehabilitation Center. Nineteen students completed the 2-year course for teachers of deaf-mutes, and 21 began the 1st year of their studies.

WHO/UNDP

CHILE-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1968.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: The program progressed satisfactorily in all 5 of the country's medical schools, where 175 copies of the *Tratado de patología* were sold, along with 44 of *Fisiología humana*, 262 of the *Manual de farmacología*, and 1 of *Bioquímica*. For 1971, Chile requested 15 copies of the *Manual de farmacología*, 297 of the *Tratado de patología*, and 545 of the *Tratado de pediatría*.

CHILE-6100, School of Public Health

Purpose: Strengthening of the School of Public Health of the University of Chile, and expansion of the facilities for training students from other countries.

Probable duration: 1958-1973.

Assistance provided: 1 short-term consultant, 1 temporary adviser, and advisory services by the PAHO/WHO Country Representative; 2 short-term fellowships.

Work done: Courses were given on public health (33 students), university teaching (23 students), hospital administration (7), administration for medical directors of services (53), health education (16), and administration of nursing services (26). Of the 158 students enrolled in all these courses, 23 were PAHO fellows from other countries.

The Curriculum Committee held a seminar to define the objectives of undergraduate and postgraduate instruction in public health. Another seminar examined the content of the annual course in public health and planned the course for 1971.

The School of Public Health (renamed Department of Public Health and Social Medicine of the University of Chile) began operations in its new building.

WHO/RB

CHILE-6200, Medical Education

Purpose: Expansion and strengthening of medical education through the teaching of preventive and social medicine as part of the clinical instruction and through the use of improved teaching methods; and development of a program of integrated medical internships in rural hospitals for students of the medical professions.

Probable duration: 1962-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative; 1 grant; supplies; 4 short- and 2 long-term fellowships.

Work done: The instructional content of all the courses taught in the Basic, Clinical, and Social Departments of the School of Medicine of the University of Chile was coordinated under a single program, as were all activities for student practice in marginal, suburban, and rural areas.

The program of rural internships in 11 small hospitals in northern and central Chile was carried forward with the participation of 140 last-year medical students (4 weeks), 150 students of nursing (16 weeks), and 80 students of obstetrics (8 weeks). The rural internships are organized on the basis of teams of students of the various professions working under adequate local, zonal, and central supervision.

PAHO/RB, PAHO/OF

KF

CHILE-6201, Training in the Medical Use of Radioisotopes

Purpose: Training in the clinical application of radioisotopes and in radiation protection.

Probable duration: 1962-1971.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative; equipment and supplies.

Work done: The training course on the medical use of radioisotopes (begun in May 1969) ended in April 1970; of the 5 students, 4 were PAHO fellows from other countries. The scheduled seminars were held, with the students participating in individual projects.

Activities during the second semester centered around the development of advanced techniques of diagnosis through the use of radioisotopes.

PAHO/RB

CHILE-6400, Sanitary Engineering Education

Purpose: Training of professional specialists in sanitary engineering and skilled subprofessional personnel, in a number and quality commensurate with the country's development and needs, in environmental sanitation techniques; and development of the University of Chile as a center for research in sanitary engineering.

Probable duration: 1965-

IX. PROJECT ACTIVITIES

Assistance provided: 1 sanitary engineer and 1 short-term consultant; grants; supplies; 3 short-term fellowships.

Work done: Four sanitary engineers were enrolled in the regular course of the University's Sanitary Engineering Section. Two courses were held for 80 sanitation technicians, and 1 on waste disposal for technical personnel of municipal agencies and the National Health Service. Six research projects in sanitary engineering were under way, including 1 on oxidation ponds. Five manuals were published during the year.

WHO/RB

CHILE-6500, Veterinary Medical Education

Purpose: Strengthening of the teaching programs in veterinary medicine, with special attention to public health and preventive medicine, at the University of Chile.

Probable duration: 1966-1971.

Assistance provided: 5 temporary advisers, and advisory services by Headquarters staff; supplies.

Work done: The School of Animal Sciences and Veterinary Medicine of the University of Chile conducted its 7th course in public health, attended by 40 5th-year students. The course included public health, nutrition, and food inspection.

The Pan American Congress of Veterinary Medicine and Zootechnics was held in Santiago late in September.

PAHO/RB

CHILE-6600, Dental Education

Purpose: Development of a program for the teaching of preventive and social dentistry at the University of Concepción, to serve also as an observation and training area for professors from other Chilean universities.

Probable duration: 1965-1971.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative; equipment and supplies.

Work done: The course in biostatistics was attended by 118 1st-year dental students, 38 3rd-year students of general epidemiology, and 36 4th-year students of public health dentistry. Twenty-five students participated in a course on the use of simplified dental equipment.

In the Province of Concepción, a survey was undertaken to determine the correlation between clinical and X-ray examinations for dental caries and student absenteeism for dental reasons.

PAHO/OF, WHO/RB

KF

CHILE-6700, Population Dynamics

Purpose: Teaching, research, and extension activities at the School of Public Health of the University of Chile in the field of health and population dynamics.

Probable duration: 1968-

Assistance provided: Advisory services by the PAHO/WHO Country Representative; 1 grant.

Work done: Eight courses in health and population dynamics were conducted, for a total of 340 students of medi-

cine, nursing, biostatistics, health and vital statistics, social services, and public health. The courses included classes for students of the IV Latin American Course in the Biology of Reproduction.

The teaching staff assisted with the II Latin American Course in Maternal and Child Health, the course for education specialists at the School of Philosophy and Education, and the Latin American Training Course in Family Planning.

Research studies were conducted on the role of midwives in medical care, methodology for estimation of population in Chile, evaluation of fertility in Chile in the 20th century, fertility in Valparaíso, and infant mortality in Chile.

PAHO/RB

COLOMBIA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1957-

Assistance provided: 2 medical officers, 1 entomologist, and 1 sanitarian; antimalaria drugs; 3 short-term and 5 long-term fellowships.

Work done: The malarious area of Colombia had a population of 12.4 million persons, 67.5% of whom were in consolidation phase areas, 31.2% in attack phase areas, and 1.3% in preparatory phase areas. The status of the program remained unchanged during 1970. The number of cases in the Lower Cauca-Nechí region, including the Municipalities of Cáceres, Caucasia, and Zaragoza, was reduced through large-scale drug treatment, but the number of positive localities (933) remained substantially the same as in the previous year (936).

The 23rd spraying cycle, scheduled to cover 14,444 localities with 435,904 houses, was completed during the first half of the year and achieved 97.2% of the target. During the second half of the year 404,638 houses in 14,326 localities were sprayed, or 94.8% of the projected coverage.

In areas bordering on Venezuela, quarterly sprayings with DDT were performed in 544 localities with 20,684 houses, 95.1% of the target being attained.

PAHO/RB

UNICEF

COLOMBIA-0300, Smallpox Eradication

Purpose: Eradication of smallpox from the country by vaccinating 80% of the population over a period of 4½ years.

Probable duration: 1967-1971.

Assistance provided: Advisory services by staff of project AMRO-0304; equipment and supplies.

Work done: The morbidity rate has remained at zero since 1967. The proportion of takes was increased as a result of the introduction of the two-pronged needle. With the help of the evaluation teams assigned to each department, it is now possible to maintain current statistics on immunity levels achieved in the different age groups. During the year 2,216,659 persons were vaccinated. Total coverage from July 1967 to October 1970 was raised to 12,715,865 persons (76.1% of the population), including 3,680,402 first vaccinees and 9,035,463 revaccinees, the proportions of takes being 92.2% and 83.2%, respectively. The production labora-

tory prepared 10,800,000 doses of freeze-dried vaccine during 1970.

WHO/RB

COLOMBIA-0400, Tuberculosis Control

Purpose: Adoption of uniform criteria on tuberculosis; inclusion of tuberculosis control activities in the general health services; training of personnel from those services in control activities; training of 60 physicians in program administration; a 10% reduction in the loss of patients discontinuing treatment; BCG vaccination of 80% of the children below age 15; and reduction of the average hospital stay to 90 days.

Probable duration: 1966-1972.

Assistance provided: Advisory services by Zone IV Office staff; 2 short-term fellowships.

Work done: The necessary standards for establishing uniform criteria on tuberculosis were adopted. A bacteriology committee was established. Integration of the programs into the regular activities of the health services was carried forward (90%). Supervision of the programs and the Pilot Center at Girardot was continued (100%). A total of 3,544,037 children under 15 years of age were vaccinated with BCG (65.4%). The new statistical form continued to be used on an experimental basis. Care was given to 7,849 cases (44.5%); 36,246 bacilloscopies were performed for diagnostic purposes (10.1%) and 35,136 (32.6%) for control purposes. A total of 43,327 photofluorographic examinations were made of persons with respiratory symptoms (49%). Home visits numbered 7,995, exceeding the target (167.8%). Fifty microscopes were acquired for bacteriological diagnosis centers (119%). The average hospital stay was reduced to 109 days (82.5%).

A course was offered for medical specialists; and a seminar was held for the purpose of bringing the graduates' knowledge up to date and evaluating their performance (66.6%). Training of personnel continued at all levels.

WHO/RB

UNICEF

COLOMBIA-2100, Engineering and Environmental Sciences

Purpose: Development of a national program of environmental sanitation.

Probable duration: 1970-1971.

Assistance provided: 1 sanitary engineer and advisory services by staff of project Colombia-3100; 2 short-term and 1 long-term fellowships.

Work done: The Division of Environmental Sanitation established and kept up to date a diagnosis of environmental sanitation and occupational health conditions in the country; formulated technical and administrative standards; prepared the programs in this field as part of the National Health Plan, under the guidance of the Planning Office of the Ministry of Public Health; supervised the execution of the programs in the sectoral health services; and evaluated their results. The staff of the Division was increased to full strength.

The programs to assess the quality of public water supplies

continued their regular activities, as did the occupational health, veterinary public health, and other general programs. The Division performed a semiannual evaluation which indicated that some programs had fallen considerably behind schedule as a result of delays in receiving the required resources, while others needed to be reorganized to adjust them to changing concepts, policies, objectives, or systems, mainly because the requisite statistical information was not available. It was generally found that there was a need to redefine the diagnosis of the current situation in each area of environmental sanitation and occupational health and make it more precise through improvement and updating of statistical information, as a prerequisite to programming of activities in this field.

Programs of investment, construction, and operation of water supply and sewerage systems were implemented chiefly through the National Institute of Municipal Development, public water and sewerage companies, and the National Institute for Special Health Programs of the Ministry of Public Health, along with such other institutions as the Regional Autonomous Corporation of the Bogotá Savanna and the Ubaté and Chiquinquirá Valleys and the Colombian Agrarian Reform Institute, which also have programs in this field. In 1970, 942 million Colombian pesos (US\$50,347,407) was invested in works in urban and rural areas. The Planning Department, which coordinates the programs of the various organizations with each other and with the National Development Plan, was studying a plan of organization and institutional reform.

Courses were offered on diagnosis of rabies and brucellosis, food microbiology and hygiene, and radiation protection.

WHO/RB

COLOMBIA-2102, Water Resources Studies

Purpose: Conservation and optimum use of the water resources of the Bogotá Savanna and the Ubaté and Chiquinquirá Valleys.

Probable duration: 1969-1971.

Assistance provided: 1 short-term consultant, 1 temporary adviser, and advisory services by staff of projects Colombia-3100 and AMRO-3122.

Work done: Plans were made for performing a comprehensive survey of water resources in the region, carrying out a development project, and for determining the most suitable solutions on the basis of mathematical models, as a means of guiding the future work and policies of the Regional Autonomous Corporation (CAR) in the field of water use and quality control. The survey will include analysis of urban transport and development and of pilot projects for water supply, sewerage and electric power; realignment of the Bogotá River; and water treatment and waste disposal.

The CAR continued its activities to assess the size of the problem of pollution of the Bogotá River and its tributaries by means of measurements and samplings.

The survey of industrial wastes in the region was completed and the following data were determined: volume of wastewater produced by industrial plants; present location and possible future expansion of such plants and their effects on water use; and probable evolution of processes used that

IX. PROJECT ACTIVITIES

might be expected to be used in the future by each type of industry.

Stabilization ponds and experimental oxidation ditches for the treatment of industrial and municipal wastes were built and put in service.

A groundwater survey was started. Regional water supply systems, recreation parks, automatic telephone systems, and power transmission lines were under construction. Existing laws were enforced to prevent the establishment of industrial plants near the intake works of the Bogotá water supply system.

A project for physical planning and urban and rural development in the CAR area was under study and review.

PAHO/CWSF

COLOMBIA-2200, Water Supplies

(1960-1970) WHO/RB

The purpose was to implement the national water supply program, including the planning, design, financing, construction, and operation of municipal water supply services. The Organization provided 2 sanitary engineers from 1962 to 1964, and 1 from 1964 to 1970; 13 short-term consultants; 12 fellowships; and technical assistance by staff of Headquarters and of project AMRO-2104.

The National Municipal Development Institute (INSFOPAL) was provided with advisory services in technical and managerial matters. INSFOPAL is the Colombian agency in charge of the design and construction of water supply and sewerage systems for urban areas. As a result of the management studies, many activities were reorganized and the agency was placed on a sounder operating basis. Studies were carried out in certain specific areas, including water-rate structure. In 1969 INSFOPAL was transferred from the Ministry of Public Works to the Ministry of Public Health. A Basic Rural Sanitation Division established in the National Institute for Special Health Programs (INPES) is responsible for all water supply and waste disposal activities in towns with less than 2,500 inhabitants.

By 1970, 65% of the country's urban population, or 7,800,000 persons, were supplied with water piped into the houses. In the rural areas about 48% (4,100,000 inhabitants) were supplied either through house connections or easy access to public fountains. In the last 10 years Colombia has invested, from international and national sources, more than US\$170 million in urban and rural public water supplies.

Future activities related to this project will be carried on by project Colombia-2100.

COLOMBIA-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1951-1973.

Assistance provided: 1 sanitary inspector and advisory services by staff of project Colombia-0200; equipment and supplies.

Work done: The program was reorganized during the second half of 1970, and its funds were increased. The attack phase was begun in Barranquilla and Cartagena, inspection was started in the more vulnerable localities of the Lower Magdalena Valley, and attack operations were continued

against the focus in Cúcuta, as well as treatment in the foci at La Guajira.

At the end of the year, the following 9 localities were positive: Maicao and Río Acha (La Guajira) and Cúcuta (Norte de Santander) on the border with Venezuela, with an index of 0.56%; and Barranquilla, 4 nearby localities, and Cartagena, with an index of more than 15%.

PAHO/RB

COLOMBIA-3100, Health Services

Purpose: Extension of the coverage of the health services, and improvement of their structure and operation.

Probable duration: 1951-

Assistance provided: 2 medical officers (including the PAHO/WHO Country Representative), 1 engineer, 1 administrative methods consultant, 4 short-term consultants, and secretarial services; 1 grant; common services; equipment and supplies; 24 short-term and 8 long-term fellowships.

Work done: A health-sector planning committee was established. The document on four-year projections was prepared and a proposed Sanitary Code was drafted. The new buildings of the National Institute of Health and the Social Welfare Institutes Corporation (CORPAL) were inaugurated. A research project on comprehensive health planning methods was initiated. The combined DPT-BCG vaccination program was completed (70% of the target). The II American Congress on Social Security Medicine was held in June.

The School of Public Health offered a refresher course on planning and a course in health planning for university professors and held a seminar on hospital administration for department heads of university hospitals and a national seminar on rabies.

PAHO/RB, WHO/RB, WHO/UNDP

UNICEF

COLOMBIA-3103, Special Public Health

Administration Programs

(1967-1970) PAHO/RB

The purpose was to improve administrative methods and practices, through special public health administration programs. The Organization provided 1 short-term consultant in 1968 and, for the duration of the project, advisory services by Headquarters staff and by the PAHO/WHO Country Representative.

The legal structure and functions of the National Institute for Special Health Programs (INPES), an autonomous agency attached to the Ministry of Public Health, were established by executive decree. Its statutes and budget were approved, in accordance with the new legal provisions. Its organization, internal regulations, and staff were strengthened. The Institute's close working relationship with the Ministry was clearly defined.

INPES carried out programs in the fields of personnel training, hospital architecture, research, basic rural sanitation, meat inspection, child welfare, and demography, as well as studies related to the National Institute of Health.

COLOMBIA-3301, National Institute of Health (Carlos Finlay)

Purpose: Increasing and diversifying the production of biologicals; improvement of public health laboratory services; training in laboratory techniques; development of research; and provision of yellow fever diagnostic services and vaccine to Colombia and other Latin American countries.

Probable duration: 1950-

Assistance provided: 1 laboratory consultant and advisory services by staff of Headquarters and of project AMRO-0700; 1 grant; 1 short-term fellowship.

Work done: The new facilities of the Institute were put in service (90%).

Vaccine production was as follows:

	Doses	Per cent of target achieved
Smallpox	10,800,000	Over 100
Yellow fever	1,629,000	85
Intradermal BCG	3,035,900	75
DPT	992,800	49
Human rabies,	530,194	84
14 doses per treatment (11,500 14-dose treatments sent to Venezuela)		
Canine rabies	245,697	98
(10,005 doses sent to Ecuador)		
Typhoid fever	196,020	40

All examinations and research concerned with yellow fever diagnosis were continued (100% of the target). Over-all performance of scheduled research was at 80%. General bacteriology and biochemistry laboratories were organized. An instruction manual for use by laboratory services was prepared.

A course on rabies diagnosis was held for 21 professionals. The training program attained 80% of its target.

PAHO/RB

COLOMBIA-4101, Clinical and Social Pediatrics

Purpose: Organization of clinical and social pediatrics courses for faculty of departments of pediatrics, obstetrics, and, in general, for physicians and nurses having responsibilities for the conduct of maternal and child health programs.

Probable duration: 1964-1973.

Assistance provided: 2 short-term consultants and advisory services by the PAHO/WHO Country Representative and staff of project Colombia-4900; supplies.

Work done: The VI Latin American Course in Clinical and Social Pediatrics (7 weeks) was attended by 19 students, including 7 PAHO fellows: 2 from Bolivia, 2 from Guatemala, 1 from Honduras, and 2 from Venezuela.

WHO/RB

UNICEF

COLOMBIA-4200, Nutrition

Two short-term and 4 long-term fellowships were awarded.

PAHO/RB

FAO, UNICEF

COLOMBIA-4202, Nutrition Training Center

Purpose: Conduct of training courses for senior professional staff of official agriculture and livestock agencies of the Latin American countries, and strengthening of applied nutrition programs and the teaching of human nutrition in agricultural universities.

Probable duration: 1968-1973.

Assistance provided: Advisory services by staff of projects Colombia-3100 and AMRO-4204.

Work done: The 3rd international course (5 months) was held in the Regional Center for Training in Food Economics and Applied Nutrition (CRECENA); it was attended by 29 professionals from 10 countries. A fellowship (Colombia-4200) was awarded to the Center's food and nutrition adviser to enable her to observe applied nutrition programs in other Latin American countries. The Director of CRECENA visited several countries to promote the program and perform preliminary screening of candidates for fellowships.

FAO, UNICEF

COLOMBIA-4500, Radiation Protection

Purpose: Determination of hazards arising from the use and operation of X-ray equipment and other radioactive sources; and development of a national program of radiation protection to include the establishment of standards for registration, installation, use, and handling of sources and equipment, and control of radiation exposure to permissible levels.

Probable duration: 1967-1971.

Assistance provided: 1 short-term consultant and advisory services by staff of Headquarters and of project Colombia-3100; equipment and supplies.

Work done: A national census of sources of radiation (X-ray diagnosis, teletherapy, etc.) revealed that 257 workers and 61,560 other persons were exposed to radiation from facilities and equipment. A draft decree on radiation protection and proposed standards and regulations were prepared. A program involving film dosimetry was initiated and a radiochemical plant was installed and put into operation. A total of 245 air specimens and 208 milk specimens (12 integrated samples) were sent to a laboratory in the United States of America for determination of the degree of radioactive contamination. A basic course on radiation protection was held for 17 participants.

WHO/RB

COLOMBIA-4601, Air Pollution

Purpose: Installation of 18 air sampling stations in the country's 6 largest cities, for the purpose of evaluation and control of air pollution.

Probable duration: 1967.

Assistance provided: Advisory services by staff of Headquarters and of project Colombia-3100.

Work done: A schedule was made for the installation of 18 air sampling stations in Bogotá (5), Medellín (4), Cali (4), Barranquilla (3), Bucaramanga (1), and Cartagena (1). Some of the equipment and material was received. The Bogotá station began operations and examined about 20

IX. PROJECT ACTIVITIES

samples per month, measuring the extent of sulfuric anhydride and of suspended and settling dust particles in the air.

An intensive short course on industrial hygiene and air pollution was conducted at the University of Valle, and a lecture on air pollution was given at the University of the Andes (Venezuela). A program of studies on air pollution and occupational health was prepared for the School of Public Health of the University of Antioquia, in Medellín.

COLOMBIA-4900, Health and Population Dynamics

Purpose: Reduction of morbidity and mortality rates for mothers and children; and extension of maternal and child health and family planning services to rural areas.

Probable duration: 1968-1971.

Assistance provided: 1 medical officer and 1 short-term consultant; equipment and supplies; local costs.

Work done: The program operated in 378 municipalities (90% of the target) and was using the services of 543 physicians and 398 rural health promoters. Family planning services were given to 27,281 applicants (27%). The targets for consultations by mothers and children were achieved to an extent of 50%; and those for medical care coverage of this group were achieved 52%.

The 172 physicians, 25 medical coordinators and nurses, 301 nursing auxiliaries, and 895 rural health promoters trained represented 35%, 100%, 80%, and 36%, respectively, of the targets.

PAHO/OF

AID

COLOMBIA-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure continuity of the program.

Probable duration: 1967.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: Sales rose to more than 4 copies per day. Requests for 700 copies of the *Tratado de pediatría* were received and distribution was begun. The country's 9 schools of medicine sold more than 1,200 copies of the *Tratado de patología*, *Bioquímica*, *Fisiología humana*, and *Manual de farmacología*.

COLOMBIA-6100, School of Public Health

Purpose: Expanding and improving the quality of the instruction at the School of Public Health of the University of Antioquia, in Medellín, in order to adequately prepare the professional public health personnel needed by the country.

Probable duration: 1964.

Assistance provided: Advisory services by the PAHO/WHO Country Representative; equipment and supplies; 2 long-term fellowships.

Work done: Following the plan of activities drawn up in 1969, the School hired 20 new instructors, most of them full-time, in various subjects. Eleven regular courses were

attended by 215 students in all. The 2nd and 3rd undergraduate courses in nutrition and dietetics were held. Seven research projects in various public health fields were in progress.

The School took part in the project for evaluation and improvement of the health planning process in the Department of Antioquia.

WHO/RB

COLOMBIA-6200, Health Manpower Studies (1964-1970) Grant to PAHO: Milbank Memorial Fund

The purpose was to conduct a study of health manpower requirements and the means for meeting them, and to collect data for the purpose of reorienting medical education and health planning and of developing a work methodology that could serve as a model for other countries that undertake similar studies. The Organization provided 18 short-term consultants; supplies and equipment (including vehicles); 2 grants to cover local costs and funds for publications; one 6-month fellowship for studies in cancer control; travel and per diem for the project codirectors to observe data-collection methods in the United States of America; and advisory services by staff members.

A census of available medical manpower was taken and the data collected were processed and analyzed. The findings were presented to the International Conference on Health Manpower and Medical Education (Maracay, Venezuela).

A national morbidity survey was conducted, consisting of house-to-house interviews with a sample of 52,964 persons and clinical examinations of a subsample of 5,258. A census was taken of the dental personnel available in the country and the findings were presented to the IV Congress of Latin American Associations of Schools of Dentistry (Maracay, 1970). A National Directory of Dentistry was prepared.

The publication *Study on Health Manpower and Medical Education in Colombia (Working Documents and Reports of the Maracay Conference, 1967)* was issued in both Spanish and English. It was distributed to health authorities of the Governments, to national associations, to schools of medicine, public health nursing, and dentistry, and to the national libraries of the Americas.

COLOMBIA-6201, Medical Education

Purpose: Improvement of medical education.

Probable duration: 1965-1972.

Assistance provided: 3 temporary advisers, and advisory services by staff of project AMRO-6204; 1 grant; 5 short-term and 2 long-term fellowships.

Work done: Twenty-five physicians (100% of the target) attended the postgraduate courses given at hospitals in Colombia. A special course on immunofluorescence was offered. Twenty-five faculty members from the country's medical schools participated in a human relations laboratory.

Three seminars on curricula and 1 on objectives of medical education were attended by 8 representatives of schools of medicine.

The monthly *Carta médica* was issued regularly and dis-

tributed to 5,000 subscribing physicians. The *Índice de la literatura médica colombiana (1961-1965)* and *Diagnóstico y tratamiento de la sífilis*, the latter in 400 copies, were also distributed.

The committee on curriculum visited a number of medical schools in other Latin American countries.

WHO/RB

COLOMBIA-6203, Center for the Teaching of Pathology

Purpose: Training of pathologists for service as teachers in Latin America.

Probable duration: 1967-1972.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by staff of project AMRO-6204; 1 grant.

Work done: The Center's operational capacity was improved and its training activities of various types were standardized.

PAHO/RB

COLOMBIA-6204, Experimental Study of Health Services

Purpose: Experimental study of a system for the delegation of health functions to nursing auxiliaries.

Probable duration: 1967-1971.

Assistance provided: 2 short-term consultants, 1 temporary adviser, and advisory services by the PAHO/WHO Country Representative and by staff of project AMRO-6204; local costs.

Work done: With the assistance of medical students, a survey was done to determine the attitudes of a sample of 490 families toward the coverage of health services. Another survey was conducted concurrently to determine the attitudes of personnel in the experimental area and in a control area. An evaluation of the work of physicians as compared to that of auxiliary nursing personnel was initiated.

PAHO/OF

AID

COLOMBIA-6300, Nursing Education

Purpose: Improvement in the training of nursing personnel.

Probable duration: 1968-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and the nurses assigned to projects Peru-3100 and AMRO-3204 and -4109; 2 short-term fellowships.

Work done: The program of instruction in maternal and child health at the National University was evaluated. Initial plans were made for a seminar on the planning of nursing activities (service as well as teaching), using elements of the health planning methodology developed by the Organization and the Center for Development Studies (CENDES) of the Central University of Venezuela.

PAHO/RB

COLOMBIA-6400, Sanitary Engineering Education

Purpose: Supply of an adequate number of professionals and technicians specialized in sanitary engineering and environmental sanitation to meet the country's needs.

Probable duration: 1964.

Assistance provided: 3 short-term consultants, 5 temporary advisers, and advisory services by staff of projects Colombia-3100 and AMRO-2114, -2400, and -3122; grants; financial assistance for 4 courses; supplies; 2 short-term fellowships.

Work done: Thirty-one Colombian professors, assisted by the short-term consultants and PAHO/WHO staff, conducted 5 intensive short courses in 4 schools of engineering of 3 universities; the courses were attended by a total of 174 engineers, including 17 from 12 American countries. A survey was carried out in 9 universities as a first stage of a study on sanitary engineering education. The School of Engineering of the National University completed the compilation of the first results of the research project on filtration properties of national sands.

PAHO/RB

COLOMBIA-6500, Veterinary Medical Education

Purpose: Improvement in the teaching of public health and related subjects in the schools of veterinary medicine in the country.

Probable duration: 1969.

Assistance provided: Advisory services by staff of projects AMRO-0700 and -0704; 1 grant; 1 short-term and 1 long-term fellowships.

Work done: Courses were given in food technology for 22 Colombian veterinarians; in rabies diagnosis, for 23 physicians from the Diagnostic Centers of the Colombian Agriculture and Animal Husbandry Institute; and in brucellosis diagnosis, for 17 physicians, veterinarians, and laboratory technicians. An evaluation of the course in veterinary public health offered in Medellín was begun.

PAHO/RB, WHO/RB

COLOMBIA-6600, Dental Education

Purpose: Development of programs in dental education at the Universities of Valle and Antioquia and the National University in Bogotá.

Probable duration: 1961-1971.

Assistance provided: Advisory service by the short-term consultant assigned to project AMRO-6608.

Work done: The University of Valle was provided with technical advice on its dental curriculum and on plans for a limited training program for dental auxiliaries.

COSTA RICA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1957.

Assistance provided: 1 medical officer, 1 sanitarian, and advisory services by staff of projects -0200 of Nicaragua and Panama and of AMRO-0200 and -0203; entomology equipment; antimalaria drugs.

Work done: The Three-year Eradication Plan achieved

IX. PROJECT ACTIVITIES

satisfactory results in its third year of operations. Semiannual sprayings with DDT resulted in a direct coverage of 91.1% of the target. Epidemiological evaluation on a monthly basis covered 70% of the localities and the number of samples examined represents 39.1% of the population of the malarious area. A total of 350 cases were diagnosed during the year, the slide positivity rate being 0.18%. Collective drug treatment, used as a supplementary measure in small residual foci in the Pacific Coast area, attained a coverage of 94% and halted transmission from the early cycles of medication.

Financing of the campaign was adequate.

PAHO/SMF, WHO/RB

UNICEF

COSTA RICA-0400, Tuberculosis Control

Purpose: Reorientation of the tuberculosis program through intensification of immunization, diagnosis, and ambulatory treatment; and incorporation of the program into the general health services.

Probable duration: 1970.

Assistance provided: Advisory services by Zone III Office staff.

Work done: Work began on integrating the tuberculosis control program into the general health services. Technical, administrative, laboratory, and statistical standards were prepared. A total of 294 cases were diagnosed, 95% of which were submitted to treatment; 616 patients were hospitalized; 28,476 persons were vaccinated with BCG, as well as 72% of the infants born in medical care facilities.

Nurses, nursing auxiliaries, and laboratory technicians from the general health services received training in a program of short courses.

COSTA RICA-2100, Engineering and Environmental Sciences

Purpose: Planning and implementation of environmental sanitation programs, including water and air pollution control, solid waste disposal, industrial hygiene, vector control, food hygiene, and training of auxiliary personnel.

Probable duration: 1969-1975.

Assistance provided: 1 sanitary engineer.

Work done: As of 30 September, 3,448 latrines (82% of the target) and 15 water pumps (58%) had been installed.

The Division of Environmental Sanitation of the Ministry of Public Health began operations, but for internal reasons of government the divisions of the Ministry were eliminated and the Chief of the Department of Sanitary Engineering was given responsibility for coordination of environmental sanitation activities. The Department began the collection of basic information on the problem of waste disposal in the metropolitan area of San José and obtained the data on 7 of the 11 cantons in the area (70% of the target).

PAHO/RB

COSTA RICA-2200, Water Supplies

Purpose: Planning, construction, maintenance, and administration of public water supply and sewerage systems in urban and rural communities of the country.

Probable duration: 1960-1974.

Assistance provided: 4 short-term consultants, and ad-

visory services by staff of Zone III Office and of project Costa Rica-2100; contractual services.

Work done: The first stage of the new water supply system for metropolitan San José was completed, raising the supply by 500 liters per second and the storage capacity by 16,500 m³ (100% of the target). The second stage was begun with the first surveys and analyses (100%) and the drilling, by the Groundwater Surveys Program, of a second well in the San Antonio de Belén springs, as an alternative source (40% of the target).

An invitation for bids on the construction of 2 collectors for the metropolitan San José sewerage system, the expansion of the water supply system, including the treatment plant, and the sanitary sewer system of San Isidro del General, was published (100%).

Thirteen rural aqueducts were inaugurated, benefiting 11,792 inhabitants (43%).

Technical and administrative advice was given to the National Water and Sewerage Service including studies on: organizational structure; purchases, supplies, and transportation; billing; rates and meters; accounting, financing, budgeting, and auditing; and project engineering (100%).

PAHO/RB, PAHO/CWSF

COSTA RICA-3100, Health Services

Purpose: Preparation and implementation of a National Health Plan as part of the national economic and social development plan; and improvement of the organization and administration of the health services, as well as their expansion at the national level, with emphasis on programs of preventive medicine.

Probable duration: 1959.

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 nurse, 4 short-term consultants; common services; 2 long-term fellowships.

Work done: A new health policy was drawn up, and work began on the development of a National Health Plan, progressing to the stage of diagnosing and analyzing the health situation, formulating an initial hypothesis of change, and proposing alternatives for the establishment of the health policy. The second stage will be the formulation of programs. Universal social security coverage, provided for in the Constitution and scheduled to become effective in May 1971, will be a matter of far-reaching importance.

The program for the construction of health services will cost a total of 153.1 million colones (US\$23,022,556) for 1969-1972.

The nursing service of the Ministry was being reorganized to absorb the nursing activities of its two General Departments.

The number of health districts was reduced to 11, in the interest of better administration.

The regular activities of the Ministry showed the following results as of 30 September: there were 44,217 consultations in the maternal and child health program to 11,000 pregnant women (81%); deliveries in rural health care centers were at 69.43% of the target for the year; children's consultations were at 93%; and family planning at 91.17%. A program of mass vaccinations against poliomyelitis, measles, and smallpox was launched in the latter part of the year.

The 62 health units, 17 clinics, 6 health posts, and 12 mobile services throughout the country provided 190,000 general consultations, 132,000 consultations for healthy children, and 44,876 prenatal consultations, and administered 222,878 doses of vaccine.

A seminar on maternal and child health and family welfare in Central America and Panama and one on food and nutrition were held during the year.

PAHO/RB, WHO/RB

COSTA RICA-3101, Fellowships

Eleven short-term and 2 long-term fellowships were awarded.

WHO/RB

COSTA RICA-3300, Laboratory Services

Purpose: Improvement and expansion of the services of the Ministry of Health laboratories at the central, regional, and local levels, according to the National Health Plan.

Probable duration: 1967-1969; 1970-1975.

Assistance provided: Advisory services by Zone III Office staff; a limited amount of supplies.

Work done: A study was made with a view to reorganization of the Central Tuberculosis Laboratory, and technical standards to govern the participation of the health laboratories in the integrated tuberculosis control program were prepared. Courses on tuberculosis bacteriology were offered for 28 laboratory technicians.

The Central Venereal Disease Laboratory was accepted as a participant in the evaluational study of serologic diagnosis of syphilis being carried out at the Center for Disease Control in Atlanta, Georgia. Advisory assistance was rendered in connection with the laboratory diagnosis of shigellosis and with specific sera.

The on-going activities of the laboratories included 322,065 examinations.

PAHO/RB

COSTA RICA-4200, Nutrition

Purpose: Improvement in the nutritional level through coordinated action of the Ministries of Public Education, Agriculture and Animal Husbandry, and Public Health.

Probable duration: 1960.

Assistance provided: 1 nutritionist.

Work done: The number of school vegetable gardens rose to 230. Three nutritionists, graduates of the School of Nutrition and Dietetics of INCAP, were added to the staff of the Department of Nutrition of the Ministry of Public Health. It was planned to establish 3 new posts for those graduating in January 1971. Upon the completion of the first 10 years of the applied nutrition program and termination of the agreement with UNICEF (December 1969), it was decided to establish a new health policy emphasizing administrative reorganization (National and Regional Committees) and encouraging self-support in the communities served.

WHO/RB

COSTA RICA-4601, Air Pollution

Purpose: Evaluation and control of air pollution in metropolitan San José.

Probable duration: 1970-1974.

Assistance provided: Advisory services by staff of projects Costa Rica-2100 and AMRO-2114.

Work done: Work began on installation of the equipment supplied by the Organization for the air sampling station to operate at the Chemical Laboratory of the Ministry of Public Health.

COSTA RICA-4800, Medical Care Services

Purpose: Improvement in the organization and administration of medical care services; and interagency coordination for the training of personnel.

Probable duration: 1967-1975.

Assistance provided: Advisory services by Zone III Office staff; 1 short-term fellowship.

Work done: New National Hospital Regulations were under consideration. A document on introduction of cost accounting in the country's hospitals was prepared. Advisory services in psychiatric nursing were furnished to Chapuí Hospital. Bids were requested on the contract for construction of the proposed 1,300 bed Psychiatric Hospital at Pavas.

WHO/RB

COSTA RICA-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: Forty-one copies of the *Tratado de patología* and 1 of *Bioquímica* were sold; 140 copies of *Fisiología humana*, 100 of the *Manual de farmacología*, and 90 of the *Tratado de pediatría* were shipped to the country.

COSTA RICA-6300, Advanced Nursing Education

Purpose: Adjustment of the basic nursing program at the School of Nursing to adapt it to the university academic level.

Probable duration: 1959-1971.

Assistance provided: 1 short-term consultant; 1 long-term fellowship.

Work done: A survey was made of facilities available for the development of educational programs in the field of maternal and child nursing; and the relevant report was submitted to the Government.

PAHO/RB

COSTA RICA-6400, Sanitary Engineering Education

Purpose: Technical training of staff engaged in sanitary engineering programs; and establishment of short courses in this field as a continuing activity of the School of Engineering of the University of Costa Rica.

IX. PROJECT ACTIVITIES

Probable duration: 1965-1974.

Assistance provided: 2 short-term consultants and advisory services by the sanitary engineer assigned to project Costa Rica-2100; supplies.

Work done: The consultants gave a 2-week course on design standards for water supply systems at the School of Engineering of the University.

PAHO/RB

COSTA RICA-6700, Biostatistics Education

Purpose: Training of professional, technical, and auxiliary personnel employed in health, vital, and hospital statistics services.

Probable duration: 1966-1972.

Assistance provided: Advisory services by staff of Headquarters and Zone III Office; 1 grant.

Work done: A course was conducted for 22 medical records and statistics auxiliaries. The 5th intermediate-level course on medical records and statistics (5 months) was attended by 10 Costa Rican and 10 foreign students.

WHO/RB

CUBA-0100, Epidemiology

Purpose: Reduction of morbidity and mortality caused by certain communicable diseases, through specific immunization; and integration of vaccination activities into the health services.

Probable duration: 1967-1975.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and staff of project AMRO-0102.

Work done: Vaccination activities were being conducted as a regular program within the general structure of the health services. By 30 June 947,399 children (1 to 14 years) were immunized against tetanus, 674,567 against diphtheria and pertussis (1 to 9 years), and 861,787 were vaccinated with BCG. The average proportion of attainment of the target was 77%.

UNICEF

CUBA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1959-1971.

Assistance provided: Advisory services by staff of Headquarters, Zone II Office, and project AMRO-0200, and by personnel assigned to other projects in the country; equipment and supplies.

Work done: The malarious area measures 37,870 km² and has a population of 3,009,000. During the year, 584,084 blood smears were examined; only one case (imported) was found.

The last autochthonous case was reported on 28 June 1967. No general control measures against the anopheles mosquito have been in effect in the last 2 years, but an adequate surveillance system has operated as part of the general health services. Because of this, the evaluating team visiting the program in August 1970 recommended that it be advanced from the consolidation to the maintenance phase.

The Ministry of Public Health, for its part, requested the Organization to take the necessary steps to have the country declared malaria-free. An evaluation team will examine the situation locally during the first half of 1971 and prepare appropriate recommendations.

WHO/RB

CUBA-0300, Smallpox Eradication

Purpose: Maintenance of the country's smallpox-free status.

Probable duration: 1969.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and staff of project AMRO-0102; equipment and supplies.

Work done: Equipment for freeze-drying of vaccine was purchased, and its delivery was awaited. In the rural areas, 39,102 children up to 2 years of age were vaccinated in 3 months (29% of the target).

WHO/RB

CUBA-0400, Tuberculosis Control

Purpose: Improvement of the tuberculosis control program.

Probable duration: 1969.

Assistance provided: 1 short-term consultant, and advisory services by the PAHO/WHO Country Representative and staff of project AMRO-0402; supplies; 2 short-term fellowships.

Work done: The program was started in 2 demonstration areas, and plans were made for extending it to the entire country beginning in 1971. A course in administration of tuberculosis control programs was given for 34 participants.

PAHO/RB

CUBA-0600, Venereal Disease Control

Purpose: Improvement of the venereal disease control program.

Probable duration: 1970-1972.

Assistance provided: 1 short-term consultant and advisory services by the PAHO/WHO Country Representative.

Work done: A course of theoretical and practical instruction on immunofluorescence and complement fixation techniques was held for 5 physicians and 2 laboratory technicians.

WHO/RB

CUBA-0700, Zoonoses Control

Purpose: Formulation within the veterinary public health services of programs for the control and prevention of the zoonoses, in particular rabies, brucellosis, and bovine tuberculosis.

Probable duration: 1969.

Assistance provided: Advisory services by staff of Headquarters and of projects AMRO-0700, -0702, and -0800; costs of a local seminar.

Work done: The programs for the control of brucellosis and bovine tuberculosis reduced the level of infection to an all-time low for the country (0.11% and 76%, respectively).

The nation-wide rabies program vaccinated 126,000 dogs and eliminated 83,000 (out of an estimated canine population of 400,000). There was 1 human case during the year.

The II seminar on zoonoses control was held, as well as a course for port and airport inspectors.

PAHO/RB, WHO/RB

CUBA-2100, Engineering and Environmental Sciences

Purpose: Strengthening of activities designed to improve environmental health conditions, with emphasis on the systems of collection, transportation, and disposal of solid wastes in urban communities, use of pesticides, and vector control studies.

Probable duration: 1969-1973.

Assistance provided: Advisory services by project AMRO-2102 staff; equipment and supplies.

Work done: The Government was provided with equipment and supplies for assessing the effectiveness of water disinfection and for determining the extent of resistance to insecticides used against flies and mosquitoes, as well as with insect traps. Arrangements were made for sending a consultant in entomology laboratories. The second visit of a consultant in solid waste collection and disposal was deferred to 1971.

PAHO/RB

CUBA-2200, Water Supplies

Purpose: Strengthening of the national water supply program in urban and rural areas.

Probable duration: 1966.

Assistance provided: 1 short-term consultant and advisory services by project AMRO-2102 staff; 1 short-term and 1 long-term fellowship.

Work done: Preliminary work was done for a study on protection of water supply sources for metropolitan Havana.

WHO/RB

CUBA-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1952-1973.

Assistance provided: 1 short-term consultant and advisory services by the PAHO/WHO Country Representative; equipment and supplies.

Work done: The pilot program for integration of campaign activities into the general health services and for utilization of volunteer workers for the application of insecticide (begun by the Government in 1968) was temporarily delayed as a result of the need to replace DDT with organophosphorus insecticides in the Province of Havana, owing to vector resistance. Activities were resumed in November when Baytex and Abate were received. Intensive courses were held for the purpose of training personnel in eradication techniques and the use of organophosphorus insecticides.

PAHO/RB, WHO/RB

CUBA-3100, Health Services

Purpose: Strengthening the administration of general health services.

Probable duration: 1959.

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 8 short-term consultants, and advisory services by staff of Headquarters, Zone II Office, and project Uruguay-4102; equipment and supplies; common services; 13 short-term and 9 long-term fellowships.

Work done: Programs for the administration of hospital services, physical and occupational rehabilitation, leprosy rehabilitation, public health and obstetrical nursing, and perinatology were strengthened.

A seminar on international sanitary control was held, as were courses on hospital records, leprosy rehabilitation, and occupational therapy.

WHO/RB, WHO/UNDP

CUBA-3300, Laboratory Services

Purpose: Strengthening the National Institute of Hygiene, Epidemiology, and Microbiology (INHEM) to equip it for better performance of regulatory, supervisory, research, and biologicals production functions.

Probable duration: 1968-1972.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by staff of Headquarters, Zone II Office, and project AMRO-3303; equipment and supplies; 4 short-term fellowships.

Work done: A study was made of the organization of the country's microbiology and chemical health laboratories and their relationship to the network of clinical laboratories. Consideration was given to the need to redefine the functions of INHEM and to organize a National Institute of Microbiology and Public Health Chemistry to take on the work of the present Provincial Laboratory of Metropolitan Havana.

Advisory services continued to be furnished in the production of tetanus and diphtheria toxoids.

The 4 INHEM physicians awarded fellowships visited France, Spain, and Sweden to observe laboratory organization and administration.

PAHO/RB

CUBA-4200, Nutrition

One long-term fellowship was awarded.

WHO/UNDP

CUBA-4600, Occupational Health

Purpose: Strengthening of the national industrial hygiene programs; and institution of air pollution control measures.

Probable duration: 1969-1973.

Assistance provided: 1 short-term consultant, and advisory services by projects AMRO-2102 and -2114 staff; supplies.

Work done: Advisory services were rendered in connection with ventilation, lighting of work places, and work physiology and a short course on occupational health was

IX. PROJECT ACTIVITIES

offered. The first results of the air sampling survey were obtained.

PAHO/RB

CUBA-6200, Medical Education

Purpose: Strengthening the training of public health professionals in every phase, with emphasis on preventive and social aspects and relations with health programs.

Probable duration: 1965-1973.

Assistance provided: 2 short term consultants, and advisory services by staff of Headquarters and of projects AMRO-6200 and -6216; supplies; 5 short-term fellowships.

Work done: The first stage (1 month) of a 3-stage course in hospital administration, to be given over a total period of 2 years, was completed; it was attended by 13 directors of clinical and surgical hospital services and 13 assistant directors of provincial medical care and education facilities.

A course on health research methods was offered for professors of schools of medicine and personnel of the Research Institute and the Ministry of Public Health. Two seminars were conducted for 30 obstetrical nurses from health areas and instructors in obstetrical nursing courses.

PAHO/RB, WHO/RB

CUBA-6400, Sanitary Engineering Education

Purpose: Improvement in the teaching of sanitary engineering at the University of Havana and in the technical training of professional and subprofessional personnel engaged in the national environmental sanitation programs.

Probable duration: 1966-1973.

Assistance provided: 2 short-term consultants, and advisory services by staff of Headquarters and of projects AMRO-2102 and -2114; supplies; financial assistance for courses.

Work done: Personnel was trained through a short course in fluoridation of water supplies. A consolidated list of equipment and materials, to be used also in the programs of projects Cuba-2100 and -4600, was prepared.

WHO/RB

DOMINICAN REPUBLIC-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1952.

Assistance provided: 1 medical officer and 1 short-term consultant; antimalaria drugs; laboratory and entomology equipment.

Work done: Areas in the maintenance or consolidation phase account for 97.2% of the population and 93.1% of the originally malarious area.

In the attack phase area, 63,938 houses (96% of the scheduled number) were sprayed during cycle 8A, and 56,874 houses (96.4%) in cycle 8B. Transmission was halted except in the foci at Dajabón (northern border) and Pedernales (southern border), where 73 and 21 cases, respectively, were reported up to September.

There were no cases in consolidation areas; in the main-

tenance area there were two positive cases, one imported from Haiti.

A total of 628,221 blood smears were examined throughout the country, with 161 found positive for *P. falciparum* (slide positivity rate, 0.03%).

To begin the transfer of malaria epidemiological surveillance to general health services in the maintenance areas, a sanitary district of the Puerto Plata Health Center was being organized. A special training course on public health and malaria eradication activities was given for 3 sector chiefs and 23 evaluators.

PAHO/RB

UNICEF

DOMINICAN REPUBLIC-0400, Tuberculosis Control

Purpose: Reduction of tuberculosis morbidity and mortality.

Probable duration: 1963-1974.

Assistance provided: 1 medical officer.

Work done: In order to re-orient activities, the relevant information on tuberculosis control was brought up to date and a province of the country was selected as a verification area.

WHO/UNDP

DOMINICAN REPUBLIC-2200, Water Supplies

Purpose: Provision of water supply facilities for 62% of the urban and 25% of the rural population and of sewerage facilities for 14% of the urban population; and integration into the National Water Supply and Sewerage Institute (INAPA) of 40% of the systems currently administered by the municipalities, over a period of 4 years (1969-1972).

Probable duration: 1962-1974.

Assistance provided: 1 sanitary engineer and 6 short-term consultants; supplies; 6 short-term fellowships.

Work done: The second stage of the study of the rate schedule for the systems operated by INAPA was concluded (100% of the target). The areas of general services, water-works administration, hydrology, and construction were examined, and 65% of the recommendations made by PAHO to INAPA were implemented (100%).

Forty-eight projects for rural water supply systems (80%) and 5 for urban systems (100%), to serve a total of 111,500 persons, were prepared. With the help of a loan from IDB, 38 water supply systems for rural communities were built (57% of the target) and 57 were in various stages of construction, to serve 114,000 persons.

Construction of a water supply system and a sewerage system to serve 32,181 persons was also carried forward. Using its own resources, INAPA overhauled 3 water supply systems in urban areas, providing benefits to 16,600 persons (100%). Distribution of food supplied by the World Food Program among members of rural communities working on the construction of their local water supply systems began (100%).

Four short courses were attended by a total of 65 students (100%).

PAHO/RB, PAHO/CWSP

DOMINICAN REPUBLIC-2201, Administration of Water and Sewerage Services

Purpose: Development of the program of administrative reform and institutional improvement begun by the National Water Supply and Sewerage Institute (INAPA) in 1968 for the purpose of providing water and sewerage services to 62% of the urban and 25% of the rural population.

Probable duration: 1970-1973.

Assistance provided: 1 short-term consultant, and advisory services by project Dominican Republic-2200 staff.

Work done: An intensive effort was made to apply the recommendations formulated by a group of experts from the Organization. A total of 7½ consultant-months' time was devoted to the principal purpose of helping introduce the new systems and apply the recommendations. INAPA achieved a high degree of implementation of the recommendations.

PAHO/CWSF

DOMINICAN REPUBLIC-3100, Health Services

Purpose: Development of the country's health services on the basis of regionalization and integration; and strengthening of their organization, methods, and operation.

Probable duration: 1953-1972.

Assistance provided: 2 medical officers (including the PAHO/WHO Country Representative), 1 sanitary engineer, 1 administrative methods consultant, 2 nurses, and 1 short-term consultant; supplies and common services; 4 short-term and 2 long-term fellowships.

Work done: The First National Development Plan (1970-1974) adopted by the Government calls for regionalization of health services.

With a view to improving the infrastructure of the Ministry of Public Health and Social Welfare, its purchasing and storage regulations were revised and structural and functional plans were made for a Division of Procurement. The committee responsible for planning the construction of health facilities financed by a US\$7.2 million loan finished the second stage of its work, completing the equipment specifications for 6 hospitals to be expanded and remodeled and for 1 hospital, 34 rural clinics, and 5 health subcenters (construction of which will start in 1971).

A communicable disease control program was prepared. One health subcenter and 4 hospitals with a total of 120 beds were inaugurated; inventories were verified in 11 hospitals; and cost-accounting methods were put into use in those institutions. In regard to nursing services, standards were applied to improve patient care at the local level, and clinics staffed by nurses were established to provide increased facilities for examination of children and pregnant women.

Sanitation activities were continued, with 1,369 latrines installed and 762 rural houses improved during the year. An operational plan for the construction of 30,000 latrines over a period of 4 years was completed.

Two courses on hospital administration and costs were attended by a total of 46 persons. The technical services planned and conducted the following activities: 1 course in environmental sanitation, for 20 sanitation inspectors and officials; 3 inservice training programs, for 75 professional

nurses; 16 courses for 262 practical midwives; and inservice training programs in 6 institutions, for 220 nursing auxiliaries.

PAHO/RB, PAHO/OF, WHO/RB, WHO/UNDP

OAS, UNICEF

DOMINICAN REPUBLIC-3300, Laboratory Services

Purpose: Organization of public health laboratories and laboratories for clinical diagnosis in hospitals, and of 5 regional laboratories; establishment and standardization of procedures; and training of the necessary personnel.

Probable duration: 1968-1972.

Assistance provided: 1 medical officer, and advisory services by project Dominican Republic-3100 staff; supplies.

Work done: A start was made on examining the proposed law and regulations to govern professional activities in the laboratory field (25%). A survey of laboratories in the capital and in the northern and southern parts of the country was carried out (35%). A four-year plan for expansion of the communicable disease control laboratories was drawn up (100%). Reorganization of the National Health Laboratory began (10%).

Training activities included a short course for 29 inservice auxiliaries (99%) and another for 43 technologists possessing a university degree, on immunofluorescence techniques (200%).

PAHO/RB

DOMINICAN REPUBLIC-4200, Nutrition

Purpose: Implementation of a national food and nutrition policy; training of health service and hospital food personnel in nutrition; and development of nutrition education and food supplement programs.

Probable duration: 1967-1972.

Assistance provided: 1 medical officer and 1 nutritionist; supplies; 2 short-term fellowships.

Work done: The report on the national nutrition survey was prepared and submitted to the Government; the survey indicated that intake levels were at the following percentages of the satisfactory norm in the communities studied; calories, 79%; proteins, 82%; calcium, 62.5%; iron, 79.2%; vitamin A, 57%; thiamin, 86%; riboflavin, 55%; niacin, 94%; pyridoxin, 54%; and folic acid, 37%.

A seminar held to formulate a national food and nutrition policy recommended the establishment of a national council to oversee the application of such a policy.

Theoretical and practical training was given to personnel of nutrition services (97% of the target) and of public health services (30%). The nutrition services were improved in the 3 selected hospitals in the National District (100%).

The program of supplementary feeding in 169 centers distributed fresh milk to 33,375 persons (96% of the target), powdered milk to 51,559 (125% of the target), and reconstituted milk to 51,335 (83% of the target).

PAHO/OF, WHO/RB

Research Corporation

DOMINICAN REPUBLIC-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: Pedro Henríquez Ureña National University sold 20 copies of the *Tratado de patología*, 36 of *Fisiología humana*, and 24 of *Bioquímica*, and ordered 50 additional copies of the first, 50 of the second, and 40 of the third. The School of Medical Sciences of the Santo Domingo Autonomous University organized its administrative section for distribution of the textbooks and ordered 300 copies of the *Tratado de patología*, 100 of *Fisiología humana*, 300 of *Bioquímica*, and 300 of the *Tratado de pediatría*.

DOMINICAN REPUBLIC-6200, Medical Education

Purpose: Strengthening of medical education, with emphasis on the teaching of preventive medicine.

Probable duration: 1962-

Assistance provided: Advisory services by the PAHO/WHO Country Representative.

Work done: After a preliminary study of the situation in the country's schools of medicine, the priority aspects meriting special attention for the improvement of medical education were defined. The number of clinical practice areas available to undergraduates was increased to 5 with the entry of 2 new hospitals into the field of university education.

DOMINICAN REPUBLIC-6300, Nursing Education

Purpose: Training of professional and auxiliary nursing personnel in line with the needs of the services and with the socioeconomic resources of the country.

Probable duration: 1958-1974.

Assistance provided: 1 nurse, and advisory services by project Dominican Republic-3100 staff; supplies; 1 long-term fellowship.

Work done: The level of the students at the National School of Nursing and the Nursing School of the Madre y Maestra Catholic University was upgraded through a revision of the admission requirements and the regulations for the award of fellowships. Teacher training was carried forward by means of continuing education courses and post-graduate academic studies. The curriculum of the schools was brought more closely into line with the country's needs and priorities and with modern concepts of teaching. The areas serving as clinical practice fields for the students, as well as the teaching material in both schools, were improved. The National School graduated 20 nurses.

PAHO/OF, WHO/RB

OAS

DOMINICAN REPUBLIC-6400, Sanitary Engineering Education

Purpose: Improvement of sanitary engineering instruction offered as part of the regular civil engineering courses; and

technical improvement of existing personnel through intensive courses on specific subjects.

Probable duration: 1969-1975.

Assistance provided: 2 short-term consultants, and advisory services by projects Dominican Republic-2200 and -3100 staff; supplies.

Work done: A 2-week course on operation and design of water supply systems was conducted at the National Water Supply and Sewerage Institute for 20 participants.

PAHO/RB

DOMINICAN REPUBLIC-6600, Dental Education

Purpose: Development of a new curriculum for the Autonomous University of Santo Domingo including the preventive and social aspects of dentistry.

Probable duration: 1966-1972.

Assistance provided: 1 short-term consultant.

Work done: A preliminary diagnosis was made of the status of dental studies at the Autonomous University of Santo Domingo and Pedro Henríquez Ureña National University. A plan was developed for revising the curriculum of the School of Dentistry of the Autonomous University so as to set guidelines for future activities related to programs of instruction in comprehensive prosthetics; to organization of the clinical components of a comprehensive clinic; and to development of a short course on prosthetics for teaching personnel.

WHO/RB

ECUADOR-0100, Epidemiology

Purpose: Significant reduction of the risks of illness and death from communicable diseases.

Probable duration: 1967-1971.

Assistance provided: 1 short-term consultant, and advisory services by project AMRO-0304 staff; equipment and supplies.

Work done: Typhoid fever, poliomyelitis, diphtheria, and rabies (human and animal) were present in high endemic proportions. The following vaccinations were performed: smallpox, 635,050 persons immunized; BCG, 304,022 doses (18.7%); DPT, 251,799 doses (31.8%); poliomyelitis (oral vaccine), 121,461 doses (32.1%).

The technical and administrative structure of the National Department of Health was strengthened through the addition of 100 health subcenters to attend to the needs of the rural population.

PAHO/RB, WHO/UNDP

ECUADOR-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1956-

Assistance provided: 1 medical officer, 2 sanitarians, and advisory services by projects Ecuador-2100 and AMRO-0304 staff; antimalaria drugs; 1 long-term fellowship.

Work done: During the year 218,663 blood smears from attack phase areas were examined, with 24,076 (11%) found positive; from consolidation phase areas, 142,216 smears

were examined and the number of positives was 4,299, or 3.0%, a slightly lower positivity rate than those recorded in 1969 of 17.1 and 4.2%, respectively.

During the first half of the year, the number of houses sprayed with DDT was 339,793 (94.5% of the scheduled number); and in the second half 94.8% of the target for that period was attained.

Financial difficulties—though on a smaller scale than in previous years—continued to handicap the program, which did not have sufficient staff. In addition, the attack operations did not cover all the areas where there was transmission of malaria. Epidemiological operations proceeded at a satisfactory pace, largely because of the efficient network of volunteer groups collaborating in them.

PAHO/SMF, WHO/RB, WHO/UNDP

UNICEF

ECUADOR-0300, Smallpox Eradication

Purpose: Maintenance of the country's smallpox-free status.

Probable duration: 1967-1972.

Assistance provided: 1 short-term consultant (assigned to project Ecuador-0100), and advisory services by project AMRO-0304 staff; equipment and supplies.

Work done: During the year 635,050 persons were vaccinated, mainly in rural areas, the proportion of takes recorded being 95.6 and 46.7 for primary vaccinations and revaccinations, respectively. From the beginning of the campaign, 5,417,882 persons (87.7% of the country's present population) had been vaccinated. No cases of smallpox occurred for the seventh consecutive year.

The campaign also included BCG, DPT, and poliomyelitis vaccination as regular activities and collaboration with the yaws eradication program.

WHO/RB

ECUADOR-0500, Leprosy Control

Purpose: Reduction of the risk of contracting leprosy and prevention of the disabilities caused by the disease.

Probable duration: 1968-1972.

Assistance provided: Advisory services by staff of Headquarters and of project AMRO-0304; supplies.

Work done: Between January and November, 57,738 dermatological examinations (45% of the target) were performed, resulting in the discovery of 198 new cases of leprosy (66%). As part of the control work and patient treatment, 10,405 house visits (62%) were made, 2,922 clinical examinations (59.6%) were performed, 1,201 disability investigations (61.6%) were conducted, and 109,636 DDS tablets (100 mg) were distributed (62.3%).

WHO/RB

ECUADOR-0600, Venereal Disease Control

Purpose: Reduction of the risk of contracting venereal diseases.

Probable duration: 1969-1973.

Assistance provided: 1 short-term consultant (assigned to project Ecuador-0100), and advisory services by project AMRO-0304 staff.

Work done: The reporting system was standardized so as to establish centralized statistical records. The venereal disease clinic in Guayaquil was converted into a regulatory, reference and training center. The venereal clinics throughout the country performed serologic tests on 46,736 persons, 5.3% of the reactions being positive. In Guayaquil and Quito, 497 cases of recently contracted syphilis (100%), 42 of congenital syphilis, and 1,815 of gonorrhea were treated.

ECUADOR-0900, Plague Control

Purpose: Reducing the risk of illness and death from plague through establishment of a control program in those areas of the country where the disease is endemic.

Probable duration: 1963-1972.

Assistance provided: 1 short-term consultant (assigned to project Ecuador-0100), and advisory services by project AMRO-0304 staff; a limited amount of supplies.

Work done: There were 31 cases: 15 in the Province of Chimborazo, 7 in Guayas (with 2 deaths), 5 in La Loja, and 4 in Manabí. Preventive drug treatment was given to 171 contacts of patients.

In active foci and in the endemic areas under surveillance, delousing operations were carried out in 71,209 houses, deratting in 291,642, and measures were taken against the rats in 66,267 (100% of the target). The control work was based on epidemiological studies. Plague advanced from the active foci in Chimborazo to a point 40 km from Guayaquil (Milagro, Guayas Province), where it was checked. Basic environmental sanitation measures were intensified in Guayaquil, and closer rodent control was instituted in the country's seaports.

WHO/RB

ECUADOR-2100, Engineering and Environmental Sciences

Purpose: Improvement of environmental sanitation conditions.

Probable duration: 1968-

Assistance provided: 1 sanitary engineer, 2 short-term consultants, and advisory services by Headquarters staff.

Work done: A special committee examined the new Sanitary Code, which by the end of the year required only approval by the Executive Branch for final enactment (100% of the target). The Division of Environmental Sanitation of the Ministry of Public Health, working in conjunction with municipal authorities and provincial councils, built 200 wells to serve 48,000 persons in rural areas and installed 3,500 latrines (60% of the target). Sixty-five hypochlorinators were installed in small rural waterworks, and 6,500 houses were connected to public sewerage systems (80%). Waste collection and disposal was improved in 8 cities, including Quito and Guayaquil (120%). As part of the over-all health program for the city of Cuenca, work was begun on surveys of water supply, the sewerage system, sewage disposal, food

IX. PROJECT ACTIVITIES

hygiene, housing and urban sanitation, and waste collection and disposal. See also project AMRO-3122.

WHO/RB

ECUADOR-2200, Water Supplies (1961-1970) PAHO/RB

The purpose was to implement the national water supply and sewerage program and to expand the existing systems in Quito and Guayaquil. The Organization provided 17 short-term consultants, supplies and equipment, and advisory services by the engineers of projects Ecuador-2100 and AMRO-2104, and 1 grant in 1970.

Considerable progress was made in the programs to construct or expand public water supplies conducted by the Ecuadorian Institute of Sanitary Works (IEOS) in the urban areas and by the Ministry of Public Health in the rural communities. Management studies carried out by PAHO at IEOS and at the water supply agency of Quito resulted in the reorganization of both agencies. In Guayaquil a study was made in 1970 to set up an executive office in charge of the expansion of the sewerage system serving that city.

The expansion of water supply systems in the last 10 years led to the following results: 61% of the urban population (1,389,000 persons) were being served through house connections, and 7% of the rural population (276,000 inhabitants) had connections or easy access to public fountains. In that period, close to \$42 million was invested for the construction of new systems or the expansion of the existing ones.

Future activities related to this project will be carried on by project Ecuador-2100.

ECUADOR-3100, Health Services

Purpose: Development of the structure of the national health services to increase their coverage and integrate them progressively, with a view to reducing general and infant mortality rates and the incidence of reducible diseases and lengthening life expectancy.

Probable duration: 1953-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 nurse, and 3 short-term consultants; supplies; common services; 5 short-term and 2 long-term fellowships.

Work done: A revision was made of the health legislation, including the 1944 Health Code, the amendments of which were awaiting executive signature. The Organic Law, providing for integration of social welfare services, was also close to final enactment. A new narcotics law was approved. As part of the rural medical program, 100 health subcenters, each staffed by 1 physician, 1 nursing auxiliary, and 1 sanitary inspector, were in operation, providing medical care to a total of 200,000 persons. The construction contract was signed and work begun on the building of 27 hospital-health centers with 17 to 27 beds each; another 7 were being completed. A decree was issued providing that no physician, nurse, midwife, or dentist may practice his profession without first serving for a year in a rural area. UNICEF supplied the equipment for 100 health centers and agreed to equip 200 more in the next 2 years.

Decrees were issued integrating the Ecuadorian Institute of Sanitary Works, the medical services of Santo Domingo, the Otavalo Hospital, and the National Malaria Eradication Service into the Ministry of Health.

The Manabí comprehensive program was continued, with special emphasis on examination of mothers, infants, and healthy children.

The National Association of Nurses performed a job reclassification study; the requirements, functions, classes, and categories of positions held by nurses—chief of a nursing service, assistant chief, general supervisor, and supervisor of a functional room or ward—were defined and submitted to the Ministry of Public Health. Continuing education projects were instituted for the nursing staff of selected services in 3 areas of the country; the projects included orientation for new personnel and courses for nurses already in service who have not had the required training. A study on reorganization of the nursing service of the L. Vernaza Hospital in Guayaquil and the E. Espejo Hospital in Quito was carried out.

The training program included: 1 short course (1 week) for 100 physicians from rural areas; 2 intensive courses in administration for heads of nursing services, attended by 180 students; 1 course (9 months) for 100 rural nursing auxiliaries; 1 course for 100 sanitary inspectors; and 3 courses (1 month each) for more than 150 statisticians and hospital records officers. Two short courses (1 week each) were held in Quito and Guayaquil for a total of 150 nurses. The training of 40 nursing auxiliaries from social welfare hospitals of Quito was concluded.

WHO/RB, WHO/UNDP

UNICEF

ECUADOR-3101, Fellowships

Six short-term and 1 long-term fellowships were awarded.

PAHO/RB

ECUADOR-3102, Rural Medical Services

Purpose: Organization of a health infrastructure for the planning and administration of a health program in the rural areas of the Andean highlands.

Probable duration: 1956-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by nursing and sanitary engineering staff assigned to other projects in the country.

Work done: Service was provided to 136 rural communities through 7 health teams, 25 health stations, and 39 first-aid stations. The activities included—as well as first aid—dental, medical, and nursing care and vaccinations. The Andean Mission task force was composed of 8 physicians, 5 dentists, 8 nurses, 5 sanitary inspectors, and 45 nursing auxiliaries, all on a full-time basis. The service was in process of being revised. A total of 944 pregnant women, 408 infants under 1 year, 689 preschool-age children, and 3,008 schoolchildren were examined. The physicians provided 12,376 consultations, the nurses 5,074, and the nursing auxiliaries 38,588. A total of 1,250 births and 676 deaths

were recorded, the latter including 220 infants under 1 year, 146 children from 1 to 5, and the rest older children and adults.

ILO, UNICEF

ECUADOR-3301, National Institute of Health

Purpose: Expansion of health laboratory services at the central level and extension of control activities to the entire country.

Probable duration: 1952-1972.

Assistance provided: 1 short-term consultant, and advisory services by Zone IV Office staff and the PAHO/WHO Country Representative.

Work done: Activities at the Leopoldo Izquieta Pérez National Institute of Health included: 793,565 diagnostic examinations; 3,689 quality tests of pharmaceuticals; 452 of cosmetics; 18,528 food analyses; 9,377 water-quality analyses; 377 toxicological tests; 38,667 inspections of animal reservoirs of disease; 25,254 entomological examinations; and 153 tests for radioactivity.

The following vaccines were produced: smallpox, 1,800,000 doses (freeze-dried); rabies vaccine for human use, 158,130 doses; rabies vaccine for use in dogs, 33,950 doses; typhus vaccines, 75,240 doses; pertussis vaccine, 32,000 doses; DPT, 471,020 doses; and tuberculosis vaccine (liquid), 77,172 cc. The Institute also produced 23,625 cc of tuberculin, 3,570 cc of other antigens, 1,685 liters of culture media, and 21,090 units of antibiotic disks.

PAHO/RB

ECUADOR-3700, Health Planning

Purpose: Establishment of a process of health planning, beginning with its legal and functional structure and physical, human, and administrative resources; and planning of health sector activities, first by province, then by regions, and later for the entire country, as part of the economic and social process.

Probable duration: 1969-1972.

Assistance provided: 1 medical officer.

Work done: The four-year projections begun during the year showed major changes in regard to acute communicable diseases and malaria; water supply and sewerage; and the structure of the health services, which reflected the addition of food and nutrition as applied to health and a significant increase of educational activities associated with performance of services.

See also project Ecuador-3100.

WHO/UNDP

ECUADOR-4202 and -4204, Prevention of Endemic Goiter and Mental Retardation

Purpose: Study of the feasibility and effectiveness of iodized oil (ethiodol) injections for the prevention of endemic goiter and associated defects: cretinism, deaf-muteness, and endemic mental retardation.

Probable duration: 1966-1971.

Assistance provided: 1 short-term consultant, and advisory services by the PAHO/WHO Country Representative; grants.

Work done: The survey to determine the prevalence of goiter and evaluate somatic growth and neuromotor, dental, and skeletal development in 583 children in Tocachi (where the iodized oil injections were administered) and in La Esperanza (control group) was continued (100% of the target). The longitudinal study in the town of Malchingui (where 184 schoolchildren had been inoculated in December 1968), aimed at determining the effect of iodized oil injections on mental capacity and the size of the goiter, was also carried forward (100%).

The studies of cretin children born in La Esperanza (non-inoculated control group) were continued, and PBI, TI, T4I, BEI, and BII determinations and complete X-ray studies of the skeletal structure were performed. At the end of the year there were 7 children under observation or diagnosed as suffering from cretinism at La Esperanza, and there were no new cases among infants born to mothers who had been treated at Tocachi.

The most significant findings of the investigation up to the present may be summarized as follows: absolute prevention of goiter in children born to mothers who have received treatment (Tocachi); a drastic reduction in the prevalence of goiter in the inoculated group; maintenance of a urinary excretion of I above the basal value after 4 years from the time of inoculation with iodized oil; normal capacity to secrete thyroxin among the persons treated, even during the first six months following the injection of ethiodol, when the iodate absorption capacity is depressed; 7 (1.9%) of the children born in the control group at La Esperanza (non-inoculated group) showed a definite retardation in their development quotient (D.Q.)¹ in comparison to "normal" children in the control group.

As a by-product, this investigation has yielded a considerable amount of data on the 583 children evaluated since March 1966, concerning such matters as patterns of growth and development, dentition, child care, lactation, and morbidity in the population under study. Records have also been kept of the prenatal and obstetrical conditions (approximately 50% of the births reported by the research workers) of the mothers under observation in both population groups.

PAHO/RB, PAHO/OF

National Association for Retarded Children (USA)

ECUADOR-4203, Nutrition (Portoviejo)

Purpose: Establishment of a nutrition rehabilitation center in Portoviejo, Manabí Province, to reduce and prevent protein-caloric malnutrition in preschool-age children.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters and Zone IV Office staff; 1 grant; supplies.

Work done: The Child Nutrition Education and Rehabilitation Center (CERNI) at Portoviejo reduced its activities to the distribution of milk to preschool-age children and did not carry out the activities proposed in the basic document;

$$^1 \text{D.Q.} = \frac{\text{maturation age}}{\text{chronological age}} \times 100$$

IX. PROJECT ACTIVITIES

consequently, the objectives and purposes of the project were not achieved.

Following a visit by the Zone Adviser in Nutrition, the project was revised and it was decided that the field activities of the Manabí Comprehensive Health Project, the Manabí Red Cross, and CERNI should be coordinated and the latter provided with continuing advisory services and supervision by qualified national personnel. Once this is done, it is planned to resume the supplementary feeding and nutrition rehabilitation work with a view to reducing the prevalence of protein-calorie malnutrition in preschool-age children.

PAHO/OF

Research Corporation

ECUADOR-4500, Health Aspects of Radiation

Purpose: Implementation of a national program to protect the population against the hazards of exposure to radiation.

Probable duration: 1969-1972.

Assistance provided: 2 temporary advisers, and advisory services by Headquarters staff; equipment and supplies.

Work done: Forty-eight samples of milk were sent to a health laboratory in the United States of America for a determination of the level of radioactive particles (80% of the target). Gamma-ray equipment was installed (100%), and 2 sets of equipment for measuring radioactivity were acquired. Film dosimetry services were provided to 19 institutions having a total of 138 users. The X-ray installations of 12 health institutions were inspected periodically (100%). In the national survey of radiation-protection manpower and equipment available in public and private institutions, 60% of the target was reached.

The national survey of sources of ionizing radiations was begun.

The consultant installed and gauged the radiochemistry equipment at the Leopoldo Izquieta Pérez Institute of Health (Guayaquil) and trained the professional personnel that will be responsible for its use and maintenance.

WHO/RB

ECUADOR-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-1973.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: The country's universities were closed in June. From January to June, 342 copies of *Tratado de patología*, 80 of *Bioquímica*, 360 of *Fisiología humana*, and 239 of the *Manual de farmacología* were sold. During 1969, 241 of the first and 157 of the second were sold to 78.9% of the university students.

ECUADOR-6200, Medical Education

Purpose: Improvement of medical education, with emphasis on preventive and social medicine, basic sciences, and medical pedagogy.

Probable duration: 1965-1973.

Assistance provided: 3 short-term consultants, and advisory services by staff of projects Ecuador-3700 and AMRO-6204; 4 short-term and 1 long-term fellowships.

Work done: The first Human Relations Laboratory, held in Cuenca, was attended by 12 professors of medicine and 2 of nursing.

Short courses were held on reproduction physiology, for 72 professionals, and on pedagogy, for 25 departmental assistants.

The regulations on internships, graduate studies, rural medical practice, and residencies were revised and those governing residencies in the field of X-ray diagnosis were put into practice.

By means of 4-year projections, the requirements for professional personnel were determined until 1980. A similar determination was made by the National Planning Board.

Extramural education and home care programs were inaugurated at 2 health centers in Quito.

Studies were made of the organization of the School of Medical Technology and of the library system.

WHO/RB

ECUADOR-6300, Nursing Education

Purpose: Adaptation of the system of nursing education to the health requirements of the country and to its human and material resources, as required by the planning process.

Probable duration: 1957-1973.

Assistance provided: 1 nurse educator and 1 short-term consultant; equipment and supplies.

Work done: The Association of Schools of Nursing prepared the work program for the year, with the participation of the country's nursing schools. Seminars on curriculum planning and development were held at Quito, Cuenca, and Guayaquil for a total of 41 participants. Eleven studies on different aspects of nursing were in progress (50%).

Forty-two students in the supplementary course for nurses held at the National School, and 41 last-year students in the basic course (26 from a state school), received instruction in the application of the scientific method to nursing (70%). The central registry of data on the training of nursing personnel was kept current (50%).

Programs sponsored by the Association of Schools of Nursing had the following enrollment: 42 nurses in supplementary courses at the National School (Quito); 4 nurses in postgraduate courses held abroad; 150 students in basic educational programs; and 248 students in courses for nursing auxiliaries (84.6%).

The following teaching staff received additional training: 5 professors, including 2 from state schools, received their Master's degree abroad; 2 professors, both from state schools, received the degree of Bachelor in nursing, also abroad; and 167 nursing auxiliaries received training. In

the survey of resources and needs, 65.4% of the target for the year was attained.

WHO/RB

ECUADOR-6400, Sanitary Engineering Education

Purpose: Specialization and training of professional, intermediate, and auxiliary personnel in the field of sanitary engineering and environmental sanitation as required to meet the country's needs, with the aim of planning, constructing, and operating sanitary engineering and sanitation facilities suited to the country's socioeconomic conditions.

Probable duration: 1965-1975.

Assistance provided: 2 short-term consultants, and advisory services by project Ecuador-2100 staff; supplies.

Work done: A course on stabilization ponds and oxidation ditches was conducted for 48 participants from the Ecuadorean Institute of Sanitary Works, and from the Quito, Guayaquil, Cuenca, and other sewerage companies.

PAHO/RB

ECUADOR-6600, Dental Education

Purpose: Analysis of the program of professional dental education, with emphasis on preventive and social dentistry.

Probable duration: 1967-1972.

Assistance provided: 1 short-term consultant, and advisory services by Headquarters staff and the PAHO/WHO Country Representative; 4 short-term and 1 long-term fellowships.

Work done: The IV National Congress of Dental Students recommended, and the University Council approved, the establishment of a 1-year period of dental service in a rural area as a prerequisite for admission to the practice of dentistry. Initial arrangements were made for a course on dental resources.

WHO/RB

EL SALVADOR-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1955-

Assistance provided: 2 medical officers, 1 sanitary engineer, 1 sanitarian, and advisory services by project AMRO-0203 staff; antimalaria drugs; equipment and laboratory supplies.

Work done: Since the measures that were being applied would not permit the attainment of the proposed goals within the period prescribed, the Government revised its strategy in March, retaining the same objectives but eliminating the deadline. The 3-year plan was therefore revised so as to provide for a better use of resources by discontinuing DDT spraying operations in the problem area where the vector is resistant to DDT and by substituting quarterly sprayings with OMS-33 for mass treatment with antimalaria drugs in the entire area of the Department of La Unión. Mass treatment was continued in the other problem areas, and spraying with DDT in areas or localities where the vector proved susceptible.

In the 5th cycle of the 3-year plan, 273,935 houses were

sprayed with DDT during the 1st half of the year (96.7% of target); and in the 6th cycle 264,597 houses (98%) were sprayed during the 2nd half year. Beginning in August, a total of 16,845 houses were sprayed twice with OMS-33, with an interval of 2 to 3 months (96%). Mass drug treatment continued to be administered to 212,785 persons (61.8% of the problem area population), 131,950 (62%) of whom were treated every two weeks. The active and passive search for cases resulted in the examination of 572,373 blood smears, with 45,436 (79.6% more than in 1969) being diagnosed as positive.

PAHO/RB, WHO/RB

UNICEF

EL SALVADOR-2200, Water Supplies

Purpose: Provision of water supply service to 75,000 inhabitants of rural areas over a 3-year period beginning in 1969.

Probable duration: 1961-1971.

Assistance provided: 2 short-term consultants, and advisory services by project El Salvador-3100 staff; 2 short-term fellowships.

Work done: Eighty-eight surveys were made for the purpose of gathering basic information on water services. Twenty-four water supply systems were repaired, 24 built, and 8 expanded, to serve a total of 28,250 persons, exceeding the target. Four waterworks were in an advanced phase of construction.

An application was submitted to the IDB for a loan of US\$1,430,000 for construction of 100 water systems in rural areas.

PAHO/RB

UNICEF

EL SALVADOR-3100, Health Services

Purpose: Execution of integrated health services programs in the country as part of a National Health Plan.

Probable duration: 1963-

Assistance provided: 1 medical officer, 1 sanitary engineer, 1 nurse, and 4 short-term consultants; 4 short-term and 1 long-term fellowships.

Work done: Activities in the last 3 years expanded the coverage of the health services by 5%. The fields showing the greatest progress (40-60% of target) were rural water supply, nursing, statistics, and emergency plans.

In the following category (10-30% of target) were: nutrition, medical care, tuberculosis, laboratories, epidemiology, immunizations, and air pollution.

PAHO/RB, WHO/RB, WHO/UNDP

EL SALVADOR-3101, Fellowships

Thirteen short-term and 2 long-term fellowships were awarded.

WHO/RB

EL SALVADOR-3102, Emergency Rehabilitation

Program

(1970) Grant to PAHO: Organization of American States

The purpose of this project was to provide water supply facilities and latrines to 20 rural communities and 9 rural settlements affected by the national emergency. The Organization provided advisory services by staff of Headquarters, Zone III Office, and project El Salvador-3100; and equipment and supplies.

Water supply facilities were constructed and latrines installed in all 20 rural communities and 9 rural settlements (100% of the target). The scope of the project was enlarged to include 5 other rural communities, where the work was well advanced at the end of the year.

This program gave new impetus to the work of the Ministry of Health in the field of rural water supplies.

EL SALVADOR-3300, Laboratory Services

Purpose: Development of laboratory services for the country.

Probable duration: 1970-

Assistance provided: Advisory services by Headquarters and project AMRO-3303 staff; 1 fellowship (extension); a limited amount of supplies.

Work done: The draft of a new agreement for a program to strengthen the health laboratory services of the country was prepared. The collection of basic information needed for the development of the laboratory system was begun. Fourteen new laboratories were established in health centers and health units. The Ministry of Public Health and Social Welfare included in its budget for the year posts for 20 medical technologists, to serve in 14 health center laboratories in the interior of the country.

WHO/RB

EL SALVADOR-4600, Occupational Health

Purpose: Control of basic industrial health problems and of community health problems arising from manufacturing or other industrial operations.

Probable duration: 1969-1971.

Assistance provided: Advisory services by projects El Salvador-3100 and AMRO-2114 staff.

Work done: The corps of sanitary inspectors of the Ministry of Public Health and Social Welfare made 1,518 inspection visits to industrial plants throughout the country.

This project will become a part of project El Salvador-2100 in 1971.

EL SALVADOR-4601, Air Pollution

Purpose: Determination of the extent of air pollution in San Salvador through the establishment of a sampling station as part of the Pan American Air Pollution Sampling Network.

Probable duration: 1970-1974.

Assistance provided: Advisory services by projects El Salvador-3100 and AMRO-2114 staff.

Work done: The sampling station began operations in June under the responsibility of the Division of Environ-

mental Sanitation of the National Department of Health. A total of 179 air samples were analyzed for a determination of the level of suspended air particles and sulfuric anhydride, and 6 for a determination of settling dust.

EL SALVADOR-4800, Medical Care Services

Purpose: Improvement in the organization of the medical care services; and expansion of their coverage by 10%.

Probable duration: 1970-1973.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by project AMRO-4803 staff.

Work done: The organization of the new 400-bed Bloom Hospital was completed, and service was inaugurated in December (100%). Construction of the Zacatecoluca and Chalatenango Hospitals (300 beds) continued (50%). A total of 120 sanitation technicians and nursing and statistical auxiliaries were trained (25%).

The forms for a hospital survey were prepared (50%).

EL SALVADOR-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by staff of Headquarters and of project AMRO-6203.

Work done: The School of Medicine of the University of El Salvador sold 69 copies of the *Tratado de patología*, 15 of *Bioquímica*, 183 of *Fisiología humana*, and 144 of the *Manual de farmacología*. A total of 100 additional copies of the first, 150 of the second, and 40 of the third were ordered, along with 200 copies of the *Tratado de pediatría*.

EL SALVADOR-6200, Medical Education

Purpose: Consolidation of the Schools of Dentistry, Chemistry, Pharmacy, and Medicine into a School of Health Sciences; improvement of the teaching; updating the curriculum in regard to public health aspects; and expansion and improvement of preventive medical care practice.

Probable duration: 1965-1972.

Assistance provided: 2 short-term consultants and 1 temporary adviser; 1 short-term and 1 long-term fellowships.

Work done: The School of Health Sciences was established (100% of the target), and the curriculum was being adapted to this new structure (50%). Professors were being trained under fellowships made available through this and other projects of the country (30%).

PAHO/RB

EL SALVADOR-6400, Sanitary Engineering Education

Purpose: Increase in the professional and subprofessional personnel in the field of environmental sanitation; and improvement in the teaching of sanitary engineering at the University of El Salvador.

Probable duration: 1965-1974.

Assistance provided: 1 short-term consultant, and advisory services by projects El Salvador-3100 and AMRO-2114 staff; supplies.

Work done: A short course on industrial hygiene and safety was conducted for 33 persons. The short-term consultant rendered advisory services in connection with hydraulics laboratories. An investigation was begun to determine the effectiveness of oxidation ditches and ponds as a means of treating residual waters from the coffee mills.

PAHO/RB

EL SALVADOR-6600, Dental Education

Purpose: Reduction of the shortage of dental services in the country through improvement of teaching in this field, betterment of the teaching staff, updating of curricula, and improvement of practice areas.

Probable duration: 1965-1972.

Assistance provided: 2 short-term consultants; supplies.

Work done: The dental curriculum was revised (100%). The statutes of the School of Health Sciences, of which the former School of Dentistry was made a part, was revised. Advisory services were provided in the field of prosthetics.

WHO/RB

FRENCH ANTILLES AND GUIANA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1963-

Assistance provided: Advisory services by project AMRO-0201 staff; equipment and supplies for the production of medicated salt.

Work done: Residual house-spraying was continued regularly in the coastal zone of French Guiana and in parts of the interior (92% of the target). Following the establishment of a mixing plant in Cayenne in May, 4,268 kg of medicated salt were distributed in the attack-phase area (61% of the target).

A total of 8,237 blood smears were examined and 117 were found to be positive (1.4%), as compared with 7,000 smears examined and 52 found positive in 1969 (0.7%).

Residual house-spraying was carried out in coordination with the reorganized *Aedes aegypti* eradication program.

No cases of malaria were reported in Guadeloupe or Martinique.

PAHO/RB

FRENCH ANTILLES AND GUIANA-3101, Fellowships

One short-term fellowship was awarded (Martinique).

PAHO/RB

FRENCH ANTILLES AND GUIANA-3300, Laboratory Services

Purpose: Development of a research laboratory which, in collaboration with similar laboratories in the area, will study the epidemiology, vectors, and reservoirs of arboviruses.

Probable duration: 1967-1972.

Assistance provided: Advisory services by project Surinam-3100 staff; equipment for preparation of antigens.

Work done: Large numbers of mosquitoes were trapped and studied for their possible role as vectors. Sera of patients with exanthema or fever were studied by complement fixation and inhibition-hemagglutination methods. Several strains of Group B viruses were isolated and sent to the Reference Laboratory for confirmation of the diagnostic results. Antigens were prepared by various methods from the viruses cultured in the Laboratory.

PAHO/RB

FRENCH ANTILLES AND GUIANA-4800, Medical Care Services

(1970) PAHO/RB

One temporary adviser assisted with the initiation of the rehabilitation service. This service is staffed by 4 nurses previously trained under PAHO fellowships.

GUATEMALA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1955-

Assistance provided: 2 medical officers, 1 sanitary engineer, and 1 sanitarian; equipment and supplies.

Work done: The last year of the revised 3-year plan was completed, with 265,303 houses sprayed with DDT twice during the year (82.9% of the target), 21 collective treatment cycles performed at intervals of 14 days as a supplementary measure (80.7%), and some 57,378 persons (44.8% of the total) treated.

A total of 90,893 blood smears from the problem area being attacked with DDT and collective treatment, 275,116 from the area being attacked with DDT only, and 80,700 from the area with suspended attack measures were examined. Emergency sprayings numbered 4,785 (47.8% of the target).

Radical treatments came to 65.7% of the number scheduled; and 363 cases discovered in the suspended-attack area (83.4%), all the cases produced by *P. falciparum* (100%), and 96 cases in the coffee-growing areas (84.2%) were investigated. A short course on laboratory techniques was conducted for health service personnel (33.3%).

In the epidemiological work, there was a definite downturn in comparison to earlier results, but the rate of parasitic infestation was kept at 4.7 per 1,000 inhabitants (estimated). The epidemiological situation showed no improvement over the previous years, but a comparison with that in 1967, when the three-year plan was launched (and when the parasites index was 9.2 per 1,000 inhabitants) reveals a steady decline of about 50% per year in the parasite index, which is to say the plan achieved 50% of its objective.

PAHO/RB, PAHO/SMF, WHO/RB

UNICEF

GUATEMALA-0300, Smallpox Eradication

Purpose: Maintenance of the smallpox-free status of Guatemala by keeping the immunization level of the population at no less than 80%; strengthening of the epide-

IX. PROJECT ACTIVITIES

miological surveillance service; and training of medical and paramedical personnel in techniques of vaccination, smallpox diagnosis, epidemiological research, and preventive measures.

Probable duration: 1970-1973.

Assistance provided: Advisory services by projects AMRO-0103 and -0300 staff; equipment and supplies.

Work done: Initial work was done on the preparation of the plan of operations and the programming of vaccination activities.

WHO/RB

GUATEMALA-2100 (-2101), Engineering and Environmental Sciences

Purpose: Development of water supply and environmental sanitation programs in urban and rural areas of the country.

Probable duration: 1965.

Assistance provided: 1 sanitary engineer; 1 short-term fellowship.

Work done: In the rural area, 52 small water supply systems were completed, providing service to 64,210 persons; and 14 to serve a total population of 23,850 were under construction (180%). A total of 7,297 latrines, serving some 36,000 persons, were installed (60%).

Twenty-four committees were organized to manage rural water supply systems built by the Division of Environmental Sanitation and collect the water-use charges (100%).

A program for improvement of floors in houses—with cement supplied by the Division of Environmental Sanitation and labor and materials by the occupants—was carried out on a trial basis in the village of Santa Cruz with very successful results.

A short orientation course in general sanitation was given for 20 sanitation inspectors lacking formal training in this field.

PAHO/RB

GUATEMALA-2300, *Aedes aegypti* Eradication (1968-1970) PAHO/RB

The purpose was to eliminate the *A. aegypti* reinfestation in the city of Escuintla and to intensify the surveillance system in the country. The Organization provided a small amount of supplies and equipment, including one vehicle, and technical advisory services by staff of Headquarters and of projects AMRO-0103 and -2303.

Guatemala was declared free of *A. aegypti* in 1958. In the wake of *aegypti* positivity in El Salvador, a surveillance system was established in Guatemala and in 1967 Escuintla was also found positive.

During 1968 and 1969 a thorough survey was made of the suspected areas while at the same time periodic-cycle spraying was carried out. Up to November 1970, 56 localities had been inspected; of the 49,968 houses registered there, 19,130 were inspected and found to be negative. All ports and the localities along the borders with El Salvador and Mexico were inspected, as was the Escuintla area (2 inspections), with negative results.

A plan of operations was drawn up for the project, based on (a) quarterly inspection of 33% of the houses in international ports, border localities, and the localities found

positive in 1967; (b) inspection twice a year of 10% of the houses in the localities most exposed to reinfestation. The *A. aegypti* surveillance service continued to be operated by the Division of Epidemiology.

GUATEMALA-3100, Health Services

Purpose: Adjustment of the technical and administrative structure of the Ministry of Public Health and Social Welfare to enable it to carry out integrated programs; and formulation of a National Health Plan including all resources of the sector.

Probable duration: 1954.

Assistance provided: 1 nurse, 2 short-term consultants, 1 temporary adviser, and advisory services by Zone III Office and project Guatemala-2100 staff; 12 short-term and 3 long-term fellowships.

Work done: The reorganization of the services of the Ministry of Public Health and Social Welfare continued to be carried forward at the central, intermediate, and local levels. Internal regulations for the divisions and other units at the central level were drafted, and a document on technical standards for the formulation and implementation of basic health programs was prepared (100% of the target). The drafting of a new Health Code was completed (80%). A start was made on technical and administrative organization of the 5 health regions and 23 health areas and on the training of personnel for the integration of services.

Health Region V was selected to serve as a model for developing an organizational scheme (20%). Integration of services at the local level was furthered through the consolidation of health centers and hospitals under a unified command (100% of the first stage). Preliminary planning work was done in maternal and child care, immunization, and environmental sanitation (20%).

Installed capacity was increased in 2 health centers and 14 posts.

The immunization programs were continued at similar levels to those of the preceding years. During the first 9 months, 15,960 persons were vaccinated against smallpox; 35,254 children under 5 years, with DPT (2 doses); 6,363 against poliomyelitis (2 doses of Sabin vaccine); and 2,090 against measles. During the first 6 months 18,832 children under 5 (15% of the susceptible population) were vaccinated with BCG.

Medical care was provided to 28,748 pregnant women (11.5% of the target) and to 14.5% of the estimated number of children under 5 in the country.

A national and 2 regional seminars were conducted for a total of 256 officials, and a course in public health for 20 medical officers of the health areas (50%).

Twenty physicians attended an intensive basic course in public health, 13 nurses attended short courses in hospital care, and 220 nursing auxiliaries were trained.

An interagency committee was established to study the teaching requirements and the types of personnel needed and to develop a uniform training policy for the various institutions.

WHO/RB

UNICEF

GUATEMALA-3300, Laboratory Services

Purpose: Technical-administrative reorganization of the health laboratories; training of their staff; and expansion of facilities for the preparation of biologicals to cover zonal requirements.

Probable duration: 1964-1972.

Assistance provided: 2 short-term consultants; equipment and supplies.

Work done: Regulations for the organization of the country's health laboratories were approved in March (100%). Advisory services were provided in the study being made for the purpose of reorganizing the Central Tuberculosis Laboratory (100%). The hospital and health center laboratories were integrated in 9 communities (64%). The annual 10-month course for laboratory technicians was under way (100%). An evaluational course on tuberculosis diagnosis held during the year was attended by 11 laboratory technicians from health facilities in Region V (100%).

PAHO/OF, WHO/UNDP

GUATEMALA-4800, Medical Care Services

Purpose: Strengthening the country's medical care programs to meet the demand, in coordination with other health programs.

Probable duration: 1968-

Assistance provided: Advisory services by Headquarters and project AMRO-4803 staff.

Work done: The manual of general standards for hospital and other medical care services was put into use (100% of the target), as was the standard medical records form for departmental hospitals (100%). Region V began to operate as a demonstration area for integrated services, and an administrative reorganization of Quezaltenango Hospital was started (50%). Five new outpatient clinics were placed in service.

As the first stage of the planning for the metropolitan area, a study on reorganization of Roosevelt Hospital was carried out (50%). A national social welfare congress held during the year discussed the coordination of Ministry of Health and social security services.

GUATEMALA-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters and project AMRO-6203 staff.

Work done: A total of 147 copies of the *Tratado de patología*, 150 of *Bioquímica*, 150 of *Fisiología humana*, and 42 of the *Manual de farmacología* were sold. The country requested 72 additional copies of the first and 75 of the second.

GUATEMALA-6200, Medical Education

Purpose: Strengthening of medical education by improving the training of medical-faculty members and develop-

ing a 10-year plan to reorganize the instruction and provide increased emphasis on a medicosocial approach.

Probable duration: 1965-1972.

Assistance provided: Advisory services by Zone III Office and project AMRO-6203 staff; 1 long-term fellowship.

Work done: The 10-year plan for reorganization of medical education was carried forward. In regard to curriculum changes, the first phase of the plan (biology) was completed, and the second phase (study of the individual, the family, and the sick community) was started. The authorities appointed a committee of 3 professors to evaluate the first phase.

A total of 105 physicians were graduated (as against 47 in 1968 and 60 in 1969).

A Committee for Coordination of Health Education, composed of representatives of the Ministry of Public Health and Social Welfare, the General Health Services Department, the School of Medicine of San Carlos University, the Guatemalan Social Security Institute, the Institute of Nutrition of Central America and Panama, and the Department of Nursing Education, was established in October.

PAHO/RB

GUATEMALA-6400, Sanitary Engineering Education

Purpose: Improvement in the technical training of professional and subprofessional personnel working in the field of environmental sanitation.

Probable duration: 1967-1975.

Assistance provided: 3 short-term consultants, and advisory services by project Guatemala-2100 staff; 1 grant.

Work done: A short course on stream pollution control and evaluation was given for 25 engineers; one on chlorination of water supply systems was also offered. Taking advantage of this, a symposium of graduates of the Regional School of Sanitary Engineering was held, with 29 engineers from the various Central American countries and Panama in attendance.

PAHO/RB

GUATEMALA-6500, Veterinary Medical Education

Purpose: Improvement of the quality of teaching in the School of Veterinary Medicine of San Carlos University.

Probable duration: 1963-

Assistance provided: 1 short-term consultant, and advisory services by project AMRO-0703 staff; supplies; 1 long-term fellowship.

Work done: A study was made at the School of Veterinary Medicine on possible expansion of activities. The first national congress on veterinary medicine and animal industry was held. Construction of a new building for the School, financed with the help of a long-term loan from the IDB, began during the year. The School has agreements with the Central American Regional Office of AID and the University of Frankfurt, Germany, for the exchange of professionals.

PAHO/RB

GUATEMALA-6600, Dental Education

Purpose: Assistance in guiding the dental curriculum toward a knowledge of the extent of oral health problems and their conditioning factors; and inclusion of preventive and public health disciplines in the curriculum.

Probable duration: 1969-

Assistance provided: Advisory services by Zone III Office staff.

Work done: Implementation of the new 6-year program of study continued to make progress, with the inclusion of practical instruction in the communities. This instruction, in which prevention and public health are grouped together, centers around three areas: intensive intramural practice teaching, in the first 4 years (observation, field surveys, and progressive application of solutions); regular programs in the next-to-last year (dental programs in marginal areas, emergency dentistry in hospitals, and weekend dentistry programs); and supervised professional practice in the last undergraduate year (10 months of dental practice in a rural community, during which the students serve as "practical dentists" under the technical and administrative supervision of the teaching staff). The basic program is aimed, in general, at providing the fullest possible knowledge of the community (collective aspect) and, specifically, of the private practice of dentistry (individual aspect). During 1970, all 37 last-year students engaged in supervised practice in as many communities (100%).

GUYANA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1961-

Assistance provided: 1 sanitarian, and advisory services by Headquarters and project AMRO-0201 staff; antimalaria drugs; a limited amount of supplies.

Work done: The densely populated coastal area, with 680,000 inhabitants, was considered free of malaria transmission at the end of 1970. In the interior there were 15 imported cases of malaria. A total of 63,623 smears were examined, with a slide positivity rate of 0.03% (0.04% in 1969). The attack measures consisted of house-spraying in the interior areas and distribution of medicated salt. Target accomplishments were 88.2% for house-spraying and 84% for salt distribution. Surveillance was intensified and the whole of the interior was ready to enter the consolidation phase.

The situation was evaluated at the year's end, and it was decided to suspend distribution of medicated salt through commercial channels. Surveillance staff, however, will continue to distribute the salt to selected groups, particularly balata bleeders and their families, comprising a total of some 3,000 persons in the Rupununi District and about 1,000 more in the rest of the interior.

PAHO/RB

UNICEF

GUYANA-2100, Engineering and Environmental Sciences

Purpose: Planning and execution of programs to improve environmental sanitation conditions; and training of professional and auxiliary personnel.

Probable duration: 1961-1975.

Assistance provided: 1 sanitary engineer, and advisory services by project AMRO-2101 staff; 2 long-term fellowships.

Work done: The final report of the environmental sanitation survey was completed and a series of recommendations for programming activities were prepared. To facilitate water quality analysis, membrane-filter equipment was installed at the Central Medical Laboratory. Following discussions with various agencies concerning a feasibility study on sewerage in the Greater Georgetown area, a request for assistance from UNDP/SF was authorized and a draft application was being prepared. The engineer completed his degree in sanitary engineering and 2 public health inspectors received university training. An inservice training course was organized for 75 public health inspectors.

WHO/RB

GUYANA-2300, Aedes aegypti Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1969-1974.

Assistance provided: Advisory services by Headquarters and project AMRO-2301 staff.

Work done: Following a complete reorganization, the program extended its operations in September 1969 to the entire Georgetown area, which includes the East and West Demerara River and Lower and Upper East Coast districts, with a total of approximately 65,000 houses.

In 1970 the program achieved very significant results. Out of the 77 localities which had shown positive findings in 1970, 13 had become negative and 13 presented positivity rates of less than 1%. The index of houses with positive findings, which had been 17.4% in the initial survey and 4.2% at the end of 1969, dropped to 1.1% by the end of 1970.

Preparatory phase activities began in some of the municipalities of Berbice and Demerara. A survey in 111 localities in the Pomeroon River area and the Municipality of Mazaruni indicated negative results for *A. aegypti*. Routine inspection of 961 ships and other international carriers also gave negative results.

GUYANA-3100, Health Services

Purpose: Strengthening and integration of health services and their extension to rural areas.

Probable duration: 1963-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative); 4 short-term consultants; common services; 6 short-term and 4 long-term fellowships.

Work done: The draft of the first National Health Plan was completed, with the exception of the sections on human and financial resources (80% of the target). A preliminary appraisal was made of the maternal and child health services, and a projection of financial resources for the development of a comprehensive 3-year program was prepared. Technical assistance was given in the following services: health education, dental health, medical care (hospital reconstruction feasibility study and neurosurgical services), zoonoses,

communicable disease control, and administrative and management practices.

WHO/RB

UNICEF

GUYANA-3200, Nursing

Purpose: Improvement of nursing services by means of improved nursing education.

Probable duration: 1965-

Assistance provided: 4 short-term consultants, and advisory services by project AMRO-6301 staff; books and teaching supplies; 2 long-term fellowships.

Work done: Coordination of nursing services improved following the appointment of a Principal Nursing Officer in the Ministry of Health. The 8-week summer institute for senior and middle-level personnel, on newer trends in nursing administration and supervision, was attended by 29 nurses from the public and private sectors. Plans for the next year's institute were completed. The Teaching-Day Committee for inservice education was reorganized, and provision was made for greater participation by all levels of nursing personnel. Three 1-day teaching sessions were held in 3 centers for a total of 446 nurses.

The plan for the basic nursing education curriculum was completed. Under the new program for nursing assistants, 23 out of the first 24 candidates successfully completed their preparation; 108 new candidates began their training. In the advanced nursing education course at the University of the West Indies, 2 candidates obtained their certificates, 1 in nursing education and 1 in administration.

WHO/UNDP

GUYANA-4200, Nutrition

Purpose: Organization and development of a national nutrition program; improvement of the production, preparation, marketing, and preservation of foodstuffs; and training of professional and subprofessional personnel.

Probable duration: 1968-1972.

Assistance provided: 1 public health nutritionist.

Work done: An evaluation was made of the applied nutrition program, which stepped up its activities in 15 pilot areas. To reinforce the educational program for mothers at clinics in the pilot areas, 3 nutrition auxiliary workers were appointed in the Ministry of Health.

The Government approved the budget for a national nutrition survey, which was scheduled to take place in April-June 1971, with the assistance of the Caribbean Food and Nutrition Institute. Provisions for a Nutrition Unit in the Ministry was included in the draft National Health Plan. A post of public health nutritionist was advertised.

Nutrition training activities were held for nurses, public health inspectors, and hospital food-service workers (30% of the year's target).

PAHO/RB

FAO, UNICEF

HAITI-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1961-

Assistance provided: 1 medical officer, 1 sanitary engineer, and 3 sanitarians; antimalaria drugs; 1 long-term fellowship.

Work done: The entire originally malarious area was in the attack phase. A total of 1,354,700 houses (98.2% of the target) were sprayed with DDT. A network of drainage ditches was completed in highly vulnerable areas where the vector is resistant to DDT (100%); 5,445 liters of gasoil/gasoline were applied as a larvicide in that area, and another 6,611 liters in other areas of the country (100%). The geographic field survey was completed (100%). An average of 2,350 volunteer aides took part in the passive search for malaria cases, locating 62.8% of the positive cases in the country. The active search was carried out through monthly visits in 8 districts representative of the originally malarious area (100%).

PAHO/SMF

UNICEF

HAITI-0600, Yaws Eradication

Purpose: Eradication of yaws and maintenance of the country free from smallpox.

Probable duration: 1950-

Assistance provided: Advisory services by Zone II Office staff and of other projects in the country; a limited amount of supplies.

Work done: Treatment was given to the 32 cases of yaws reported, as well as to 673 contacts. Vaccinations against smallpox were administered to 148,983 persons, bringing the proportion of the total population vaccinated in the past 9 years up to 55%.

WHO/RB

HAITI-2200, Water Supplies

Purpose: Expansion of the water supply system of Port-au-Prince and, later, of the systems for other urban and rural localities in the country.

Probable duration: 1960-

Assistance provided: 1 sanitary engineer, 1 short-term consultant, 1 temporary adviser, and advisory services by Headquarters and projects Mexico-2200 and AMRO-2102 staff; 2 short-term fellowships.

Work done: A review was made of the organization and administration of the Port-au-Prince water company. The IDB granted a loan of \$5,100,000 for the further improvement and expansion of the water system, and another of \$72,000 for the implementation of administrative innovations, including the automatization of invoicing and the preparation of new internal rules and procedures. Hydrogeological studies to explore new water sources in the higher parts of the Port-au-Prince area were started.

PAHO/RB

HAITI-3100, Health Services

Purpose: Development of integrated health services at the national and local levels; and establishment of a demonstration and training area.

Probable duration: 1957-

Assistance provided: 1 medical officer (the PAHO/WHO

IX. PROJECT ACTIVITIES

Country Representative), 1 nurse, 1 sanitarian, and advisory services by staff of Headquarters and of projects AMRO-0102, -0702, -3202, and -3502; 1 secretary; supplies; common services; 4 short-term and 1 long-term fellowships.

Work done: Quadrennial projections of activities were prepared, and a Planning Section was set up. The national system for morbidity reporting was reorganized. The number of medical institutions sending regular weekly reports rose from 17 to 45 during the year. The central-level Nursing Department was reorganized; a program for the creation of an intermediate-level nursing structure was drawn up; and a first District Nurse was appointed. In the Cayes district, the project for the demonstration of integrated health services was started. A draft plan of operations for the Mirebalais experimental sanitation project was prepared.

**PAHO/RB, PAHO/SFHP,
WHO/RB, WHO/UNDP**

UNICEF

HAITI-3300, Laboratory Services

Purpose: Improvement of the services of public health, hospital, and field laboratories.

Probable duration: 1953.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by Headquarters and project Dominican Republic-3300 staff; equipment and supplies.

Work done: Equipment and supplies continued to be furnished to the laboratory of the General Hospital in Port-au-Prince, which serves as a practice facility for the School of Laboratory Technicians, and to the Public Health Laboratory. A review of the role of the Central Public Health Laboratory was made, and proposals for its further improvement and expansion were being formulated.

PAHO/RB

HAITI-4200, Nutrition

Purpose: Implementation and evaluation of pilot activities to combat malnutrition, encompassing its technical, educational, and economic aspects, and the dissemination of practical nutritional concepts whose soundness has been demonstrated by institutions in the health and educational sectors.

Probable duration: 1961-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by project Dominican Republic-4200 staff; grants for local costs.

Work done: The Office of Nutrition and the Ministry of Public Health and Population continued to establish and operate nutrition rehabilitation centers. At the year's end there were 30 such centers in the country, of which 15 were involved in the execution of joint programs with the agricultural services. Also in operation were 15 centers organized by private institutions in accordance with the standards set by the Office of Nutrition.

PAHO/OF

Research Corporation

HAITI-4205, Corn Breeding Improvement

(1968-1970) Grant to PAHO: Research Corporation

The purpose was to increase the country's corn production

through the improvement of native species. The Organization furnished advisory services through the PAHO/WHO Country Representative and other international staff assigned to the country, as well as equipment and supplies and yearly grants for local expenses.

Several studies were undertaken to ascertain the methods and techniques best suited for increasing the yield of various local and exotic species of corn, and to evaluate alternatives with respect to planting seasons, use of fertilizers, plant density, frequency of irrigation, etc. Results were measured both in terms of weight and on the basis of quantitative and qualitative chemical analyses, conducted with the cooperation of the Virginia Polytechnic Institute (U.S.A.). The project was interrupted in February, pending a thorough evaluation of the results thus far obtained.

HAITI-4900, Health and Population Dynamics

Purpose: Planning and implementation of a national family planning program, integrated with the basic health services, and specifically with maternal and child care.

Probable duration: 1970-

Assistance provided: Advisory services by Headquarters staff; supplies.

Work done: Data on health and sociological conditions, and more specifically, on existing family planning activities and maternal and child health facilities, were collected through field visits. Plans for a national program were drawn up.

PAHO/RB

HAITI-6200, Medical Education

Purpose: Improvement of medical education at the National University, with emphasis on preventive and social medicine, basic sciences, and medical pedagogy.

Probable duration: 1967-

Assistance provided: 2 short-term consultants, and advisory services by project Haiti-3100 staff; supplies.

Work done: Construction of the new building for the School of Medicine was started. First plans for the establishment of a medical library were drawn up. The agreement for the School's participation in the medical textbook program was signed.

PAHO/RB

HAITI-6300, Nursing Education

Purpose: Supply of nursing and/or auxiliary personnel in sufficient number to fill prospective employment possibilities with persons suitably trained to meet the needs of the country's health services.

Probable duration: 1967-

Assistance provided: 1 short-term consultant; equipment and supplies; 1 short-term fellowship.

Work done: The Ministry of Public Health and Population approved a proposed revision of the program of studies of the country's 3 schools of nursing. Fourteen professors from those schools attended a 4-week advanced training course. The National School of Nursing Auxiliaries was supplied with library material and its quarters were enlarged

to include an additional classroom for 50 students, as well as other units.

PAHO/RB

UNICEF

HONDURAS-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1956-

Assistance provided: 1 malariologist, 1 sanitarian, and advisory services by project AMRO-0203 staff; supplies; 1 short-term fellowship.

Work done: A program was prepared for the 3rd year of the revised 3-year plan, and the program as a whole was revised.

During the year, 191,383 houses (100% of the target) were sprayed, and direct protection was provided to 928,051 inhabitants. Between July and December, 2 quarterly cycles were completed, with 48,673 houses sprayed and protection provided to 214,050 inhabitants. In addition, 8,394 emergency sprayings were performed and 41,443 inhabitants were protected.

Collective treatment with antimalaria drugs continued during the first half of the year in areas where the vector is resistant to DDT; 130,000 persons in these areas were to be treated in 14-day cycles, but the population was reluctant to take the drugs and only 56,381 persons (43.4%) actually received treatment. A total of 357,436 blood smears were examined, the number of positives being 34,537. A course including 16 hours of theoretical instruction and 48 of practical instruction was offered in December for 14 workers in charge of spraying with OMS-33.

WHO/RB

UNICEF

HONDURAS-0400, Tuberculosis Control

Purpose: Improvement of the tuberculosis control programs.

Probable duration: 1962-1974.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and project AMRO-0403 staff; 1 short-term fellowship.

Work done: In Health Districts I, III, and VI, tuberculosis control activities were inaugurated in 67 general health services (100% of the target). Four mobile units were assigned to the control program (100%). Performance and attainment of goals were as follows:

Activity	Per cent achieved
New cases attended to: 998	37.1
Diagnostic bacilloscopies: 6,269	47.4
Bacilloscopic examination of patients under treatment: 5,639	34.9
X-ray examinations: 1,015	38.3
Outpatient consultations: 10,035	93.2
Drug treatments: 998	37.4
Home visits: 1,521	45.7
Tuberculin tests: 65,499	101.5
BCCG vaccinations (doses): 192,460	96.6
Chemoprophylactic treatment of contacts: 569	58.7
Treatment of ambulatory cases: 545	54.6
Patients hospitalized: 453	45.4

Training was given to 41 physicians from the general health services (36.3%), 19 graduate nurses (52.8%), 112 nursing auxiliaries (41.9%), and 21 laboratory technicians (39.6%). Two short courses were held on tuberculosis bacteriology.

PAHO/RB

HONDURAS-2200, Water Supplies

Purpose: Organization, planning, and implementation of national water supply programs; and improvement of existing services.

Probable duration: 1960-

Assistance provided: Advisory services by staff of Headquarters and of projects AMRO-2103 and -2203; 1 long-term fellowship.

Work done: Advisory services were provided in administration, operation and maintenance of water supply systems; rates; groundwater surveys; and the project for construction of the future water supply system for Tegucigalpa.

Eleven urban and 72 rural water supply systems were built and 6 urban systems were improved with funds from AID, IDB, and the National Autonomous Water and Sewerage Service (SANAA), and assistance from the communities. A project for increasing the flow from the sources supplying the Central District was completed, doubling the supply of water. A slow filtration plant for the treatment of water from the sources on the Guacerique River that supply part of the Central District was under construction.

A preliminary application was submitted to the IDB for a loan to finance the construction of the future water supply system for the Central District; the improvement of 15 urban water systems; and the completion of the water distribution and sanitary sewer systems of the Central District.

Short courses were offered for technical and administrative personnel of SANAA.

This project ended in 1970; from 1971 on it will be included in project Honduras-2100.

WHO/RB

HONDURAS-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1968-1973.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and project Honduras-0200 staff; a limited amount of supplies.

Work done: Activities were limited to the city of San Pedro Sula and certain neighboring localities. San Pedro Sula received 3 cycles of treatment with Abate and Baytex. The index of positive houses dropped from 32.4% in 1969 to 1.0% in 1970.

Of the remaining 34 reinfested localities, 22 received 1 cycle of treatment, after which 9 of them showed negative results.

WHO/RB

HONDURAS-3100, Health Services

Purpose: Gradual organization of integrated health services at both the central and local levels; and training of personnel.

Probable duration: 1955-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 sanitary engineer, 1 public health nurse and 1 short-term consultant; supplies; common services; 4 short-term fellowships.

Work done: Work began on placing the country's first Coordinated Sanitary District in operation (25% of target). A revision of the manual of procedures for local health services was started (50%). Eight health centers and 3 sub-centers were established (100%). The pilot plan for utilization of the medical certification of cause of death continued to be carried out in the areas selected (100%). The activities of the family planning program carried out by the Ministry of Public Health and Social Welfare were coordinated, with assistance from AID (50%). Consultations were provided to 51,054 pregnant women (44.2%), 70,558 unweaned infants (50%), and 114,798 preschool children (53.1%).

In the leprosy control program, 1,259 persons (15.7% of target), were examined and 14 new cases (70%) and 20 contacts (12.5%) were discovered; 1,039 cases and contacts (73.2%) were under surveillance; 5 cases (2.1%) were treated; and 20 contacts (80.0%) were given preventive treatment.

The health education programs continued their regular operations (100%).

A Veterinary Public Health Division including 2 sections (Sanitary Food Inspection and Zoonoses Control) was established, and 2 veterinarians were appointed to direct the sections (100%).

The following vaccines were administered to children of less than 1 year: smallpox, 3,822 (4.6%); DPT, 29,718 (45.4%); poliomyelitis, 32,002 (48.9%), and measles, 3,056 (4.6%).

The Nursing Division continued to organize nursing services in the Ministry's hospitals (50%).

The Nutrition Section distributed iodized salt for consumption by 80% of the population (88%) and installed 4 nutritional rehabilitation services for persons suffering from first-degree malnutrition (100%) and 2 nutrition education and rehabilitation services for persons with second-degree malnutrition (200%).

In San Pedro Sula, activities were started for integrating the Leonardo Martínez Hospital with the Health Center (25% of target).

PAHO/RB, WHO/UNDP, WHO/OF

HONDURAS-3102, Fellowships

Fifteen short-term and 7 long-term fellowships were awarded.

WHO/RB

HONDURAS-3104, Emergency Rehabilitation Program
(1970) Grant to PAHO: Organization of
American States (UNESCO, UNICEF)

The purpose of this project was to rehabilitate the health

infrastructure in the areas bordering on El Salvador, by carrying out an emergency program. The Organization provided advisory services by the PAHO/WHO Country Representative and staff of projects Honduras-3100 and AMRO-2203, as well as equipment and supplies.

Twenty sets of basic equipment, 1 of surgical equipment, and two of laboratory equipment, as well as 30 refrigerators, 28 thermos containers, 1 ambulance, 12 jeeps, and 2 trucks were provided to 35 health centers (100% of the target).

Ten water wells and 2,000 latrines were dug (100%). Three well-drilling machines were repaired (100%). Six water supply systems were under construction (15%), and 10 wells were being drilled (25%).

HONDURAS-3300, Laboratory Services

Purpose: Development of the laboratory services of the Ministry of Public Health and Social Welfare.

Probable duration: 1967-1972.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and project AMRO-3303 staff; a limited amount of supplies.

Work done: A senior level working group was established in the Ministry to speed up the organization of health laboratories in the country (100%), and a set of draft regulations for their organization was prepared (100%).

A start was made on construction of the new building for the central laboratory (70%). UNICEF provided equipment and material for the installation of 10 laboratories.

PAHO/RB

HONDURAS-3700, Health Planning

Purpose: Formulation of the Sectoral Health Plan for 1972-1977 with participation of all health sector institutions, including review of the plan of investments requiring external financing.

Probable duration: 1970-

Assistance provided: 2 short-term consultants, and advisory services by Headquarters staff, the PAHO/WHO Country Representative, and project AMRO-3703 staff.

Work done: The preliminary version of the Sectoral Health Plan was prepared and published (75% of the target).

PAHO/RB

HONDURAS-4800, Medical Care Services

Purpose: Improvement in the medical care services of the State institutions, including the social security institutions.

Probable duration: 1965-1974.

Assistance provided: 4 short-term consultants, and advisory services by the PAHO/WHO Country Representative and project AMRO-4803 staff.

Work done: The Maternal and Child Hospital in Tegucigalpa completed its organization and was operating at full capacity (100% of the target). The hospital completed its system of medical records and statistics and continued the preparation of a standard form (50%).

The administration of hospital nursing services was improved (60%).

Initial work was done on the planning of Health District

III, which will be the country's first coordinated district (25%), and agreements were signed with the Honduran Social Security Institute for the purpose of avoiding duplication of services in that health district (50%).

The rate of turnover per general hospital bed was increased, with the percentage of occupancy rising and the average stay declining by 5 days per patient discharge in most of the general hospitals (75%).

WHO/RB

HONDURAS-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: The office organized in the School of Medical Sciences of the National Autonomous University of Honduras to promote and sell the medical textbooks operated efficiently. A total of 39 copies of the *Tratado de patología*, 10 of *Bioquímica*, 119 of the *Manual de farmacología*, and 139 of *Fisiología humana* were sold. At the School's request, the Organization sent 80 copies of *Bioquímica*, 90 of the *Tratado de patología*, and 70 of the *Tratado de pediatría*.

HONDURAS-6200, Medical Education

Purpose: Development of the School of Medical Sciences of the National Autonomous University of Honduras.

Probable duration: 1965-1974.

Assistance provided: 3 short-term consultants, and advisory services by the PAHO/WHO Country Representative and project AMRO-6203 staff; 1 short-term fellowship.

Work done: The National Congress did not approve the new charter for the University, and this prevented the use of the divisional nomenclature envisaged in the plan for overall development of the University. In view of this, and in order to achieve the basic purpose of creating a larger institution, it was decided to designate the proposed division as the School of Health Sciences. The Board of Directors of the School was considering a plan of reform for which preliminary studies were being made. One of the studies calls for diagnosing the country's health situation through an analysis of existing personnel based on the leading characteristics of the student body and including an exhaustive evaluation of academic and administrative conditions at the School.

WHO/RB

HONDURAS-6300, Nursing Education (1965-1970) PAHO/RB

The purposes of this project were: planning and implementation of a 5-year program of nursing studies at the academic university level; improvement of the basic nursing curriculum in hospital schools; and training of graduate nurses through a program at the Bachelor's level. The

Organization provided the services of 1 nurse educator (1965-1969) and 1 short-term consultant (1970), advisory services by nurses assigned to projects British Honduras-6300 (1965) and AMRO-6203; and equipment and supplies.

The program of nursing studies at the academic university level, approved by the Academic Commission of the University and the University Council in December 1969 for the National School of Nursing, comprises: 1 year of general university studies, 3 years of nursing and general education, and 1 year of internship or social service. The training given is intended to turn out nurses capable of working in national health programs and contributing to their success; training nursing personnel at the various levels; and serving as administrators who, by applying scientific criteria and reasoning, can offer comprehensive nursing services to individuals, families, and the community. The structure and operation of the School are based on the charter of the University. The School is part of the School of Medical Sciences and is at the same level as the other departments. It is managed by a Director and an Assistant Director. Its program was begun in 1966 with 3 foreign professionals (pending the training of 5 Honduran nurses with a degree of Bachelor in nursing) and 16 students. A program of fellowships was prepared—carried out under other Honduran projects and with contributions from AID and the National Autonomous University of Honduras—for the training of faculty and students. Three nurses have completed their studies at the Bachelor's level and 1 at the Master's level. The number of students increased from 16 in 1966 to 28 in 1970.

In order to improve the basic nursing curricula in hospital schools, a technical council was established with representatives from the Ministry of Public Health and Social Welfare, the nursing profession, and the Vicente D'Antoni Hospital, the object being to reach an agreement to convert the program of the school in that hospital to one at the intermediate level. This part of the project was not carried out, owing to a difference of opinion as to the professional level that the graduates should have. However, an evaluation of the present program was completed.

As for the training of graduate nurses through a Bachelor's program, representatives of the Ministry and of the Department of Nursing Education of the University, a Peace Corps volunteer, and personnel of the Organization prepared a preliminary proposal which was discussed and approved at the level of the University in September 1969. This program was instituted in February 1970 with 8 nurses who were taking supplementary studies on a part-time basis. Since 4 of the nurses withdrew from the program, an effort was being made to interest the institutions in awarding fellowships to their professionals.

HONDURAS-6400, Sanitary Engineering Education

Purpose: Improvement in the teaching of sanitary engineering at the National University of Honduras and in the advanced professional training of personnel working in national programs of sanitary engineering and environmental sanitation.

Probable duration: 1965-1974.

Assistance provided: 2 short-term consultants, and advisory services by project Honduras-3100 staff; 1 grant.

Work done: A short course on administration and organi-

zation of water supply and sewerage services was attended by 32 students; the manual of the course was printed and distributed.

PAHO/RB

JAMAICA-2100, Engineering and Environmental Sciences

Purpose: Improvement of environmental conditions by establishing health standards and programs for housing, food sanitation, industrial health, and air, water, and soil pollution control.

Probable duration: 1968-

Assistance provided: 1 sanitary engineer, and advisory services by project AMRO-2101 staff; 1 short-term and 1 long-term fellowship.

Work done: The Department of Sanitary Engineering of the Ministry of Health continued its environmental sanitation activities, although at a slower rate than in the preceding years owing to the shortage of professional sanitary engineering staff. A plan of reorganization of the Department was adopted for implementation in the early months of 1971. The Ministry drew up a plan of operations in this connection, including the recruitment of 4 sanitary engineers, evaluation of the maintenance and operation of rural water services, and preparation of a national water services program for submission to the IDB.

WHO/UNDP

JAMAICA-2200, Water Supplies

Purpose: Development of water supply programs in urban and rural areas of the country, including improvement in the organization and administration of the Kingston and St. Andrew Water Commission and the National Water Authority.

Probable duration: 1963-1970.

Assistance provided: Advisory services by projects Jamaica-2100 and AMRO-2101 staff.

Work done: The Cobre River waterworks to increase Kingston's supply by 17.5 million gallons per day was under construction. This project is being financed with a US\$5 million loan from the World Bank and a contribution of \$4.1 million from the Government. The possibility of obtaining water for Kingston from additional sources at Blue Mountain and in the northeastern part of the country was considered.

The National Water Authority was constructing 12 large water supply systems at a cost of \$6.2 million to serve a total population of 53,400. Another 13 systems, to serve a total of 135,900 persons at a cost of approximately \$17.3 million, were being designed. A feasibility study on improvement of the Kingston sewerage system was completed.

Water supply activities in Jamaica will henceforth be reported under project Jamaica-2100.

JAMAICA-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1969-1976.

Assistance provided: Advisory services by projects AMRO-2300 and -2301 staff.

Work done: The country began its eradication campaign

with 3 spraying cycles in the District of Spanish Town, which served as a pilot area for the training of personnel and the development of administrative and operational systems for the future island-wide campaign. A complete plan of operations was worked out for the preparatory phase of the national campaign. The Government submitted an application for financial assistance to the United Nations Development Program.

JAMAICA-3100, Health Services

Purpose: Increasing life expectancy at birth by one year by 1975.

Probable duration: 1963-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 nurse, 1 administrative methods adviser, and 2 temporary advisers; 18 short-term and 4 long-term fellowships.

Work done: In the Ministry of Health, recommendations on the administrative structure, particularly in regard to personnel management, budget and accounts, supply management, and general services, were being implemented (75% of the year's target). A seminar on management of health services was conducted for senior officials, and overseas training in administration was provided for 6 staff members. The Ministry prepared an extensive inservice training program for 1971, and initiated training in budget and accounting (100% of the target).

Quadrennial projections were prepared for the country. All targets for the year were met in regard to the launching of a comprehensive maternal and child health program, training of professionals (4) in the health planning course, and inclusion of a post for a health planning officer in the 1970-1971 budget.

Two persons attended the course in methodology of nursing studies. Six nurses were trained in advanced nursing education; 24 participated in the continuing education program; and 24 completed the midwifery course. Four nurse-tutors received postbasic training at the University of the West Indies, and 2 new courses for assistant nurses were started with 45 students.

PAHO/RB, WHO/RB

JAMAICA-4300, Mental Health

Purpose: Decentralization and upgrading of psychiatric care.

Probable duration: 1964-1972.

Assistance provided: 1 medical officer, 1 short-term consultant, and advisory services by the PAHO/WHO Country Representative; 1 short-term and 1 long-term fellowships.

Work done: At the Bellevue Psychiatric Hospital, a therapeutic program was instituted in the third-admission ward. The demonstration ward continued to be used as a training facility for student psychiatrists. Training in psychiatric and follow-up care was given to 439 persons (medical residents and students, public health nurses, student nurses, and public health inspectors). Teaching in the general hospitals had little impact, and the project as a whole made slow progress.

PAHO/RB, WHO/UNDP

JAMAICA-4500, Radiation Protection

Purpose: Organization of a radiation protection service on a national scale, in order to cope with the problem of radiation exposure, both occupational and general.

Probable duration: 1966-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by project Jamaica-2100 staff; equipment and supplies.

Work done: Two-hundred and thirteen occupationally exposed persons were being monitored, including 28 from 7 other West Indian areas. Studies were continued on the Cesium-137 content in milk.

PAHO/RB**JAMAICA-4800, Medical Care and Hospital Administration**

Purpose: Improvement of medical care and hospital administration.

Probable duration: 1969.

Assistance provided: 3 short-term consultants, and advisory services by the PAHO/WHO Country Representative; and by projects Jamaica-3100 and AMRO-3501 staff; 6 short-term fellowships.

Work done: A seminar on management of health services was conducted for medical officers in charge of hospitals and health centers. Training programs in budget and finance for accounting clerks in hospitals were initiated. At Spanish Town Hospital, construction of the building for a medical records demonstration unit was started. At the Lionel Town and St. Ann's Bay Hospitals, medical records departments were included in the newly built outpatients department/casualty blocks.

WHO/RB**JAMAICA-6100, Public Health Training Center**

Purpose: Preparation of public health inspectors and public health nurses to meet the real needs of Jamaica and the Caribbean area.

Probable duration: 1967-1973.

Assistance provided: Advisory services by Headquarters staff and by personnel assigned to other projects in the country; equipment and supplies.

Work done: In the annual 9-month public health course, 33 inspectors and 16 nurses were trained. Equipment and supplies for setting up a teaching laboratory were ordered and some of the items began to arrive. A joint committee comprising representatives of the Government, the University of the West Indies, the College of Art, Science and Technology, and PAHO was set up in December to advise the Director of the Center on matters of curriculum.

PAHO/RB**JAMAICA-6201, Department of Social and Preventive Medicine (UWI)**

Purpose: Training of physicians and other medical personnel in the field of public health, with special emphasis on health structures found in the Caribbean area.

Probable duration: 1962-1972.

Assistance provided: 3 short-term consultants, and advisory services by the PAHO/WHO Country Representative and by Headquarters and Zone I Office staff; 1 grant.

Work done: Preparations for awarding a postgraduate diploma of public health were completed and teaching will start in April 1971. Six community health aides were trained at Elderslie Health Center (joint program with Cornell University). The studies for the Inter-American Investigation of Mortality in Childhood were completed.

WHO/RB**JAMAICA-6301, Advanced Nursing Education**

Purpose: Development of professional nursing leadership in the Caribbean area by means of: an 11-month postbasic course at the Faculty of Medicine, University of the West Indies, leading to a certificate in nursing education or nursing administration, for approximately 100 general registered nurses from the area in the first 5 years; and implementation of a baccalaureate degree program in nursing.

Probable duration: 1966-1972.

Assistance provided: 1 nurse educator, 1 short-term consultant, 2 temporary advisers, and advisory services by staff of project Jamaica-3100; books and teaching equipment; 5 short-term fellowships.

Work done: Thirty students were admitted to the postbasic course, thus raising the total enrollment since the start of the project to 112 nurses from 14 Caribbean territories; 70 obtained their certificates in either nursing administration or nursing education, apart from the 30 currently enrolled.

Financial support to the program for the next 3 years was pledged by the Bahamas, Barbados, Grenada, Guyana, Jamaica, and Trinidad and Tobago.

A proposal for a baccalaureate degree program in nursing was submitted to the University.

WHO/RB**JAMAICA-6600, Dental Education**

Purpose: Establishment and operation of a school for dental nurses patterned after the type instituted in New Zealand.

Probable duration: 1966-1972.

Assistance provided: 1 short-term consultant, and advisory services by Headquarters staff and by the PAHO/WHO Country Representative; 1 long-term fellowship.

Work done: The school was opened in May 1970 with an enrollment of 25 students. All the teaching staff had been assigned by August.

WHO/RB**UNICEF****MEXICO-0200, Malaria Eradication**

Purpose: Eradication of malaria.

Probable duration: 1956.

Assistance provided: 1 medical officer, 1 epidemiologist, 1 sanitary engineer, and 1 entomologist; equipment and supplies.

Work done: Up to November, 3,042,790 houses in attack phase areas (89.5%) and 347,324 in the consolidation phase

IX. PROJECT ACTIVITIES

areas (97.0%) were sprayed. A total of 1,659,861 blood smears were taken, the slide positivity rate being 3.3% (compared to 2.0% in 1969). The increase in positivity was particularly pronounced on the Pacific slope and was due in part to a lack of sufficient funds resulting in an inadequate level of operations.

PAHO/RB, PAHO/SMF, WHO/UNDP

MEXICO-0400, Tuberculosis Control

Purpose: Improvement in the national tuberculosis control program.

Probable duration: 1960-1974.

Assistance provided: 4 short-term consultants, 2 temporary advisers, and advisory services by project AMRO-0402 staff; equipment and supplies; 7 short-term fellowships.

Work done: Throughout the verification area in Puebla 1,115 microscopic examinations of sputum were performed (100%), and 10,354 X-ray examinations were made in the city of Puebla (93%). Forty-three cases were diagnosed, of which 39 remained under treatment. Contacts registered amounted to 188, and 150 of them were examined (80%). Over-all performance of the targets in the area was estimated at 60%.

In Ciudad Juárez, 20,596 X-rays (48%) were taken and 835 indicated possible tuberculosis (66%); 963 microscopic examinations of sputum were made (27.5%). A total of 138 cases of tuberculosis were diagnosed, 127 of which remained under treatment (92%). A total of 2,100 contacts were registered and 937 examined (44.6%). Over-all performance of the targets for the city was estimated at 40%. Vaccination was administered to 1,917,062 children less than 14 years of age (60%). A high-level seminar on tuberculosis chemotherapy and bacteriology was held; it included a course on bacteriology, attended by 15 microbiologists (100%) and 5 round tables attended by 25 clinical physicians and epidemiologists (100%).

WHO/RB

UNICEF

MEXICO-0700, Zoonoses Control

Purpose: Control of those zoonoses of greatest importance to the country.

Probable duration: 1966-

Assistance provided: Advisory services by project AMRO-0702 staff; 1 long-term fellowship.

Work done: The campaign against rabies in the Federal District was carried forward in its maintenance and extension phase (50% of the target). Seventeen new sets of equipment for the diagnosis of bovine rabies by means of fluorescent techniques were put into operation throughout the country; they will be used also for the diagnosis of canine and feline rabies.

The border rabies control program was revised (100%); and epidemiological surveillance of rabies was instituted, as was notification of cases to the Pan American Zoonoses Center (100%). A total of 42 laboratories were established for diagnosis of the zoonoses (100%). Cooperation was furnished to the laboratory of the National Research Department in the production of rabies vaccine (SRL) and control of its potency (90%). Brucellosis control was extended to all the states

in the country (80%). A total of 800,000 horses were vaccinated against encephalomyelitis.

Several conferences were held on zoonoses control.

WHO/RB

MEXICO-2200, Water Supplies

Purpose: Provision of water and sewerage service to 70% of the urban and 50% of the rural population in the country within a 4-year period (1968-1971).

Probable duration: 1960-1973.

Assistance provided: 1 sanitary engineer and 3 short-term consultants; 5 short-term fellowships.

Work done: With the completion of the water supply programs scheduled for 1970, the goal of providing service to 70% of the urban rural population was reached. The proportion of urban population served by sewerage facilities rose to 50%. In rural areas 5,770,000 inhabitants (28% of the total) were estimated to be served by water supply facilities. Provision of water supply service to 80% of the urban population and a substantial increase in sewerage services were proposed as the target for the next decade. The 109 water supply systems completed during the year (48%) were serving 748,000 inhabitants at a cost of 120 million pesos (US\$9.6 million). In the rural areas, 1,088 water supply facilities were completed (64%), at a cost of 541 million pesos (US\$43.2 million), providing service to 1,100,000 persons. In urban communities, 22 sewerage systems (39%) were completed, providing service to 180,794 inhabitants, at a cost of 17 million pesos (US\$1.36 million).

Investments during the year amounted to 360 million pesos (US\$28.8 million). An intensive study on fluoridation of the water supply for 12 of the country's major cities with a combined population of 4,312,500 inhabitants was being analyzed. Four short courses were held for a total of 207 participants.

PAHO/RB, WHO/RB

MEXICO-3100, Health Services

Purpose: Strengthening of the general health services by training personnel at the technical and auxiliary levels.

Probable duration: 1966-

Assistance provided: 1 short-term consultant, 2 temporary advisers, and advisory services by Zone II Office staff; 13 short-term and 3 long-term fellowships.

Work done: At courses in the School of Public Health and other educational centers in 10 cities, a total of 549 persons were trained: 285 nurses, 180 nursing auxiliaries, 32 health statisticians, 18 sanitation technicians, 18 laboratory technicians, and 16 administrators of local services. UNICEF paid the stipends for one fourth of the participants in the courses; those for the other three fourths were paid by the Government.

WHO/RB

UNICEF

MEXICO-3102, Fellowships

Six short-term fellowships were awarded.

WHO/RB

MEXICO-3105, Continuing Medical Education

Purpose: Provision of facilities to physicians living in rural areas or in small communities far from hospital services or educational centers, to enable them to update their knowledge and improve their technical efficiency.

Probable duration: 1968.

Assistance provided: Advisory services by Zone II Office staff.

Work done: Twenty-seven physicians received inservice training over periods ranging from 10 to 12 days in hospitals and sanatoria of the Federal District of the State of Morelia. The fields chosen by them indicated a preference for pediatrics, obstetrics, and traumatology.

Preliminary activities were begun for the purpose of updating knowledge and improving techniques in hospitals and sanatoria in the States of Chihuahua and Durango.

The number of physicians updating their knowledge during the year was very small, the monthly average being 2.2%.

MEXICO-3300, Laboratory Services

Purpose: Expansion and improvement of the services of the national health laboratories by providing them with a modern structure and adequate organization and facilities for the development of diagnostic techniques and methods, and the production and control of biological products, drugs, and medicine.

Probable duration: 1967.

Assistance provided: Advisory services by project AMRO-3302 staff; equipment and supplies.

Work done: A considerable amount of equipment was provided for lyophilization of BCG vaccine and for the filling and sealing of the ampules. Fermenters were supplied for the deep cultivation of pertussis and diphtheria vaccines. Refrigerated centrifuges were provided to satisfy the needs for production of bacterial and viral vaccines.

See also projects Mexico-3302 and -3303.

PAHO/RB

MEXICO-3301, Immunology Research and Training Center

Purpose: Organization of an immunology training center to prepare highly skilled national and foreign personnel.

Probable duration: 1968.

Assistance provided: 1 short-term consultant, 2 temporary advisers, and advisory services by project AMRO-0102 staff; equipment and supplies.

Work done: Seven national departments and laboratories providing services in immunology were combined to form the Center, which will be governed by a committee headed by a national coordinator. As part of its research program, the Center was studying the relationship between malnutrition and immunity to tuberculosis or leprosy. Three research papers were published. Nine professionals were being trained in various aspects of immunology in different units of the Center. A basic document was prepared as a basis for a study of the possibility of providing training in this field to students from other Latin American countries.

PAHO/RB

MEXICO-3302, Vaccine Production

Purpose: Increase in the production of live poliomyelitis vaccine at the National Institute of Virology to 50-70 million doses per year, so as to meet the needs of the Latin American countries.

Probable duration: 1968-1976.

Assistance provided: 1 virologist; equipment and supplies.

Work done: The remodeling of the National Institute of Virology, which will produce poliomyelitis vaccine for national use as well as for other countries, reached an advanced stage and was scheduled to be completed by March 1971. The staff moved into the Institute in September, and a course in virology for this personnel was held during September-December.

PAHO/RB

MEXICO-3303, Modernization of the National Health Laboratories

Purpose: Modernization of the national health laboratories responsible for production of vaccine and sera, food and drug control, diagnostic services for infectious disease control programs, and scientific research on public health problems.

Probable duration: 1970.

Assistance provided: 1 short-term consultant; equipment and supplies.

Work done: A technical and administrative study of the laboratory of the National Department of Public Health Research was made; and recommendations were formulated on the programs under way and the present feasibility of the proposals contained in the application prepared by the Government for submission to the United Nations Development Program.

WHO/UNDP

MEXICO-3304, Electron Microscopy Course (1970) PAHO/RB

The purpose was to conduct for scientific personnel of Latin America a course on recent advances in theory and practice of electron microscopy as applied to biological problems. The Organization provided a grant to assist with the teaching of the course and another for equipment and supplies.

The 3-week course was conducted by scientists from the University of Geneva, Switzerland; the University of California, Los Angeles; the U.S. National Laboratories at Oak Ridge, Tennessee; and the National Autonomous University of Mexico. The course included the preparation of specimens and the examination and interpretation of results by the students. Seventeen scientists from 8 Latin American countries attended.

MEXICO-4600, Occupational Health

Purpose: Reduction of the health hazards to which workers are exposed; and monitoring of air pollution.

Probable duration: 1966.

Assistance provided: Advisory services by project AMRO-2102 staff; equipment and supplies.

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Work done: Equipment and supplies were furnished to the Environmental Hygiene Department of the Ministry of Health and Welfare. In Mexico City, 10 air sampling stations were in operation. The data obtained on air pollutants were sent periodically to the Pan American Center for Sanitary Engineering and Environmental Sciences.

WHO/RB

MEXICO-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable, low-cost textbooks to students; and establishment of a revolving system for the funds collected, in order to ensure the continuity of the program.

Probable duration: 1968-

Assistance provided: Advisory services by Headquarters and Zone II Office staff.

Work done: Of the 24 medical schools in Mexico, 12 had joined the program. Of these, only 7 were participating actively in this project. A total of 2,945 copies of the *Tratado de patología, Bioquímica, Fisiología humana*, and the *Manual de farmacología* were sold on cash terms.

MEXICO-6100, School of Public Health

Purpose: Increase in the number and improvement in the quality of public health manpower.

Probable duration: 1954-

Assistance provided: Advisory services by project AMRO-3407 staff.

Work done: A total of 168 persons successfully completed 10-month courses during the year at the School of Public Health; 44 received a Master's degree in public health and medical administration, 5 in hospital administration, and 28 in public health nursing, while 18 were trained as sanitation technicians, 32 as statistical technicians, 21 as nutrition technicians, and 20 were trained in rural social work techniques.

Two 4-month courses were held for 18 laboratory auxiliaries and 16 health center administrators, and one 1-month course for 10 dental hygiene auxiliaries.

Four physicians continued their public health studies in infectious diseases. The program of studies in this field covers a period of 3 years.

MEXICO-6200, Medical Education

Purpose: Strengthening of medical education, with emphasis on preventive and social medicine, the basic sciences, and medical pedagogy.

Probable duration: 1968-

Assistance provided: 1 short-term consultant, 2 temporary advisers, and advisory services by Headquarters and Zone II Office staff; equipment and supplies; 2 short-term and 1 long-term fellowships.

Work done: The Institute of Health Sciences of the University of Nuevo León (Monterrey) and the Schools of Medicine of the Universities of Coahuila and Chihuahua began their participation in the project. Advisory services in hospital administration were provided to the School of Medicine of the University of Coahuila. A meeting was held with offi-

cials of the School of Medicine of the Autonomous University of San Luis Potosí to consider possible PAHO cooperation in the course of study leading to a master's degree in pharmacological sciences.

The library of that University was provided with books, technical journals, and basic equipment for the reproduction of teaching material.

WHO/RB

MEXICO-6300, Nursing Education

Purpose: Increase in the number and improvement in the quality of professional, technical, and auxiliary nursing personnel, over a 5-year period.

Probable duration: 1968-1973.

Assistance provided: 1 nurse educator and 1 short-term consultant; 1 short-term fellowship.

Work done: The School of Nursing of the University of San Luis Potosí joined the project during the year. New curricula were developed for this school and the School of Nursing of the University of Nuevo León (100%).

In the National Polytechnic Institute, 13 nurses took courses in nursing education, 5 specialized in psychiatric nursing, and 10 in administration of nursing services (85%).

A total of 186 auxiliaries were trained in 9 three-month courses in 5 states (103%); and 261 technicians (69%) were trained in 12 one-year courses in 11 states of the country.

PAHO/RB

MEXICO-6400, Sanitary Engineering Education

Purpose: Development of sanitary engineering education and of continuing education at the professional level and research at various universities in the country.

Probable duration: 1961-1971.

Assistance provided: 4 short-term consultants, 1 temporary adviser, and advisory services by Headquarters and projects AMRO-2102 and -2114 staff; grants; supplies; 2 short-term fellowships.

Work done: Cooperative agreements have been signed with 4 universities. The National University of Mexico offered 2 short courses: 1 on water pollution control, for 20 participants, and the other on sanitary engineering teaching methods, for 25 participants.

The program of applied research on hydraulic flocculation continued. Assistance was provided to the University of Chihuahua in the program of research on potable water use in the capital of the state. The Ministry of Hydraulic Resources sponsored 4 short courses, which were attended by more than 220 professionals.

WHO/RB

MEXICO-6500 Veterinary Medical Education

Purpose: Development of the teaching of preventive medicine and public health in the schools of veterinary medicine of the country.

Probable duration: 1969-

Assistance provided: Advisory services by project AMRO-0702 staff; 1 long-term fellowship.

Work done: A survey of human resources was made in 3 Mexican schools of veterinary medicine, and the needs of the schools were defined (36% of the target). In 4 schools, lectures were given on the teaching of veterinary medicine (50%), applied research was under way, and courses in preventive veterinary medicine were added to the curricula (50%).

WHO/RB

NETHERLANDS ANTILLES-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti* in all six islands in the Netherlands Antilles.

Probable duration: 1969-1973.

Assistance provided: 1 sanitarian, and advisory services by staff of project AMRO-2301; equipment and supplies.

Work done: A revised budget for the campaign was prepared and financial assistance for the project from the Netherlands Government was assured. Ninety-six field inspectors and squad leaders were recruited and trained in Aruba, 60 in Curaçao, 12 in Bonaire, and 4 in the Windward Islands (96% of the target). One and a half cycles of treatment and verification were carried out in Aruba (60% of the target). There was a dramatic reduction in *A. aegypti* infestation in the treated areas. Preparatory work in Curaçao progressed satisfactorily. Most of the supplies and equipment for the various islands were received (80%).

PAHO/RB

NICARAGUA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1957-

Assistance provided: 2 medical officers, 1 entomologist, and 1 sanitarian; equipment and supplies; antimalaria drugs.

Work done: In the area where *A. albimanus* is still susceptible to DDT, 152,595 houses (94.6%) were sprayed with that insecticide during January-June and 153,410 houses (92.2%) during July-December. In the area where the vector was resistant to DDT, plans were made to spray 12,618 houses with malathion every 4 months and 15,842 with propoxur (OMS-33) every 3 months, starting in April. Because of the delay in receiving shipments, malathion was applied only in one and a half cycles during January-July (94.0% and 58.1%) and propoxur was then substituted to complete the cycles originally planned. In the area where propoxur was to be applied, 15,514 houses (98.0%) were sprayed during April-June and 15,753 (99.4%) during July-September. In the last cycle, September-December, 24,687 houses were sprayed (87.9%).

A total of 3,492 notification posts were collaborating with the National Malaria Eradication Service in taking blood smears. During the year those posts produced 172,491 smears, of which 21,053 were found positive; active case-finding by the Malaria Service produced 108,895 smears, of which 6,207 were positive. Of the total of 27,260 malaria cases, 21,912 were *P. vivax* infections, 5,180 *P. falciparum*, and 168 mixed infections.

The program was evaluated by a strategy review team during 6-25 April, in the light of Resolution WHA22.39 of the Twenty-Second World Health Assembly. The team's recommendations were accepted by the Government and a new plan for 1971 was drafted.

PAHO/SMF, WHO/RB

UNICEF

NICARAGUA-2200, Water Supplies

Purpose: Establishment of a central agency responsible for water and sewerage services; and planning of a national water supply program.

Probable duration: 1962-1971.

Assistance provided: 1 short-term consultant, and advisory services by projects Nicaragua-3100 and AMRO-2203 staff; 1 short-term fellowship.

Work done: The Managua Water Company carried out an expansion of water supply facilities to serve 17,200 inhabitants, raising the coverage to 78%, at a cost of 3,282,000 córdobas (US\$468,857.14) (83.5% of the programmed investment). The National Department of Water Supply and Sewerage Services improved the installations of 35 water supply systems at a cost of 445,831 córdobas (US\$63,690.14), benefiting a total of 129,516 inhabitants (108%).

Construction of facilities in the rural sector reached 76% of the scheduled total and provided water to 48,495 inhabitants at a cost of 7,666,741 córdobas (US\$1,095,248.71), representing 62.1% of the investment scheduled for the year.

PAHO/CWSF, WHO/RB

NICARAGUA-2300, *Aedes aegypti* Eradication

Purpose: Intensification of *A. aegypti* surveillance activities.

Probable duration: 1970-1973.

Assistance provided: Advisory services by project AMRO-2303 staff; a limited amount of supplies.

Work done: A surveillance plan was prepared, providing essentially for training of personnel; routine inspection of seaports, airports, and border cities; routine inspection of the more vulnerable localities; and action to prevent the introduction of the mosquito into the country.

WHO/RB

NICARAGUA-3100, Health Services

Purpose: Improvement in the pertinent legislation and in the structure and operation of the Ministry of Public Health at the national, regional, and local levels.

Probable duration: 1963-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 sanitary engineer, 1 nurse, 2 short-term consultants; common services; equipment and supplies; 6 short-term and 2 long-term fellowships.

Work done: A national seminar on food, drugs, and pharmacies was held to draft a proposed food and drug law (100% of the target).

Fourteen health centers were built (70%); another 2 were

IX. PROJECT ACTIVITIES

under construction in Managua, and 7 in other parts of the country. Eight new peripheral laboratories started operating (100%). In Managua, the activities of the Salvadorita Health Center increased by 95% and a center was established for the demonstration of methods, which were applied in 2 other centers in Managua (100%). The coverage of the health centers was increased as a result of the compulsory social service law; the services of 38 medical undergraduates, 14 medical technicians, and 9 dentists were obtained. There were 56 family planning clinics, which provided service to 16,500 persons (an increase of 18% over 1969).

In communicable disease control, the national vaccination program was modernized (50%). A new operational scheme for *Aedes aegypti* surveillance and an integrated tuberculosis control program were formulated (100%). Techniques and guidelines were developed for persons on the staff of health laboratories, who were also trained in bacteriological diagnosis of tuberculosis (100%). An application was drawn up for technical assistance in the solution of problems of population and health statistics and birth and death records (100%).

In 3 short courses (10 days each), 100 health center officials were trained in certain aspects of maternal and child care (100%), and 28 nurses attended a course on maternal and child nursing. The program of continuing education was inaugurated for 25 teaching nurses (100%). In addition, 158 nurses and 597 auxiliaries received training in Nicaragua. The Intersectoral Nursing Committee began operations (100%).

The goal of constructing 10,000 latrines per year was attained to the extent of 29.6%, while that of installing 6,500 latrines annually was achieved 45.5%. The number of health inspections of all kinds exceeded the target of 190,000 (206%).

WHO/RB, WHO/UNDP

UNICEF

NICARAGUA-3101, Fellowships

One short-term fellowship was awarded.

PAHO/RB

NICARAGUA-3300, Laboratory Services

Purpose: Improvement and development of the country's health laboratory services; and training of personnel.

Probable duration: 1967-1974.

Assistance provided: Advisory services by project AMRO-3303 staff.

Work done: The Technical Council of the Ministry of Public Health approved the regulations for the laboratories serving the Ministry (50% of the target); these regulations will become operative once they are published in the Official Gazette.

The laboratories for the León and Estelí health regions were established (50%). Laboratory standards were developed for the comprehensive tuberculosis control program (100%). Evaluation of the Central Laboratory of the Ministry of Public Health was begun (25%). The Chemistry and Food Analysis Laboratory was moved to a new building and its installations and equipment improved (100%). Eight peripheral laboratories were established in health centers

(100% of the target for the year), raising the total number of such facilities to 71, out of 125 to be established. Twenty laboratory auxiliaries were trained (30%).

NICARAGUA-4200, Nutrition

Purpose: Development of applied nutrition programs.

Probable duration: 1962-1974.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and project AMRO-4203 staff.

Work done: The program covered 234 communities (210 in 1969). There were 172 school gardens in 6 departments of the country (162 in 1969).

The program of supplementary feeding benefited 190,261 persons (181,850 in 1969).

The 13 nutrition rehabilitation centers (12 in 1969) were bringing about the recovery of 50% of the children under treatment, to whom complete supplementary feeding was being provided for a period of 3 months. The number of 2nd degree malnutrition victims attended to in the 13 centers in 1970 was 6,180 (16% of the total). The centers operate on a full-time basis.

A program of nutrition education and nutritional rehabilitation of infants and preschool-age children was started in the rural areas, operating through community nutrition centers, 34 of which were placed in service. By the end of the year, these centers were serving 10,783 preschool-age children. A total of 154 community leaders were trained in 5 courses for service in the centers.

The National Congress approved the Regulations for the Salt Iodization Program.

In the medical care services, 2 nutritionists, graduates of INCAP's School of Nutrition and dietetics, were appointed; and 2 candidates were selected to begin the academic program in 1971.

Fourteen training courses were held for teachers, local leaders, and women volunteers; the target for the year was thus exceeded.

FAO, UNICEF

NICARAGUA-4800, Medical Care Services

Purpose: Improvement and adjustment of the administrative structure and operation of the national hospital system in order to achieve better use of resources and meet the demand for services.

Probable duration: 1967-1974.

Assistance provided: Advisory services by projects Dominican Republic-3100 and AMRO-4803 staff.

Work done: The patient capacity at the Chinandega Hospital was increased by 42 general beds (63.5% of the target) and by 32 pediatric beds, no increase in which had been planned for the year. The Masaya Hospital added orthotics and prosthetics shops to its facilities (100%). A 20-bed mechanical therapy ward was established in El Retiro General Hospital in Managua. The kitchen was remodeled in the Psychiatric Hospital, and a modern laundry was installed

in the Estelí Hospital. In Managua, the Eastern District Clinic of the National Social Security Institute (INSS) was enlarged (100%), and a Central Procurement and Supply Center was set up to serve the INSS and the National Social Welfare Board (JNAS) (100%). A start was made on construction of the Salvadorita Hospital at San Carlos, in the San Juan River Department (100%). A day-care center with a capacity for 70 children was inaugurated in the Eastern District of Managua.

A basic list of drugs for the entire national hospital system was prepared (100%). In the Departments of Chinandega and León, the medical care services of the INSS and JNAS were integrated with those of the Ministry of Public Health for a new comprehensive program of tuberculosis control (100%). Operating regulations were adopted for the Prinzapolca Hospital (100%). In Managua the plan for coordination between the JNAS and the Ministry was extended to 3 health centers.

Four short inservice training courses on administration of hospital nursing services, nursing-midwifery, evaluation, and human relations were conducted for staff of the Ministry, INSS, and JNAS.

NICARAGUA-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable, low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: Sales totaled 55 copies of *Bioquímica* and 39 of the *Tratado de patología*; 30 additional copies of the *Tratado de patología* and 40 of the *Tratado de pediatría* were requested.

NICARAGUA-6200, Medical Education

Purpose: Strengthening of medical education, with emphasis on the training of teachers in basic sciences and in preventive and social medicine.

Probable duration: 1965-1974.

Assistance provided: Advisory services by the PAHO/WHO Country Representative.

Work done: A preliminary loan application was prepared and was submitted by the National University of Nicaragua to the IDB for the construction of the Medical Campus, which will house the building for the basic medical curriculum and the courses in medicine, dentistry, medical technology, chemistry, and pharmacy, and will include the Hospital of the National Social Security Institute, to be converted into the new teaching hospital of the University (100%). Work was completed on departmental organization of the School of Medical Sciences (100%).

The Ministry of Public Health expanded its cooperation with the School by providing additional lectures in zoonoses, applied nutrition, venereology and leprosy, family planning, and health education (100%).

The regulations of the Law on Compulsory Social Service

were made applicable to undergraduate students of dentistry and pharmacy, in addition to those studying medicine and medical technology (100%).

NICARAGUA-6400, Sanitary Engineering Education

Purpose: Strengthening of sanitary engineering education; and organization and holding of intensive short courses in this field at the School of Physical Sciences and Mathematics of the National Autonomous University.

Probable duration: 1965-1975.

Assistance provided: 2 short-term consultants, and advisory services by project Nicaragua-3100 staff; 1 grant.

Work done: A course on sewerage systems was held for 40 engineers (50% of the target).

A study was made to determine the feasibility of setting up a laboratory for the analysis of drinking water, sewage, and industrial wastes; the laboratory would operate as part of the Department of Sanitary Engineering of the School.

PAHO/RB

NICARAGUA-6600, Dental Education

Purpose: Improvement in the over-all training of future dentists, chiefly in the social and preventive aspects of dentistry, to equip them for effective participation in public health programs and in the private practice of their profession.

Probable duration: 1966-1974.

Assistance provided: Advisory services by the PAHO/WHO Country Representative.

Work done: The plan was designed for the new building to house the School of Dentistry of the National University (100% of the target). The 8 undergraduates in the School were assigned to health centers of the Ministry of Public Health in accordance with the Law of Social Services (100%).

Two professors from the School visited schools of dentistry in Colombia; another 2, who had completed their training under PAHO and AID fellowships, resumed their teaching activities on a full-time basis (100%).

PANAMA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1956-

Assistance provided: 1 medical officer, 1 sanitary engineer, and 1 sanitarian; antimalaria drugs and entomological material.

Work done: The 3-Year Plan was carried forward satisfactorily. During the first half of the year, 9,262 localities (100.8% of the target) and 203,098 houses (97.5%) were sprayed. The target for the second half-year was to spray 189,365 houses and 20,123 in 2 cycles every 3 months (in five areas of persistence). In the second 6-month cycle, between July and October, the number of sprayings performed was 187,414 (99.0% of the target for the half-year), and in the 2 three-month cycles, 39,316 houses were sprayed.

Beginning in July the attack measures were intensified in 6 areas where transmission persisted. Quarterly sprayings were instituted in 5 of the areas, while monthly mass radical

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treatment was begun in 1 area and treatment of family groups in 3 areas. In the Barú region (24,000 inhabitants), the mass treatment program was discontinued in March, after 12 cycles had been completed, when no autochthonous cases were discovered in 11 of them. This program was continued in the area of Gatun Lake despite the decline in the slide positivity rate (from 28.1% in the initial survey to 3.6% in the 26th cycle).

During the year 237,477 blood smears were examined, with 4,584 positive findings (2.0%), the annual parasitic index being 3.3% per 1,000 inhabitants (4.4% in 1969). *P. falciparum* continued to be the predominant cause of infection.

PAHO/SMF, WHO/RB, WHO/UNDP UNICEF

PANAMA-2100, Engineering and Environmental Sciences

Purpose: Strengthening of the national technical and administrative infrastructure to increase the proportion of the population covered by the environmental sanitation services.

Probable duration: 1970-1972.

Assistance provided: 1 sanitary engineer, and advisory services by projects AMRO-2103 and -2203 staff; supplies.

Work done: The technical and administrative structure was established for a rural water supply program (1970-1973) to provide rudimentary water systems to 210 rural communities with a combined population estimated at 84,000. Five water supply systems were completed and 16 were in an advanced stage of construction. With the assistance of CARE, 6 rudimentary water supply systems were built to serve 2,437 persons in rural areas (100%). A total of 296 wells were installed (242 by drilling and 54 by excavation) to supply water to 14,800 persons (82%); and 4,500 latrines were built to serve 22,500 persons (50% of the target).

Health inspection of industrial plants numbered 833. Twenty new sanitation inspectors were trained in a 4-month course (100%). A total of 653 food handlers working in private industry were also trained.

PAHO/RB

PANAMA-2200, Water Supplies

Purpose: Implementation of a national program for the construction of water supply and sewerage systems.

Probable duration: 1960-

Assistance provided: Advisory services by Headquarters and projects Panama-2100 and AMRO-2203 staff.

Work done: Twelve rural water supply systems were built in rural areas to serve 11,000 persons (55% of the program target), and 30 wells were drilled (100%).

In the urban area, the project for improvement and expansion of 2 water supply systems to serve 14,172 persons was completed (100%), as were 5 projects (100%), financed by AID (U.S.A.), to extend the water distribution network of Panama City (100%). Construction of an urban waterworks to serve 2,060 persons was started (60%), and a contract was awarded for the construction of 3 water supply systems to serve 5,500 persons, financed by the National Water Supply and Sewerage Institute (IDAAN) and IDB.

The AID-financed program for the construction of 10 sewerage systems for 150,000 persons in Panama City got

under way (20% of the projects were completed, 30% were under construction, and for the remaining 50% the contracts were awarded.) A sewerage system started during the year (and taken to 20% of completion) will provide service to a community with 13,050 inhabitants; the project is being financed by IDAAN and the IDB.

An application was prepared for an IDB loan to help finance the construction of 106 rural water supply systems to serve 100,000 persons; improvement and expansion of 20 systems to serve a total of 56,200 persons in urban and rural areas; and reconstruction and expansion of 12 sewerage systems to serve 121,500 inhabitants.

IDAAN signed a technical assistance agreement with the Organization. A course on operation and maintenance of well-drilling equipment was held for 12 Panamanian and foreign engineers, and another on middle-level supervisory techniques was conducted for 40 officials of IDAAN.

AID

PANAMA-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1967-1971.

Assistance provided: 1 short-term consultant.

Work done: Negative indices were achieved in four localities where reinfestation had occurred.

The 4th and 5th verifications in Colón showed negative results. The sixth verification was also negative up to December, when it was nearing completion. Three consecutive verifications in Cativá and 4 in Buena Vista and Palo Quemado failed to reveal the presence of *A. aegypti*.

As part of the program to investigate the presence of the vector in the areas most vulnerable to reinfestation, all localities along the Trans-Isthmian Highway and 31,221 houses in Panama City were inspected, with negative results.

The surveillance service was instituted which inspected 793 ships and other international vessels, as well as 2,266 houses, in the port area of Colón, with negative findings in every case. In Panama City, 106 ships were inspected, also with negative results. The index of infestation in the country was zero.

PAHO/RB

PANAMA-3100, Health Services

Purpose: Strengthening of activities for the promotion, protection, and restoration of health.

Probable duration: 1952-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative) and 2 short-term consultants; common services; and 3 short-term and 1 long-term fellowships.

Work done: Priority was attached to 4 programs: maternal and child health, adult medical care, environmental sanitation, and administration. The community medical program was initiated in the Metropolitan Area with the integration of the peripheral health centers into the Santo Tomás Hospital and decentralization of general and special medical care. For the latter purpose, population sectors served by ambulatory medical care units were established to improve the quality of service and provide prompt attention. Am-

bulatory medical care achieved 100% of the target, and medical care in institutions achieved 80%.

WHO/RB, WHO/UNDP

PANAMA-3101, Fellowships

Fifteen short-term and 7 long-term fellowships were awarded.

WHO/RB

PANAMA-3300, Laboratory Services

Purpose: Development of the laboratory services of the Ministry of Health at all levels, in line with the needs of the National Health Plan.

Probable duration: 1970.

Assistance provided: Advisory services by project AMRO-3303 staff; laboratory supplies.

Work done: Regulations for the National Laboratory Services were drawn up and were awaiting approval. Technical standards for participation of health laboratories in the integrated tuberculosis control program were prepared. Bacteriological and chemical testing of dairy products was intensified; and supervision of peripheral laboratories was increased. The Central Laboratory cooperated with the salt iodization program by providing advisory services to the treatment plants and examining samples of the product intended for human consumption.

The serologic surveys on the prevalence of brucellosis and syphilis continued to be carried out in cooperation with the Corgas Institute; 80% of the population under study was covered. The plans were completed for remodeling the building of the Santo Tomás General Hospital with a view to relocation of the Hospital's Laboratory Services. Designs and plans were prepared for the new annex to house the Laboratory of the Integrated Medical Center at Chitré.

Refresher courses were given; and the regular course in laboratory procedures was initiated.

WHO/RB

PANAMA-4100, Maternal and Child Health

Purpose: Development of systematized maternal and child health and family welfare activities within the context of the National Health Plan.

Probable duration: 1970-1974.

Assistance provided: Advisory services by Headquarters and Zone III Office staff and by the PAHO/WHO Country Representative.

Work done: The Department of Maternal and Child Health was reorganized and its program strengthened through the setting of definite targets of maternal and child health care. Further progress was made in the integration of family planning activities into the maternal and child health program.

A social pediatrics seminar was held for former fellows who participated in the annual courses offered on the subject in Santiago, Chile, and Medellín, Colombia. Three training courses in family planning were held for medical and auxiliary personnel.

The annual targets were set for the programs for 1970-1974. During the first 10 months of the year, 13,212 preg-

nant women were examined (34% of the target), 3,364 deliveries were performed (57%), and 18,144 children of less than 1 year were examined (100%), as were 31,096 children between 1 and 4 years (86%), and 30,568 schoolchildren (38%).

The statistical records forms were revised so as to provide more accurate information on the coverage of the country's maternal and child health services.

An internal evaluation of the program was made.

PANAMA-4200, Nutrition

Purpose: Improvement of nutritional levels of the population, particularly among preschoolers, schoolchildren, and pregnant women.

Probable duration: 1962-1970.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and project AMRO-4203 staff.

Work done: Four nutritionists and 1 health educator were added to the program. Preliminary work was done for the establishment of standards for school cafeterias. Preparation of a dietary manual for hospitals was begun; and the nutrition education program sponsored by the Organization of Central American States (ODECA) continued to be carried out.

PANAMA-4500, Radiation Protection

Purpose: Cooperation with the Government in adopting technical or administrative measures in the field of radiation protection.

Probable duration: 1970.

Assistance provided: Advisory services by project AMRO-4507 staff; equipment and supplies.

Work done: Equipment and materials for the commencement of radiation protection activities were supplied.

PAHO/RB

PANAMA-4700, Food and Drug Control

Purpose: Expansion of food and drug control activities and increased compliance with existing legislation; strengthening of the Special Analysis Laboratories of the University of Panama, which provide reference library service to the countries of Central America; and training of the personnel required to carry out these activities.

Probable duration: 1968.

Assistance provided: 2 short-term consultants, and advisory services by the PAHO/WHO Country Representative; equipment and supplies.

Work done: The VI Seminar on Food and Drug Control for Central America and Panama was held. A course in food microscopy for participants from the Central American area, and 1 on food technology, were offered at the University of Panama. A total of 236 food-processing plants, 12 pharmaceutical laboratories, 192 pharmacies, and 226 supermarkets were inspected. The Chief of the Department of Pharmacy, Drugs, and Food of the Ministry of Health attended a course on narcotics control in Europe and a drug control seminar in Venezuela.

Training was given to 3 Central American professionals

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at the Special Analysis Laboratories of the University of Panama.

WHO/RB

PANAMA-4800, Medical Care Services

Purpose: Expansion of medical care services and integration of health activities, so as to achieve a better utilization of physical resources.

Probable duration: 1968-1974.

Assistance provided: Advisory services by Headquarters personnel, the PAHO/WHO Country Representative, and project AMRO-4803 staff; 1 short-term fellowship.

Work done: Reorganization of the medical care services of the Ministry of Health continued as part of the basic work program. Improvement of the physical plant and equipment of the Santo Tomás General Hospital was under way at a considerable cost. Administration at the Hospital was improved substantially in the areas of accounting, personnel, supplies, and maintenance.

A start was made on dividing the metropolitan area into sectors; 6 ambulatory medical care units were established for the highest-density districts in order to relieve congestion at the Santo Tomás Hospital.

A study was made on remodeling and expansion of the Children's Hospital in Panama City.

In the first half of the year, 80% of the target had been reached in regard to hospital discharges, and more than 100% in regard to medical consultations.

Studies on inter-institutional coordination and regionalization of services continued to be carried out under the National Health Plan, with a view to extending the program to the entire country. National hospital regulations were being prepared.

PAHO/RB

PANAMA-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable, low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: The program continued to be carried out satisfactorily. Sales totaled 57 copies of *Bioquímica* and 41 of the *Tratado de patología*. The Organization dispatched another 50 copies of *Bioquímica*, 60 of the *Tratado de patología*, and 150 of the *Tratado de pediatría*.

PANAMA-6200, Medical Education

Purpose: Adaptation of the technical and administrative structure, with a view to improving the performance of educational programs by regulating the operation of the departments and instituting standards for the programming and evaluation of activities.

Probable duration: 1965-

Assistance provided: 2 short-term consultants and ad-

visory services by Zone III Office staff, the PAHO/WHO Country Representative, and project AMRO-3603 staff; 1 short-term fellowship.

Work done: The School of Medicine of the University of Panama was reorganized, with professorial chairs replaced by departments. The medical curriculum was shortened by one year. Grading and promotion regulations and a new set of admission regulations were approved for the School. The 1970-1971 academic year began with a full complement of professors, the temporary appointees having been made permanent. The University graduated 24 new physicians.

A symposium on integrated education in the health sciences was held.

PAHO/RB

PANAMA-6300, Nursing Education

Purpose: Increase in the number and improvement in the levels of training of nurses in Panama.

Probable duration: 1966-1971.

Assistance provided: 2 short-term consultants, and advisory services by Headquarters staff and the PAHO/WHO Country Representative; equipment and supplies.

Work done: With the object of easing the shortage of nurses, the basic nursing curriculum was reduced by a year, with the students given the option of doing an additional year's work and earning a degree of Bachelor in nursing sciences. Seven students received this degree, while 35 completed the basic course. Enrollment during the 1969-1970 academic year was 142 students in the basic program and 35 in the advanced course. The staff of professors and teaching assistants was increased to full complement.

The 4th year of basic studies was offered for the first time. The course of theoretical and practical instruction in maternal and child nursing and the program of clinical practice in a private hospital were instituted.

A course in community health was begun, and guidance for the instructors in the pediatrics course was planned.

WHO/RB

PANAMA-6400, Sanitary Engineering Education

Purpose: Preparation and advanced training of professional and subprofessional personnel through improved teaching of sanitary engineering at the University of Panama and through short intensive courses on specific subjects.

Probable duration: 1965-1974.

Assistance provided: 3 short-term consultants, and advisory services by Headquarters staff; 1 grant.

Work done: A short intensive course on technical, financial, and administrative aspects of urban sanitation services, held in July, was attended by 30 engineers (19 from Panama and 11 from other Latin American countries). The School of Engineering at the University of Panama made available the services of 2 sanitary engineering professors to collaborate in administrative aspects of the course. The National Water Supply and Sewerage Institute organized an intermediate-level seminar on training; the Eastern Health Region organized 5 short courses for food handlers; and

the Social Security Fund organized a course on industrial hygiene.

PAHO/RB

PANAMA-6600, Dental Education

Purpose: Improvement of the instruction at the School of Dentistry of the University of Panama.

Probable duration: 1966.

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative; equipment and supplies.

Work done: A new 5-year program of studies was inaugurated with 40 preparatory students, 40 1st-year students, and 16 2nd- and 3rd-year students enrolled. The 4th-year students began their clinical work in operations and periodontics. An integrated plan of research related to the classroom work was prepared.

WHO/RB

PARAGUAY-0100, Epidemiology

Purpose: Reduction of the risks of illness and death from the more prevalent communicable diseases.

Probable duration: 1965-1973.

Assistance provided: 1 short-term consultant, and advisory services by projects Paraguay-3100 and AMRO-0106 staff; supplies; 1 short-term fellowship.

Work done: Tuberculosis Control and Venereal Disease Control Sections were established in the Department of Epidemiology of the Ministry of Public Health and Social Welfare.

The communicable disease control program continued to be carried out in Health Regions I and V, serving a population of 792,207 inhabitants (33% of the country's population). The program includes the detection and treatment of cases and contacts of tuberculosis, leprosy, syphilis, gonorrhea, typhoid fever, measles, pertussis, gastroenteritis, and poliomyelitis, as well as immunization of vulnerable groups with DPT and with tetanus, poliomyelitis, and smallpox vaccine. The Government expressed a desire to extend the program to the entire country. An evaluation of the immunization programs showed the following achievement of targets for the year: DPT vaccination, 31.1%; tetanus vaccination, 92%; smallpox vaccination, 34.1%; BCG, 62.6%, and poliomyelitis vaccination, approximately 100%.

The tuberculosis control program, limited to the detection and treatment of cases and contacts, continued its regular activities. In September the program was extended to all the health regions; its basic aim is to cover 70% of all infants of less than 1 month (37,025), by examining them in the health centers and at home; 30% of the children between 1 and 11 months (14,972); 40% of those between 2 and 4 years of age (58,566); 70% of the children entering school (33,195); and 100% of the Indian population below 15 years of age (13,992). A start was made on reorganizing the country's tuberculosis diagnosis laboratories.

The leprosy control program continued to be carried out through the regular health services. Of the 4,612 estimated active cases, 50.3% were lepromatous. New cases discovered

totalled 199. The field activities, including the search for cases and contacts, were being carried out under an agreement between the Government of Paraguay and a private German association.

An outbreak of paralytic poliomyelitis occurred in Asunción and neighboring towns during September, October, and November among children less than 4 years of age; there were 68 cases and 12 deaths. A total of 60,000 doses of vaccine were administered.

In the training activities, 70% of the target was attained: 32 laboratory technicians were trained in tuberculosis bacteriology; 14 nurses in BCG vaccination techniques; and 12 technicians and auxiliaries in health statistics. The Chief of the Tuberculosis Control Section attended the course in epidemiology and administration of tuberculosis control programs offered in Venezuela; and the Director of Epidemiology attended the course in epidemiology and venereal disease control offered by the National Health Service of Chile. The Regional Statistician for the V Region attended an academic course on health statistics in Argentina.

A Manual of Venereal Disease Control was prepared.

PAHO/RB

UNICEF

PARAGUAY-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1961-

Assistance provided: 1 sanitary engineer, 1 medical officer, and 2 sanitarians; laboratory and entomology equipment, antimalaria drugs, and other supplies; 1 long-term fellowship.

Work done: The attack phase entered its second year. Between April and September, 501,204 sprayings were performed in 303,370 houses (95.7%), resulting in the protection of 1,285,111 inhabitants (94%). Another six-month cycle began in October; up to December 131,586 houses were sprayed and 574,416 persons were protected. The rest of the population in the malarious area was protected indirectly.

During the year 157,587 blood smears were examined (98.5%), and a like number of suspected cases were treated (100%). A total of 149 cases were investigated (86%).

The number of positive cases reported was 1,429. The slide positivity rate for 1970 was 0.9%, compared to 8.0% in 1969, leading to the presumption that transmission of the disease had been halted throughout the malarious area of the country.

Six short refresher courses were held for spraying and evaluation personnel.

PAHO/RB

UNICEF

PARAGUAY-0201, Study of the Socioeconomic Impact of Malaria

Purpose: Measurement of the economic impact of malaria on selected farm families and rural industries by means of a study of all aspects of their economic activities and comparisons between groups affected by malaria and those not affected.

Probable duration: 1968-1972.

Assistance provided: Advisory services by the economist

IX. PROJECT ACTIVITIES

of project AMRO-0200 (half time); local costs; equipment and supplies.

Work done: Visits to families and industries proceeded as planned; they were completed in 6 areas by the end of April and in 2 more in June. Over-all, 80% of the scheduled visits were performed.

Data coding activities were begun in January. Coding was undertaken for all the information on family census, health records, and data on livestock, poultry, and harvests; for some families, the information on farm work done and crop histories was coded. Verification of all confirmed malaria cases was also carried out. Approximately 65% of the planned data had been coded as of mid-November; about half of that amount had been sent for card punching.

Programming of the malaria-related health index was being done by project Argentina-3504, and by mid-November it had reached an advanced stage. Programming of the main tabulations of farm work and crop histories was begun and was expected to be ready for use early in 1971. Programs for the tabulation of livestock, poultry, and harvest data were prepared.

PAHO/SMF

PARAGUAY-0300, Smallpox Eradication

Purpose: Eradication of smallpox within a 4-year period, starting in 1969.

Probable duration: 1967-1972.

Assistance provided: Advisory services by projects Paraguay-3100 and AMRO-0106 and -0306 staff; equipment and supplies.

Work done: Routine vaccination against smallpox continued to be provided through the health posts and centers. During the year, 273,718 persons were vaccinated (97.37% of the target). Vaccination and epidemiological surveillance were stepped up in the border region following an outbreak of smallpox in the Province of Misiones, Argentina. No cases of smallpox were reported.

WHO/RB

PARAGUAY-2100, Engineering and Environmental Sciences

Purpose: Development of environmental sanitation programs, including water supply and sewerage, industrial hygiene, waste disposal, housing, and food hygiene.

Probable duration: 1969.

Assistance provided: Advisory services by staff of Headquarters, Zone VI Office, and of projects Argentina-2200, Paraguay-3100, Uruguay-2100, and AMRO-2106; 1 grant; supplies.

Work done: A legislative bill for the establishment of a National Environmental Sanitation Service was prepared.

A special service was established in the Ministry of Health to carry out the national environmental sanitation program, aimed particularly at small communities and rural areas. The program will be executed in two 5-year stages. The 1st will cover a population of 1,270,000 (approximately 50% of the country's total population), 80% of which will be provided with waste disposal services and 50% with water service. The program will cost US\$9.5 million, 13% of

which will be covered by the National Government, 20% by the communities, 5% by UNICEF, and the remaining 62% through a revolving fund to be established with the proceeds of a \$4.5 million IDB loan. The World Food Program will also participate in the program, providing food to compensate the communities for their contribution in the form of labor.

The following sanitation activities were carried out:

Activity	Target	Per cent accomplished (7 months)
Wells drilled	21	33
Wells dug	140	79
Wells repaired	210	63
Springs protected	50	6
Running water installations	12	100
Water specimens collected	1,470	50
Disinfection of water systems	530	24
Construction of latrines	3,150	63
Repair of latrines	2,100	68
Promotion of food-distribution depots	704	31

PAHO/RB

PARAGUAY-2200, Water Supplies

Purpose: Planning and implementation of a national water supply and sewerage program.

Probable duration: 1961-

Assistance provided: Advisory services by Headquarters, Zone VI Office, and project Paraguay-3100 staff; 1 short-term fellowship.

Work done: Several contracts were awarded for the supply of materials and equipment for expanding the water supply system and extending the sewerage network in Asunción.

The Sanitary Works Corporation (CORPOSANA) completed 5 of the 8 water supply projects for cities in the interior. The first water supply system other than that of Asunción was inaugurated in Piribebuy, a town with 4,000 inhabitants. The goal is to provide household connections for 50% of the population.

PAHO/RB

PARAGUAY-3100, Health Services

Purpose: Planning of health services, and development of the infrastructure of health services to permit coverage of 70% of the country's population by 1974.

Probable duration: 1955-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 sanitary engineer, 1 statistician, 2 short-term consultants, and advisory services by Zone VI Office staff; common services; supplies.

Work done: The quadrennial projections of PAHO assistance to Paraguay were completed. Special attention was given during the year to health statistics, environmental sanitation, metoxenous diseases, to communicable diseases, preventable and reducible, and to medical care.

A preinvestment study of the health sector was carried out under the sponsorship of the Technical Planning Secretariat; the study included a diagnosis of health conditions and policy in the country, a sectoral analysis of present investments, and requirements for the next 5 years. It covered

the needs of the Ministry of Public Health and Social Welfare, the Institute of Social Welfare, and the Sanitary Works Corporation, which together account for over 90% of all investment in the sector. This study was included in the report submitted by Paraguay to the Inter-American Committee on the Alliance for Progress in October. Preparation of this study and cooperation in other activities having to do with medical care, health statistics, and training fostered closer coordination among institutions.

Communicable disease control activities were continued on a regular basis through the tracing and treatment of cases of the more prevalent diseases. An outbreak of paralytic poliomyelitis, resulting in 68 cases and 12 deaths (75% in Asunción) occurred during September-November. A mass program of vaccination of children under 4 was carried out with vaccine supplied by the Organization (116% of the target for the year).

Further action was taken to strengthen the health infrastructure. The Ministry made a new distribution of Health Regions to meet the health needs of the colonization areas, dividing the country into 6 Regions and making Region VI responsible for the planning and supervision of activities to be carried out in the colonization areas. At the central level, the Department of Epidemiology was reorganized to include new sections for tuberculosis control and venereal disease control. The National Leprosy Department began its activities. At the peripheral level, work was completed on the construction or expansion of health centers or posts at Villa del Rosario (to serve 11,048 persons, including 6,968 in rural areas), at Obligado (for 4,645 persons, 91% of them in rural areas), at Maciel (for 5,043, 92% rural), and at Villarrica, Concepción, Encarnación, Caaguazú, Juan León Mallorquín, and San Estanislao.

The need for a national hospital system was recognized. Preliminary studies were performed for the establishment of an intensive care unit in the First Aid Hospital.

In statistics, the registration of births and deaths was improved (the former by 18%) as a result of the provision of suitable registration books, for which the Organization supplied the material. Such books were supplied to 80% of all registry posts in the interior. Civil Registry Offices were established in Encarnación, Villarrica, and Concepción, which are the country's largest cities after Asunción and are also the seats of Sanitary Regions. Monthly reporting of certain diseases to the Ministry of Health was instituted by presidential decree. A National Statistical Council was established.

The main accomplishments of the general health services during the first 6 months of the year are listed below with an indication of the targets attained:

Activity	Targets (1970)	Per cent accomplished (6 months)
Control of communicable diseases		
Leprosy		
Cases brought under control	2,208	43.2
Contacts	4,416	25.8
Tuberculosis		
Cases brought under control	3,838	68.4
Contacts	7,676	72.0
BCG vaccination (to September)	143,768	25.0

Activity	Targets (1970)	Per cent accomplished (6 months)
Poliomyelitis		
Cases brought under control	25	100.0
Vaccination	46,050	116.1
Diphtheria		
Cases brought under control	45	80.0
Pertussis		
Cases brought under control	1,753	42.1
DPT vaccinations (to September)	73,177	12.2
Tetanus		
Cases brought under control	149	29.5
Vaccinations (to September)	131,713	35.0
Measles		
Cases brought under control	1,651	7.9
Vaccinations	46,050	0
Syphilis		
Cases brought under control	1,970	59.9
Consultations	5,940	52.8
Gonorrhea		
Cases brought under control	656	59.3
Consultations	1,312	42.5
Leishmaniasis		
Cases brought under control	1,276	17.7
Consultations	2,552	13.8
Maternal and child health		
Prenatal care of 60% of expectant women	41,097	99.4
Prenatal consultations (2.4 consultations in health centers and 2.2 in health posts)	90,413	83.59
Obstetrical care	13,160	56.0
Care of infants under 1 year	20,225	67.7

Training activities included: 1 course for 20 nursing auxiliaries (9 months); 1 for 10 nutrition and dietetics assistants (10 months); 1 on tuberculosis bacteriology (2 weeks), for 32 students; 1 on vaccination techniques (2 weeks), for 14 nurses; 1 on foot-and-mouth disease control (1 week), for 42 veterinarians; 1 on applied nutrition (1 week), for 24 physicians and 3 nurses; 1 on applied nutrition (2 weeks), for 46 supervisors of the Expanded Nutrition Education Program (PAEN); 1 for 60 principals of schools in the PAEN area (2 weeks), and 1 postgraduate course in quantitative medicine (1 week), for 32 instructors. Three seminars on evaluation of maternal and child care services (24 hours each) were attended by a total of 64 students.

PAHO/RB, WHO/UNDP

UNICEF

PARAGUAY-3101, Fellowships

Eight short-term and 1 long-term fellowships were awarded.

WHO/RB

PARAGUAY-4100, Maternal and Child Health

Purpose: Extension of maternal and child health care services, as well as improvement of their quality, and training of lay midwives in rural areas.

Probable duration: 1970-

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

IX. PROJECT ACTIVITIES

Work done: An analysis of human and material resources and their utilization and productivity was made, as a preliminary to establishing action programs. The regulations and manuals of procedure of the country's maternal and child services, including those applicable to the training of midwives, were brought up to date. This facilitated the conduct of the courses held in 12 localities for 120 midwives. Four seminars on organization of maternal and child care services and evaluation of their efficiency were held in the capital and other parts of the country.

PARAGUAY-4200, Nutrition

Purpose: Improvement of the nutritional level of the population, with special emphasis on vulnerable groups, with a view to controlling or eradicating serious and moderate cases of clinical malnutrition.

Probable duration: 1960-1972.

Assistance provided: Advisory services by Headquarters, Zone VI Office, and project Paraguay-3100 staff.

Work done: Performance of scheduled training activities was at 70% in the case of the Food and Nutrition Education Program (PAEN) and 100% in that of the Ministry of Public Health and Social Welfare. PAEN offered 5 short courses: 1 for 46 supervisors of applied nutrition programs; 1 on applied nutrition, for 26 medical directors of health centers and 3 nurses; 1 for 25 school directors; and 2 (2 weeks each) for community leaders, with emphasis on the production of nutritious foods. The first 10-month course for nutrition-dietetics auxiliaries was begun, with 11 students in attendance. PAEN continued its activities in 200 schools in its area of operations and initiated projects relating to the breeding of fish, rabbits, hogs, and bees.

The World Food Program (WFP) continued collaborating with the Government in a reforestation project in the Puerto Presidente Stroessner area benefiting 800 families and in a project providing food assistance to 995 settler families in the Eje Norte. A preliminary review of the application for WFP food assistance in the national environmental sanitation program was completed.

The project for the control of endemic goiter through the use of iodized salt was continued in spite of some administrative difficulties. Centralized issuance of all import permits for salt, as decided by the Ministry of Health, also went into effect.

FAO, UNICEF

PARAGUAY-4800, Medical Care Services

Purpose: Improvement in the administration of the country's medical care services, with emphasis on institutional coordination and on technical integration of the services.

Probable duration: 1970-1972.

Assistance provided: Advisory services by Headquarters staff; equipment and supplies.

Work done: Taking as a basis the four-year projections, consideration was given to establishing a system for regional coordination of all health facilities operated by public and private institutions. Other activities were directed to improvement of services in the Casualty Hospital in Asunción, development of standards for the licensing of private health

establishments, promotion of a national pharmaceutical formulary, and planning of health facilities.

The Institute of Social Welfare inaugurated its Central Hospital. The Clinical Hospital of the School of Medical Sciences of the National University made improvements in its nursing services, clinical records, and centralization of operating rooms.

Thirty nursing auxiliaries received inservice training at a 3-month course held at the Municipal Polyclinic.

PAHO/RB

PARAGUAY-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable, low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: Thirty copies of *Fisiología humana* were sold. The Organization made initial shipments of the *Tratado de patología* and the *Tratado de pediatría*, distribution of which will begin in 1971.

PARAGUAY-6200, Medical Education

Purpose: Strengthening of medical education, with emphasis on preventive and social medicine, the basic sciences, and medical pedagogy.

Probable duration: 1965-1972.

Assistance provided: 1 short-term consultant, and advisory services by Headquarters, Zone VI Office, and project Paraguay-3100 staff; 1 grant; 1 short-term fellowship.

Work done: A course on quantitative medicine was held from 7-14 September under the sponsorship of the National University, the Ministry of Public Health and Social Welfare, and the Organization; it was attended by 32 full, associate, and assistant professors. With assistance from the Paraguayan Center for Population Studies, the School of Medical Sciences held the first workshop on population and health (13-18 June), for members of its faculty. The School and the Ministry continued their efforts to coordinate their program with a view to establishing a 1-year compulsory program of rural internships.

PAHO/RB

PARAGUAY-6400, Sanitary Engineering Education

Purpose: Improvement in the teaching of sanitary engineering at the National University in Asunción.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters, Zone VI Office, and project Paraguay-2100 staff.

Work done: A group of officials of the Ministry of Public Health and Social Welfare participated in a traveling seminar that visited Argentina to observe rural sanitation activities of the national water supply program in that country.

PARAGUAY-6600, Dental Education

Purpose: Improvement in dental education, with emphasis on clinical work, public health dentistry, and a social view of the profession.

Probable duration: 1966.

Assistance provided: Advisory services by Headquarters and project Paraguay-3100 staff.

Work done: The Higher University Council revised the dental curriculum, adding instruction on periodontics and dental materials and expanding that in other subjects. An analysis was made of the dental practice performed outside the school by 5th-year students as part of their work in the preventive dentistry course. The students were devoting 120 hours per year (8.3% of the 5th-year program and 66% of the hours assigned to this course) to these activities. The aim is to increase these activities by assigning students during the school year and vacation period to health centers which have dental services located in the vicinity of Asunción, as a step toward the establishment of compulsory rural internships. As part of their practical work in preventive dentistry, the 5th-year students took part in a school dental survey organized by the Ministry of Public Health and Social Welfare to assess the effectiveness of the water fluoridation program carried out for the last 10 years (national program).

PERU-0100, Communicable Disease Control

Purpose: Reduction of communicable disease morbidity and mortality through immunizations.

Probable duration: 1970-1973.

Assistance provided: 1 short-term consultant, and advisory services by project AMRO-0104 staff; equipment and supplies.

Work done: A mass program of maintenance vaccination against measles, diphtheria, tetanus, and pertussis was planned in Lima and Callao. Following the earthquake, intensive work was done to vaccinate the inhabitants of the stricken areas, and of those where outbreaks occurred, through successive and simultaneous immunizations.

WHO/RB**PERU-0200, Malaria Eradication**

Purpose: Eradication of malaria.

Probable duration: 1957-

Assistance provided: 1 medical officer, 1 sanitary engineer, and 1 sanitarian; antimalaria drugs.

Work done: A total area of 3,040 km², with 57,705 inhabitants, progressed from the attack to the consolidation phase, and 111,322 km², with 130,298 inhabitants, went from the consolidation to the maintenance phase (100%). In the attack phase area, 57,869 quarterly sprayings (104.4% of the target) and 54,653 semiannual sprayings (100%) were performed in the first half of the year. In the second 6-month cycle 44,786 sprayings were performed (85.3%); and 31,415 houses were sprayed in a single 3-month cycle (October-December). In the consolidation phase area (Zarumilla and Tumbes) 7,206 houses were sprayed twice during the year (98%).

Triple drug combination treatment was administered to 49,268 inhabitants of 13,715 houses in 406 localities within the attack phase area (98% of target). Radical drug treatment was administered to 1,098 cases (34.5% of the target) in this area and 208 cases (90%) in the consolidation phase area.

A total of 310,237 blood smears were obtained. A total of 4,494 cases were discovered, 89.2% of which were in the attack phase area.

In the maintenance phase area, 33,681 blood smears (27% of the target) were obtained and 234 cases discovered during the Cañete and Chíncha outbreaks.

Fourteen zone or sector chiefs, 99 medicators, 42 brigade chiefs, 138 spraymen, and 16 microscopists were trained in the program.

PAHO/RB**UNICEF****PERU-0300, Smallpox Eradication**

Purpose: Protection of the country against smallpox through systematic vaccination of 90% of its population and through epidemiological surveillance at the level of the peripheral health services.

Probable duration: 1967-1972.

Assistance provided: 1 sanitarian, and advisory services by Headquarters and projects AMRO-0104 and -0304 staff; equipment and supplies; 1 short-term fellowship.

Work done: A total of 1,371,956 smallpox vaccinations were performed. The rate of smallpox morbidity remained at zero. Production of freeze-dried vaccine was at 6,227,800 doses. The program continued to be integrated with other immunization activities, especially BCG vaccination. The budget was revised, and the complement of manpower was doubled in comparison with that available in 1969.

Five short training courses were conducted for 152 students.

WHO/RB**PERU-0700, Veterinary Public Health**

Purpose: Control of brucellosis in goats in the Departments of Lima and Ica and the Province of Callao; and reduction of human incidence.

Probable duration: 1966-1974.

Assistance provided: 1 short-term consultant, and advisory services by projects AMRO-0700 and -0704 staff; laboratory and field equipment and supplies.

Work done: The technical and administrative structure of the Ministries of Agriculture and Health was reorganized so as to group the respective agrarian and health zones under a single technical command. A total of 85,000 goats were vaccinated (70% of the target); 6,279 specimens of whey and milk were analyzed to determine prevalence rates by districts. A registry of producers, classified by vaccination areas, was opened. To improve the goat herds, adult males reacting positively to brucellosis were identified for replacement by healthy specimens.

WHO/RB

PERU-0701, Rabies Control

Purpose: Eradication of human and canine rabies in Lima and Callao.

Probable duration: 1970-1974.

Assistance provided: Advisory services by projects AMRO-0700 and -0704 staff; equipment and supplies.

Work done: In Lima a rabies control program was initiated and the technical and administrative structure of the Rabies Control Center was improved. A total of 15,700 persons bitten by dogs were treated, and 13,500 biting dogs were clinically observed (86% of the target). One thousand brains of suspect dogs were examined, and 550 proved to be positive for rabies. The facilities for treatment of persons bitten were decentralized and improved. An active community education drive was conducted through the press, radio, and television, community leaders, and public schools. By December, 100,000 dogs had been inoculated (with an effective coverage of 92% in the areas worked). Counting the 36,000 dogs vaccinated before the beginning of the program, the coverage in Greater Lima had been raised to 40% of the estimated canine population (4.25% reached in 1969). A total of 34,000 stray dogs (60% of the target), or 10% of the estimated dog population, were caught and destroyed.

The production capacity of the laboratories was increased to more than 500,000 doses of vaccine per year.

WHO/RB**PERU-0900, Plague Control**

Purpose: Reduction of the risk of disease and death due to plague.

Probable duration: 1966-1971.

Assistance provided: 1 sanitarian, and advisory services by projects AMRO-0104 and -0304 staff.

Work done: A total of 128 cases of plague were reported. The project continued to be carried out on a decentralized basis and within the structure of the northwestern health zone, with headquarters in Piura. Laboratory specimens (totalling 12,261) from 620 localities were collected (90% of the target); 2,209 houses were disinfested and deratted in the endemic area (88.3%); 29,104 rodent traps were laid; 25,780 specimens of fleas and acarids were classified, 26.4% being *Pulex irritans* and 8.6% *Polygenis*. A total of 2,832 wild rodents were captured, 38.1% being *Oryzomys* and 37.2% *Akodon*.

Work continued on health education activities and the installation of volunteer reporting posts.

PAHO/RB**PERU-1000, Chagas' Disease**

Purpose: Reduction or elimination of the risk of contracting Chagas' disease in affected areas.

Probable duration: 1970-1973.

Assistance provided: Advisory services by Zone IV Office and project AMRO-0304 staff.

Work done: The project was carried out in the Departments of Moquegua and Arequipa. Inspections were made in 210 localities with 16,921 houses, and 139 were surveyed, 64 of which were found to be infested by *Triatoma infestans* and

33 with *Trypanosoma cruzi*. Also surveyed were 2,451 houses, 525 of which were found to be infested with triatomids and 106 with *T. cruzi*. The number of houses in localities with positive findings for *T. cruzi* was 5,225, and the exposed population was 20,019.

Sixty-two localities were sprayed with BHC, of which 60 were evaluated; 495 complement-fixation tests were performed, the positivity rate for Chagas' infection being 9.5%.

San Agustín University in Arequipa collaborated in the investigation of Chagas' disease infection and morbidity. The head of the project received training in Brazil and Venezuela.

PERU-2100, Engineering and Environmental Sciences

Purpose: Creation of better environmental conditions for the population through adequate planning and coordination of the many agencies involved.

Probable duration: 1968-

Assistance provided: 1 sanitary engineer, and advisory services by Headquarters and project Peru-3100 staff.

Work done: Regulations for the General Water Law were approved and draft regulations prepared to govern the installation of inside sanitary facilities in buildings. The Sanitary Food Code was being revised. Sanitation and rural physical planning were included in agricultural projects. The 2nd stage of the National Rural Water Supply Plan achieved 70% of its target.

PAHO/RB**PERU-2200, Water Supplies**

Purpose: Increase in the percentage of population served by public water supply and sewerage facilities throughout Peru, through the establishment of properly operated systems.

Probable duration: 1960-

Assistance provided: Advisory services by Headquarters and project Peru-2100 staff; per diem and traveling expenses.

Work done: The national water supply and sewerage programs were carried forward in urban and rural areas, with the urban program attaining 60% of its goal. The British Government delivered the water supply study for the metropolitan area of Lima, which includes short-term plans for the 1970's, long-term plans, and projections and possible solutions up to the year 2000. A comprehensive study was made of the commercial operations of the Lima Sanitation Corporation (ESAL) with a view to improving its systems and enabling it to meet its current debt. The first stage of the advisory assistance was completed, and, as an initial step in implementing the recommendations, bids were requested for the purchase of a computer. In addition, the administrative reform of ESAL was begun with the integration of its departments and initial improvement of its methods. An 18-month pilot plan to provide water service to 11,000 dwellings in the "new towns" of Lima was begun. The part scheduled for 1970 was successfully carried out. The May 31 earthquake damaged the water supply facilities of various towns, particularly in Chimbote and Huarás, and the Orga-

nization provided assistance in the assessment of the damages and the rehabilitation work.

PAHO/CWSF

PERU-2202, Administration of Water and Sewerage Services

Purpose: Institutional improvement and administrative reform of the Lima Sanitation Corporation (ESAL) to enable it to meet the growing demand for adequate water and sewerage services.

Probable duration: 1970-1975.

Assistance provided: 6 short-term consultants, and advisory services by Headquarters and project AMRO-2114 staff.

Work done: The first stage of a program financed by ESAL was completed: the project team, composed of national and international personnel, developed the instructions, regulations, and manuals and designed the systems to be applied by ESAL. The significant changes brought about included, notably, an increase in revenue and better service to the users.

PAHO/CWSF

AID

PERU-3100, Health Services

Purpose: Raising the level of health of the country's inhabitants to increase their well-being; and improving the productive capacity of the labor force.

Probable duration: 1956-1975.

Assistance provided: 1 sanitary engineer, 2 nurses, 3 short-term consultants, and advisory services by Zone IV Office staff; common services; supplies; 13 short-term and 4 long-term fellowships.

Work done: Since the project specifically being carried out at Junín was nearing completion, a National Health Plan for 1971-1975 was formulated, as were the four-year projections.

Under the new structure, the peripheral health services were decentralized and regionalized in accordance with the 5 integrated development regions into which the country is divided, in each of which health zones were established. These zones, of which there are 12 in all, have in turn been subdivided into 60 hospital areas, thus completing the basic planning areas of the system. A system of quarterly evaluation of activities, including communicable disease control and epidemiology programs, preventive medical care, environmental sanitation, investments, training, and physical plant, was set up in all 12 zones.

A plan of 1-year medical internships in rural areas was being developed as a means of affording newly-graduated physicians direct experience in those areas.

An evaluation of the "National Plan for the Development and Integration of the Rural Population" was published and submitted. This project has been under way for more than 3 years under an agreement between the Government and the IDB, which provided a loan of US\$20,000,000.

Attainment of targets for the year had reached the following levels by September: hospitalization, 78.2%; medical consultations, 63.3%; dental consultations, 73.1%; house calls, 56.7%; environmental sanitation, 129.1%; smallpox vaccinations, 61.7%; BCG vaccination, 36.2%; measles vac-

cination, 73.5%; poliomyelitis vaccination, 24.6%; and DPT vaccination, 47.4%.

The goals set for the year were in general reached.

A health plan for rehabilitation and reconstruction of the area stricken by the earthquake of 31 May 1970 was prepared. The Organization offered the necessary technical assistance, and UNICEF agreed in principle to provide equipment and supplies for over-all rehabilitation, including health, education, social welfare, and agriculture.

A study of the national nursing situation (services and education) was made, and descriptions of nursing positions were drawn up for inclusion in the national salary scale. The following training activities were conducted: 4 workshops and 1 course, for a total of 97 nurses; a seminar on intensive care units, for 35 nurses; a seminar on psychiatric and mental health nursing, for 40 nurses; and a course on intensive care units, for 21 nurses. PAHO consultants devoted 3 months to conducting training courses on administration of hospital nursing services for the organization of the Nursing Department of the new Peruvian Air Force Hospital.

PAHO/RB, WHO/UNDP

UNICEF

PERU-3105, Health Services (Loreto and San Martín)

(1966-1970)

(UNICEF)

The purpose was to improve the services of the health areas of the Departments of Loreto and San Martín. The Organization provided the advisory services of personnel assigned to projects Peru-3100, AMRO-0504, and Zone IV Office.

The activities were planned in accordance with targets set in the National Health Plan for 1966-1970, and readjustments were made on the basis of periodic evaluations.

In Loreto Department, a 133-bed hospital-health center was built at Pucallpa and 2 communicable disease wards were added to the Iquitos hospital-health center. In San Martín Department, health posts were established, equipped, and staffed and a 136-bed hospital-health center was built.

To increase coverage among the widely spread and not easily accessible rural inhabitants of Loreto Department (61.4% of the total population), close working relationships were maintained with the Ministries of Public Education, Interior, War, Navy, and Air Force. Army health personnel rendered services to the civilian population, the Navy provided transportation for health workers on its regular river navigation service, and the Air Force assisted in transporting patients in need of emergency hospital care.

Training activities included 1 course in auxiliary nursing (6 months), for 44 students; 1 orientation course in public health, for 73 rural schoolteachers; and 1 course in administrative organization and methods (6 weeks), for 32 administrative officers. Inservice training was provided for 33 nursing auxiliaries. A course on tuberculosis control, including vaccination techniques, taking of sputum samples, handling of slides, and health education, was conducted for 45 technical auxiliaries. More than 100 lay midwives received training.

PERU-3106, Health Services (Piura and Tumbes)

Purpose: Development and extension of the integrated health services in the Departments of Piura and of Tumbes.

Probable duration: 1970-1974.

Assistance provided: Advisory services by Zone IV Office staff.

Work done: The plan of operations was prepared for this project, in which the Government, UNICEF, and the Organization are participating. The budget covering the program for 1971-1972 in the Piura-Tumbes-Sullana Health Area was also prepared. UNICEF will contribute funds for the purchase of equipment and materials and for the training courses for present auxiliary staff and that to be recruited. The lists of the equipment and materials to be supplied by UNICEF were revised. Eight inservice training courses and 2 courses for nursing auxiliaries and sanitary inspectors, to be offered in Lima, Piura, Sullana, and Tumbes, were planned with the assistance of the School of Public Health.

UNICEF**PERU-3301, Vaccine Production**

Purpose: Strengthening of the National Institutes of Health for the purpose of increasing the production of vaccines to meet the country's needs.

Probable duration: 1969-

Assistance provided: Advisory services by project AMRO-0304 staff.

Work done: Local testing of biologicals was accomplished 100%, but shipment of the products to PAHO/WHO reference laboratories was achieved to an extent of only 50%. The growing demand for vaccine for the country's 12 health zones was met.

PERU-4200, Nutrition

Purpose: Development of a food and nutrition program within the health services.

Probable duration: 1965-

Assistance provided: 1 nutritionist, and advisory services by project AMRO-4204 staff; 1 long-term fellowship.

Work done: The multisectoral applied nutrition program was continued as part of the National Plan for the Development and Integration of the Rural Population in 7 joint action zones (Callejón de Huaylas, Meseta del Bombón, Valle del Mantaro, Cangallo, Puno, Canas Canchis, and Andahuaylas). Six officials of the program attended the course at the Regional Food Economics and Applied Nutrition Center in Colombia; 4 assumed duties as zone coordinators and 2 began service in the Agriculture Extension Services of the Departments of Agriculture. Two high-level courses were conducted for a total of 241 agriculture, education, health, and fisheries professionals (121 with UNICEF fellowships) from the joint action zones. The plan of operations was approved for the maternal and child supplementary feeding program. A course in poultry raising was held at the Veterinary Institute for Tropical and High Altitudes Research of San Marcos University for 49 professionals from the same 7 zones. In the Ministry of Agriculture, the Office of Technical Information inaugurated its recording laboratory to produce materials for food and nutrition training programs.

A technical handbook on practical poultry raising was prepared, and similar manuals on school vegetable gardens, community centers, the teaching of nutrition in elementary schools, and trout breeding in the Peruvian Sierra were in press. A start was made on the distribution of equipment and tools supplied by UNICEF for school vegetable gardens and home economics workshops in the 7 zones.

Two nutritionists were appointed to the staff of the Department of Nutrition, bringing the total number to 5. A modern public dining facility was established and a study of costs begun. Four short courses on basic aspects of nutrition were conducted for staff of the school feeding program, as well as a course on basic nutrition for elementary schoolteachers. Community education activities were stepped up.

WHO/RB**FAO, UNICEF****PERU-4202, Nutrition Rehabilitation Centers in the Highlands**

Purpose: Establishment of nutrition rehabilitation centers as a regular service of the hospital areas.

Probable duration: 1967.

Assistance provided: Advisory services by projects Peru-4200 and AMRO-4204 staff; 1 grant.

Work done: Three children's nutrition education and rehabilitation centers continued their regular activities: 1 in the San Bartolomé Hospital and Health Center in Lima, operated by Hospital Area 2; 1 (privately financed) in the Puno Hospital Area; and 1 in Cuzco, financed by the Rotary Club and supervised by the local Health Area.

The center at Sapallanga (Huancayo) was closed until July, when a grant from the Research Corporation made possible the resumption of its activities with 10 children. At the end of the year another 10 children were in the nutrition rehabilitation program.

PAHO/OF**Research Corporation****PERU-4500, Radiation Protection**

Purpose: Reduction of unnecessary exposure to ionizing radiations, both of persons exposed for occupational reasons and of the general population.

Probable duration: 1968-1971.

Assistance provided: Advisory services by project AMRO-4507 staff; 1 short-term fellowship.

Work done: The shipment of air samples to the National Radiological Health Center of the U. S. Public Health Service was continued on a regular basis as an activity of the Pan American Air Pollution Sampling Network. Six studies on radiation exposure in hospitals and health centers were made. A member of the technical staff of the Institute of Occupational Health was sent abroad to study film dosimetry techniques.

WHO/RB**PERU-4800, Medical Care Services**

Purpose: Strengthening of the administrative and technical systems of the Central Aeronautics Hospital.

Probable duration: 1970-1971.

Assistance provided: 1 short-term consultant, and advisory services by staff of Headquarters and of projects Peru-3100, Trinidad and Tobago-4800, and AMRO-3204, -4804, -4813, and -6708.

Work done: Assistance was furnished in setting up the administrative organization and complete remodeling of the physical plant of the Central Air Force Hospital to permit its early inauguration and operation. In the Department of Nursing, initial work was done on drafting procedures and regulations, and training was given in intensive patient care. Three nurses received training in administration of surgery centers at the Elizabeth Seaton Hospital in Cochabamba, Bolivia.

PAHO/RB

PERU-5000, Rehabilitation

Purpose: Establishment of national standards and procedures to govern the national rehabilitation program, and training of instructors and technicians in this field.

Probable duration: 1970.

Assistance provided: 1 short-term consultant, and advisory services by project AMRO-5000 staff.

Work done: An evaluation was made of the country's rehabilitation activities, including a review of the curriculum of the School of Technology of the Academic Medical Program at San Marcos University and the occupational therapy course at the Workers' Hospital. Targets for the training of new professionals were established. Appropriate services were selected to offer instruction in various techniques.

WHO/UNDP

PERU-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable, low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967.

Assistance provided: Advisory services by Headquarters and project AMRO-6204 staff.

Work done: The program was operative in 4 of the country's 6 medical schools. Sales totaled 143 copies of the *Tratado de patología*, 18 of *Bioquímica*, 50 of *Fisiología humana*, and 215 of the *Manual de farmacología*. The country also requested 270 copies of the *Tratado de pediatría*.

PERU-6100, School of Public Health

Purpose: Education and training of professional, technical, and auxiliary personnel in accordance with the national health plans.

Probable duration: 1963.

Assistance provided: 1 short-term consultant; 1 long-term fellowship.

Work done: A course was designed for the training of intermediate level personnel in X-ray techniques.

PAHO/RB

UNICEF

PERU-6200, Medical Education

Purpose: Increase in the training of teaching personnel and adaptation of the programs of study; strengthening of medical education at the undergraduate and postgraduate levels and provision of continuing education; and integration of preventive and social medicine into the programs.

Probable duration: 1964.

Assistance provided: 2 short-term consultants, and advisory services by project AMRO-6204 staff; 7 short-term and 1 long-term fellowships.

Work done: A document on the general characteristics of medical education in the country, analyzing the problem areas, especially those relating to faculty, students, and curricula, was prepared.

Seminars were held on the program of study and establishment of educational objectives (at Arequipa) and of a teaching hospital (at Trujillo); and on community teaching of maternal and child care (Paracas). A symposium on modern trends in health education was conducted.

Two laboratories were held in Trujillo and Arequipa on human relations and medical teaching. At San Marcos University and the Cayetano Heredia University, emphasis was placed on the teaching of preventive medicine and public health and demonstration areas were set up for the training of students in community medicine.

PAHO/RB, WHO/RB

PERU-6300, Nursing Education

Purpose: Training nurses at the basic and advanced levels for work in supervision, administration, and teaching.

Probable duration: 1964-1971.

Assistance provided: Advisory services by projects Peru-3100 and AMRO-3204 staff.

Work done: First-year nursing enrollments in the 5 universities participating in the project were at full capacity level. Owing to interruption of academic activities, there were no graduations during the year.

The Academic Nursing Program at San Marcos University increased its faculty to 100% of the target by giving permanent appointments to 7 professors and recruiting 3 additional professors. Thirty per cent of the nursing faculty took advanced academic training in nursing. A program of continuing education was instituted for the faculty. The Director of the Academic Nursing Program was made a member of the Governing Board of the Academic Program in Human Medicine. Plans were completed for approximately 85% of the courses of study in nursing.

A working group on planning of nursing activities held a 1-week meeting, with 27 instructors from most of the country's training centers participating.

PERU-6400, Sanitary Engineering Education

Purpose: Training of professional and subprofessional personnel engaged in sanitary engineering work, and performance of research on matters of sanitation.

Probable duration: 1964-1971.

Assistance provided: 2 temporary advisers, and advisory services by project Peru-3100 staff; 1 grant; supplies; 2 short-term fellowships.

IX. PROJECT ACTIVITIES

Work done: A course on methodology for university teaching was conducted at the National Engineering University with the assistance of 14 lecturers, for 54 professionals. The research project on stabilization ponds was completed and the relevant report prepared.

PAHO/RB

PERU-6500, Veterinary Medical Education

Purpose: Strengthening of the School of Veterinary Medicine of San Marcos University, especially with reference to the teaching of public health and preventive medicine.

Probable duration: 1965-1972.

Assistance provided: 1 temporary adviser, and advisory services by Zone IV Office and project AMRO-0700 staff; 1 long-term fellowship.

Work done: The Peruvian Association of Educational Centers in Veterinary Science was established; part of its objectives include the problems of teaching in this field, taking into account the needs of the country's social and economic development.

The first seminar on veterinary medical education was held from 9-11 December with participation of 19 national institutions (including the 4 Schools of Veterinary Medicine). The seminar reviewed the present status of teaching programs, and recommendations were made to adapt them and university research to the needs of community development.

Two veterinarians received academic training in public health and another 4 participated in courses and seminars on hydatidosis and tuberculosis.

WHO/RB

PERU-6600, Dental Education

Purpose: Improvement of dental education, with emphasis on the teaching of the basic sciences and of preventive and social dentistry.

Probable duration: 1969.

Assistance provided: 3 short-term consultants; 3 short-term and 1 long-term fellowships.

Work done: The changes made in the curriculum and academic structure of the dental program in San Marcos University were evaluated. Among other changes, a Preventive and Social Dentistry Section was established as an integral part of the University's Department of Preventive Medicine and Public Health. The Cayetano Heredia University received advisory assistance in planning the continued development of its dental program; until 1970, only postgraduate courses were offered, but plans were made during the year for admitting undergraduates beginning in 1972. A system of community dental practice was also set up as part of the course of instruction.

The University of Ica received advisory services in connection with the adjustment of its curriculum, and the School of Public Health in planning a public health course for dentists.

PAHO/RB

SURINAM-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1957.

Assistance provided: 1 sanitarian, and advisory services by Headquarters and project AMRO-0201 staff; antimalaria drugs; other supplies.

Work done: Of Surinam's estimated population of 376,136, about 36% were living in the nonmalarious area (Paramaribo). Of the number in the originally malarious areas, 73.6% were in maintenance phase areas, 11.2% in consolidation-phase areas, and 15.3% in attack-phase areas. Medicated salt (186,104 lbs) was distributed in the 2 malarious river valley areas where nearly all the transmission takes place (50% of target). Residual spraying was poor, covering only 3,849 houses out of 15,400, or 25%, in the 22nd cycle (January to June) and 2,670, or 17.3%, in the 23rd cycle (July to December). Of 48,702 blood smears examined (100% of the target) 1,019 were found to be positive, giving a slide positivity rate of 2.17% (1.9% in 1969). The increase was attributed to insufficient distribution of medicated salt in the Tapanahoni River valley. In the consolidation-phase areas, among 25,810 smears examined 84 positive cases were found, 22 of them imported from attack-phase areas.

PAHO/SMF, WHO/RB

UNICEF

SURINAM-2200, Water Supplies

Purpose: Planning, design, and improvement of rural and urban water supplies and development of sewerage facilities; exploration and definition of water resources; and establishment of an authority responsible for the continuing development and sound management and operation of systems.

Probable duration: 1964-1973.

Assistance provided: 1 project manager, 1 sanitary engineer, 1 hydrogeologist, 1 drilling superintendent, 2 short-term consultants, and advisory services by Headquarters and Zone I Office staff; equipment and supplies; 1 short-term fellowship.

Work done: Basic demographic, meteorologic, hydrogeologic, and topographic data for Supply Groups I and II were collected and collated (100% of the target). Existing water supply systems, legislation, and administrative agencies were inventoried (100% of the target). A revised Project Activity Plan was prepared.

Evaluation of surface and groundwater sources for Supply Group I was in process (75% of the target). Water demands for Supply Group I areas were projected through the design year 1987, and a preliminary study was made of those for Group II. Sewerage requirements were reviewed (60%).

General design criteria for water supply and sewerage systems were developed for Supply Group I. Review and evaluation of alternative designs was in progress (70%).

Preliminary and final designs for high priority water systems for Supply Group I were completed. Some preliminary designs for Supply Group II water systems were prepared, as were designs for Group I sewerage systems (100%).

Data on financing and investment sources were compiled, and feasibility studies for Supply Group I water systems were initiated (100%).

WHO/UNDP

SURINAM-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti*

Probable duration: 1969-1973.

Assistance provided: 1 sanitarian, and advisory services by project AMRO-2301 staff; equipment and supplies.

Work done: The campaign completed the 2nd year of the attack phase, its activities being restricted to Paramaribo, nearby cities, and the seaboard region.

Three verification and treatment cycles were carried out; owing, however, to problems of personnel and transportation, the activities of the campaign were not performed according to the plan of operations. A survey of 3,624 houses in Paramaribo showed that the roof gutters in 1,287 (36%) were breeding grounds for the vector. After a number of methods were tried, it was found that the application of Abate mixed with sand and wrapped in muslin bags resolved the problem satisfactorily.

With the exception of Paramaribo, which suffered a setback in 1970, all the work areas showed a significant improvement in the rate of infestation, as indicated below.

Area	House positivity index	
	1969	1970
Paramaribo	4.5%	11.0%
Commewijne and Marowijne	15.0%	3.2%
Saramacca, Coronie, and Nickerie	7.0%	1.0%
South Paramaribo, Pará, and Brokopondo	8.0%	1.5%

PAHO/RB, WHO/UNDP**SURINAM-3100, Health Services**

Purpose: Improvement and expansion of the national health structure and strengthening of the national health services.

Probable duration: 1965-

Assistance provided: 1 medical officer, and advisory services by Zone I Office and projects AMRO-0800, -1000, and -4230 staff; common services; supplies.

Work done: Quadrennial projections were prepared. An extensive study of administrative practices in the Ministry of Health was conducted by a team of specialized consultants. An Interministerial Committee had under study a national health insurance scheme to provide coverage for the entire population. Preventive measures were taken against foot-and-mouth disease, following the outbreak that occurred in Curaçao.

PAHO/RB**SURINAM-6200, Medical Education**

Purpose: Strengthening and improvement of medical education in Paramaribo.

Probable duration: 1967-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by projects AMRO-3501 and -6101 staff.

Work done: Construction of the building for the Basic Sciences Laboratory was begun. The medical records unit of the University Hospital introduced improved methods for the collection and reporting of data on patients admitted; these

improvements were demonstrated as part of the teaching program.

TRINIDAD AND TOBAGO-0100, Epidemiology

One short-term fellowship was awarded.

WHO/RB**TRINIDAD AND TOBAGO-2100, Engineering and Environmental Sciences**

Purpose: Strengthening and expansion of engineering and environmental health activities in Trinidad and Tobago.

Probable duration: 1969-1972.

Assistance provided: 1 short-term consultant, and advisory services by Zone I Office and projects West Indies-2200 and AMRO-2107 staff.

Work done: Planning of sanitary engineering activities continued in the country, but substantial progress in this project was impeded by the lack of a chief engineer in the Ministry of Health. The consultant performed a survey of available environmental sanitation manpower and facilities for training and education of such personnel.

PAHO/RB**TRINIDAD AND TOBAGO-2200, Water Supplies**

Purpose: Reorganization of the national Water and Sewerage Authority; expansion of the existing water treatment plant; and achievement of economic self-sufficiency by the water and sewerage services.

Probable duration: 1963-

Assistance provided: 1 short-term consultant, and advisory services by the PAHO/WHO Country Representative and by projects West Indies-2200 and Trinidad and Tobago-3100 staff; supplies.

Work done: A report on the operation and maintenance of the Water and Sewerage Authority (WASA) was prepared and presented to the Government. At a meeting in June an evaluation of the progress made in implementing the 1968 recommendations on organizational structure was carried out by WASA's management team and PAHO/WHO advisers. A WASA training center was set up early in the year and courses for personnel at the operational level were organized. WASA submitted a loan application to the IDB for 46.5 million dollars (Trinidad and Tobago) to cover the design and construction of waterworks at Navet and Caroni-Arena and the purchase of 60,000 water meters.

PAHO/CWSF**TRINIDAD AND TOBAGO-3100, Health Services**

Purpose: Implementation of the health policies embodied in the First National Health Plan, 1967-1976.

Probable duration: 1968-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 nurse, and 1 administrative methods officer; common services; 27 short-term and 9 long-term fellowships.

Work done: A medical officer to take charge of integrating family planning into the maternal and child health services

was appointed in November. A workshop held in September assessed the progress made in integrating curative and preventive medicine in a rural zone and one district hospital in the Point Fortin area; it estimated that 80% of the goal had been accomplished. The Ministry introduced its new manual on maternal and child care. The regionalization of health services was continued, 50% of the established target having been met. The National Drug Formulary was issued and put into use. A centralized radiotherapy service was instituted in Port-of-Spain. All of the planned improvements to the casualty ward at Port-of-Spain Hospital were accomplished.

Training at the local level was continued for both nursing and administrative personnel. Three new graduate programs for nurses were established. At the 2 regional hospitals, the nursing supervisory structure was reorganized. Steps were taken to accelerate the integration of nursing services in 23 pilot areas; the objective was fully achieved in 13 of the areas and partially achieved in 6.

PAHO/RB, WHO/RB

UNICEF

TRINIDAD AND TOBAGO-3500, Health Statistics

Purpose: Establishment of a health statistics service in the Ministry of Health to provide timely and adequate data for the planning, operation, and evaluation of health services.

Probable duration: 1969-

Assistance provided: Advisory services by the PAHO/WHO Country Representative and by the medical records officer and the statistical adviser of project AMRO-3501.

Work done: Preparation of staff for the proposed statistical unit in the Ministry of Health continued to meet with difficulties. Nevertheless, the statistical clerk from the Ministry attended the 3-month training course given by the Central Statistical Office; special sessions were devoted to health, vital, and population statistics.

Medical records and hospital statistics were improved at the 2 regional hospitals. A professional librarian joined the staff of the Port-of-Spain Hospital.

TRINIDAD AND TOBAGO-4800, Hospital Administration and Medical Records

Purpose: Improvement of hospital and medical care administration policies and procedures.

Probable duration: 1967-1972.

Assistance provided: 1 hospital administrator.

Work done: Feasibility studies related to hospital construction were carried out. At the Port-of-Spain Hospital new medical records forms were introduced; a disaster plan was prepared; a technical booklet for physicians in the emergency service was in preparation; and the laundry service was improved by the addition of trained staff and the establishment of equipment-handling programs. Emergency services were inaugurated in both the Port-of-Spain and the San Fernando Hospitals. Two courses were conducted for 70 hospital attendants, and a program for community education on the role of the hospital was carried forward. Preparation of a comprehensive hospital manual was under way (50% of the work completed), and an information booklet and a hospital newsletter were published.

WHO/UNDP

TRINIDAD AND TOBAGO-4900, Health and Population Dynamics

Purpose: Establishment of a national family planning program as an integral part of the health services, and specifically of the maternal and child care service.

Probable duration: 1969-1971.

Assistance provided: Advisory services by Headquarters staff; equipment and supplies.

Work done: Major emphasis was placed on three areas: (1) The national family planning program was integrated into the maternal and child health service. (2) A community education program was designed and many activities were carried out, including film showings, organization of Family Planning Week, a conference on family life and education, and broadcast and television interviews with local personalities; a pilot project on community education was conducted over a 3-month period. (3) Training programs on family planning were conducted for nurses and nurse-midwives, health educators, community education aides, and county health visitors.

Other activities included a follow-up study of dropout cases and implementation of postpartum and postabortion programs. Preparations were made for a cytology and cancer detection program; 80% of the women to be reached were interviewed in the field.

Coordination of the activities with those of the World Bank Missions was maintained.

PAHO/OF

AID

UNITED STATES OF AMERICA-3100, Consultants in Specialized Fields

Purpose: Study of special public health problems.

Probable duration: 1958-

Assistance provided: 5 short-term consultants.

Work done: At the request of the U.S. Public Health Service, the consultants rendered services in the fields of chronic diseases, sulphur chemistry, virology, mental health, and plague control.

WHO/RB

UNITED STATES OF AMERICA-3103, Fellowships

Twenty-three short-term fellowships were awarded.

PAHO/RB, WHO/RB

URUGUAY-0300, Smallpox Eradication

Purpose: Eradication of smallpox.

Probable duration: 1967-1972.

Assistance provided: Advisory services by project AMRO-0106 staff; equipment and supplies.

Work done: Some financial problems were solved, and the program continued. There were no cases of smallpox. A total of 369,802 persons were vaccinated. The cumulative total of vaccinated and revaccinated persons was 1,614,739, out of a population of 2,851,600. Production of glycerinated vaccine amounted to 1,720,000 doses.

WHO/RB

URUGUAY-0701, Rabies Control

Purpose: Planning and implementation of a rabies control program, including the production of rabies vaccine.

Probable duration: 1966-

Assistance provided: Advisory services by project AMRO-0700 staff.

Work done: A total of 1,447 persons were given the complete series of rabies vaccine. There were no clinical cases of human rabies and none of animal rabies. A total of 32,540 dogs were vaccinated; 8,763 stray dogs were held for observation, and 6,435 were destroyed.

URUGUAY-1000, Chagas' Disease

Purpose: Control of the vectors of Chagas' disease by house-to-house spraying with insecticide.

Probable duration: 1968-

Assistance provided: Advisory services by Headquarters and Zone III staff, 3 vehicles, and a centrifuge and accessories for a diagnostic laboratory assisting the program.

Work done: Owing to administrative and financial difficulties, the program was not started.

WHO/RB**URUGUAY-2100, Engineering and Environmental Sciences**

Purpose: Formulation and implementation of environmental sanitation programs.

Probable duration: 1968-1974.

Assistance provided: 1 sanitary engineer, and advisory services by projects AMRO-2106 and -2114 staff; supplies.

Work done: A Department of Environmental Hygiene was established in the Ministry of Public Health. Advisory assistance was given to the Municipal Government of Montevideo in obtaining a preinvestment loan to finance the technical and economic feasibility studies for sanitary improvements on the beaches of Montevideo. The contract for the studies has been awarded to a firm of consultants specialized in this field. Inspections, surveys, and educational events on various aspects of environmental sanitation were carried out.

Wells were drilled in rural areas with assistance from UNICEF.

PAHO/RB, WHO/UNDP**URUGUAY-2200, Water Supplies**

Purpose: Implementation of national water supply and sewerage programs to meet the needs of 75% of the urban and 40% of the rural population for water supply and of 60% of the urban population for sewerage service.

Probable duration: 1960-1972.

Assistance provided: 4 short-term consultants, and advisory services by projects Uruguay-2100 and AMRO-2106 staff; equipment and supplies; 4 short-term fellowships.

Work done: The administrative rationalization of the State Sanitation Works (OSE) was the subject of a general evaluation. An analysis was performed of OSE's staff with a view to preparing a program of inservice training for the semi-technical and administrative personnel. A study was made of

the operation and maintenance of water supply services in Montevideo and other cities.

PAHO/RB, PAHO/CWSF**OAS****URUGUAY-3100, Health Services**

Purpose: Development of the national health services in accordance with a national health plan and a program encompassing appropriate technical and administrative reorganization at the national, regional, and local levels; and training of the necessary personnel.

Probable duration: 1955-

Assistance provided: 1 medical officer (the PAHO/WHO Country Representative), 1 administrative methods consultant, and 2 short-term consultants; common services; equipment and supplies; 6 short-term fellowships.

Work done: A diagnosis was made of health conditions in the country's 19 departments; the major areas requiring preferential attention were determined; and the basic programs to be carried out were specified. These included: technical rationalization of facilities; administrative improvement, already begun; manpower; adjustment of installed capacity; investments; and intrasectoral coordination. Work continued on matters of personnel, processing of documents, communications services, etc., particularly through the Department of Administrative Rationalization. In the accounting and budget areas, the regular activities were carried out, including, notably, the preparation of documents on expenditures by administrative unit, evaluation of the program budget for 1969, the forecast of expenditures for 1971, the design of a model for controlling the cash flow at the local level, and the experimental use of this model at the Pereira Rossell Hospital. An advisory group was established to assist the Division of Administration of the Ministry of Public Health. An administrative diagnosis model was designed and tested at the Dr. Pedro Visca Hospital.

A seminar for administrators of medical care services in Montevideo was held to examine the question of supplies.

PAHO/RB, WHO/RB**UNICEF****URUGUAY-3101, Fellowships**

Eight short-term and 2 long-term fellowships were awarded.

WHO/RB**URUGUAY-3102, Development of the Santa Lucía River Basin**

(1969-1970) PAHO/RB, WHO/RB

(OAS)

The purpose was to study the water resources of the Santa Lucía River basin with a view to obtaining the maximum benefit from the use of the water of the basin. The Organization provided 20 man-months of professional services in the form of short-term consultants in sanitary engineering, public health, and systems analysis, as well as advisory services by Headquarters staff and by the engineer and the medical officer of project AMRO-3122.

Estimates of future municipal and industrial water demands, liquid waste loads, and waste treatment requirements for protection of water quality were prepared. An evaluation

IX. PROJECT ACTIVITIES

was made of the impact on health of proposed hydraulic developments, the health measures necessary to cope with them, and the cost of such measures. A mathematical model for providing optimum solutions to water supply and water quality problems was developed and applied. The final report on the project set forth recommendations on hydraulic projects and their costs and benefits. This project received assistance from the Organization of American States and was the first comprehensive multilateral river basin study in which PAHO/WHO participated.

URUGUAY-3500, Health Statistics

Purpose: Establishment of a national system of health statistics to provide reliable current data.

Probable duration: 1965-1974.

Assistance provided: Advisory services by project Uruguay-4102 staff; equipment and supplies.

Work done: The system of hospital statistical records established in 1969 was put into use in all departmental hospitals of the Ministry of Public Health. Data on medical services and their effectiveness were processed for 1969. The general mortality data for that year were published according to the list of causes in the *International Classification of Diseases*. In addition, the annual information on cases of notifiable diseases during 1969 was completed, and the monthly report was being updated with the issuance of all the reports up to July 1970. A morbidity survey of hospital discharges in 1968 (based on a 10% sample) was processed and tabulated, and a similar sample for 1969 was being processed.

WHO/RB

URUGUAY-3600, Administrative Methods and Practices in Public Health

Purpose: Improvement of administration, with emphasis on the training of personnel, organization of the system, and selection of methods.

Probable duration: 1970-1975.

Assistance provided: 1 administrative methods consultant (December).

Work done: The project began toward the end of the year. An annual work plan was prepared, including participation of administrative services in planning activities; reorganization of the Personnel and Organization and Methods Departments of the Ministry of Public Health and training of their officials; post analyses; updating of personnel records; mechanization of administrative activities; improvement of supply procedures; application of a new system of documents administration; analysis of the transportation and communications system; and intensification of training activities.

WHO/UNDP

URUGUAY-4102, Latin American Center for Perinatology and Human Development

Purpose: Reduction of maternal, fetal, and infant morbidity and mortality rates; and subsequent achievement of

adequate child health conditions through research, training, and advisory services in the field of human reproduction and development.

Probable duration: 1970-1974.

Assistance provided: 1 Director of the Center, 1 statistician, and 2 perinatologists; equipment and supplies; local costs.

Work done: The Center furnished advisory assistance to 8 countries of the Region in matters relating to perinatal problems, through courses, lectures, practical demonstrations, and discussion of specific problems.

A seminar on the teaching of the biology of human reproduction was attended by 20 professors from medical schools in Central America, who also participated in related activities in Argentina and Chile. A seminar on perinatal physiology was also held as part of the Latin American course on the biology of human reproduction.

Eighteen professionals from countries in the Region, including 15 recipients of PAHO fellowships under other projects, received training at the Center.

The Center published 126 research papers on matters relating to perinatal problems, with special emphasis on the dangers of premature birth and the prevention and treatment of acute fetal distress.

PAHO/RB, PAHO/OF, WHO/RB Ford Foundation

URUGUAY-4600, Occupational Health

Purpose: Implementation of a program for reducing the losses of life, health, and economic productivity caused by occupational diseases and work accidents.

Probable duration: 1967-1972.

Assistance provided: Advisory services by Headquarters and project Uruguay-2100 staff.

Work done: The Industrial Chemistry Laboratory, an agency of the Committee on Occupations Hazardous to Health, inspected more than 20 industrial plants utilizing or processing lead, foundries, chrome-processing establishments, pulverizing and metal polishing plants, and paint factories.

URUGUAY-4601, Air Pollution

Purpose: Determination of air pollution levels and adoption of control measures through the establishment of an air-sampling station.

Probable duration: 1967-1972.

Assistance provided: Advisory services by Headquarters and project Uruguay-2100 staff.

Work done: The air-sampling station set up in downtown Montevideo performed tests for suspended dust particles, settling dust, and sulfuric anhydride.

URUGUAY-4800, Medical Care Services

Purpose: Establishment of a national medical care system with the participation of all public and private medical care institutions.

Probable duration: 1966.

Assistance provided: 1 medical officer and 1 short-term consultant.

Work done: The Medical Care Division of the Ministry of Public Health, seeking to improve its technical structure, fostered a suitable climate for teamwork and for a systematic review of the aims, functions, and structure of each of its component units. The work program drawn up for 1971 included activities dealing with technical rationalization at the central and local levels and with the training of personnel.

The Technical Advisory Working Group of the Collective Medical Care Coordinating Board agreed on certain criteria, defined a work plan, and allocated specific responsibilities to its members.

The intensive care unit of the Clinical Hospital reached 75% of the target for completion of its physical plant.

PAHO/RB, WHO/RB

UNICEF

URUGUAY-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable, low-cost textbooks to students; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters staff and the PAHO/WHO Country Representative.

Work done: The program has been received exceedingly well by the students. A total of 302 copies of *Bioquímica* and 307 of the *Tratado de patología* were sold.

URUGUAY-6200, Medical Education

Purpose: Strengthening of medical education by improving the curriculum, teaching methods, faculty, and physical resources of the School of Medicine of the University of Uruguay.

Probable duration: 1964-1975.

Assistance provided: Advisory services by Zone VI Office and project AMRO-4102 staff; 1 long-term fellowship.

Work done: A seminar on epidemiology and demography was held, with 45 professors from the School of Medicine participating. Two courses in medical statistics (total, 105 hours) were sponsored by the Graduate Division of the School of Medicine. A professor of hygiene and preventive medicine from the School was granted a long-term fellowship for studies in epidemiology.

PAHO/RB

URUGUAY-6400, Sanitary Engineering Education

Purpose: Improvement of the teaching of sanitary engineering in the regular civil engineering courses; and implementation of a program of continuing education for professionals through short courses and applied research.

Probable duration: 1965-1975.

Assistance provided: 2 temporary advisers; 2 short-term consultants, and advisory services by project Uruguay-2100 staff; 1 grant; equipment and supplies.

Work done: The following courses were held for a total of 99 participants: protection of water pipes against corrosion; industrial hygiene and safety; economic feasibility studies, for engineers (as part of project Uruguay-2200);

and treatment of waste water. The short-term consultants served as professors in the courses.

PAHO/RB

URUGUAY-6600, Dental Education

(1970) PAHO/RB

A short-term consultant worked 3 months with members of the social dentistry faculty of the School of Dentistry of the University of Uruguay on strengthening the teaching of epidemiology and statistics in the 3rd year of the dental curriculum and on introduction of extramural practice with the aim of bringing the students into direct contact with oral health problems, their conditioning factors, and the preventive concepts taught in the classroom.

VENEZUELA-0200, Malaria Eradication

Purpose: Eradication of malaria.

Probable duration: 1955-

Assistance provided: 1 short-term consultant, and advisory services by Headquarters staff.

Work done: Of the 7,287,027 inhabitants of the originally malarious area, only 410,604, or 5.6% are now in attack phase areas, the rest being in maintenance phase areas.

In the attack phase area, 397,766 DDT sprayings were performed at intervals of 6, 4, or 3 months, depending upon the epidemiological situation in each region. A total of 88,424 blood smears were examined in this area, 11,789 of them yielding positive results.

In the maintenance phase area, 180,710 blood smears were examined, with 2,753 found positive. Of these, 633 were classified as autochthonous cases, 12 as relapses, 264 as cases imported from other countries, 1,542 as cases imported from the attack phase area, 4 as induced cases, 297 as introduced cases, and 1 case as of doubtful origin.

In addition to regular campaign operations, research was performed on the effectiveness of spraying with OMS-33, with malathion, and utilization of FLIT-MLV and Baytex as larvicides.

Performance of the activities envisaged for an administrative methods consultant was prevented by problems of various kinds.

PAHO/RB

VENEZUELA-0300, Smallpox Eradication

Purpose: Maintenance of the smallpox-free status of the country.

Probable duration: 1969-1972.

Assistance provided: Advisory services by Headquarters and Zone I Office staff; equipment and supplies.

Work done: A report on the production of smallpox vaccine in Venezuela was submitted to the Government. The Organization donated a set of freeze-drying equipment for the preparation of smallpox vaccine.

WHO/RB

VENEZUELA-2200, Water Supplies

Purpose: Complete reorganization of the National Institute of Sanitary Works, including its organic structure, policies, systems, and working procedures, and the training of personnel.

Probable duration: 1969-1972.

Assistance provided: 1 administrative methods consultant, 9 short-term consultants; supplies.

Work done: The preliminary phases of the program were accomplished with technical assistance in the areas of organic structure, financial administration, personnel management, supply systems, data processing, control and auditing, and determination of the operating capacity of the engineering services. Work was also done on the formulation of programs for implementing the measures recommended. Two intensive large-scale programs of immediate advisory services and a broad training program were planned for 1971. A program was developed for performing a complete manpower survey.

PAHO/CWSF

UNICEF

VENEZUELA-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti*.

Probable duration: 1958-

Assistance provided: Advisory services by Zone I Office staff.

Work done: The activities of the program continued to be limited to the western part of the country. The number of localities remaining positive—78 at the end of 1969, with an index of 3.2% of the houses positive—rose to 94 (index, 2.3%) at the end of 1970.

VENEZUELA-3100, Consultant Services in Health

Purpose: Improvement in the level of health; and adaptation of the organization and resources of the health sector to increase its productivity and efficiency and enable it to play an effective and significant role in the development of the country.

Probable duration: 1964-

Assistance provided: 1 short-term consultant, and advisory services by Headquarters and Zone I Office staff; 11 short-term and 2 long-term fellowships.

Work done: The 4-year projections for 1971-1974 were drawn up. The 1st meeting on PAHO/WHO activities in Venezuela, held at the Central Office for Coordination and Planning (CORDIPLAN), afforded an opportunity for an exchange of views among the country's central planning agency, authorities and officials of the Ministry of Health and Social Welfare, and PAHO staff stationed in Venezuela. A new health policy and an administrative reform of the sector were planned.

Various chapters of the IV National Plan recently released are devoted to the Program of Health and Social Protection. Significant assistance was provided in the training of personnel in various fields of public health: 23 fellowships (12 academic and 11 for short courses) were awarded. The Ministry's plan calls for integration of health services in all new hospitals.

WHO/RB

VENEZUELA-3300, Laboratory Services

Purpose: Organization of laboratory services at the national, regional, and local levels with the aim of improving the quality of diagnosis, comprehensive medical care, and preventive medicine.

Probable duration: 1966-1972.

Assistance provided: 1 laboratory technician.

Work done: A plan was devised for developing the Regional Laboratory at Maracay for use as a pilot center for the training of technical laboratory personnel. The plan consisted of the following 4 parts: (a) A basic study of the laboratory's resources and operation (personnel, equipment, materials, quarters, techniques, productivity, demand, administration, supplies, etc.). The study was nearly completed and proposals were made for a reorganization of the laboratory; in addition, a bromatology section was established. (b) Training program. To improve the technical knowledge and practical skills of the staff, a program including lectures by Laboratory Division experts, internal seminars, and individual reading was instituted, and a small library was organized (100%). (c) Quality control, including equipment maintenance, culture media, reagents, procedures, and standards. (d) A training program in epidemiology (public health bacteriology). In order to train the technical laboratory personnel in field work techniques, a small field campaign was prepared.

Over-all achievement of the objectives of the plan was at 90%.

In the field of training, the Laboratory Division continued its 2-year postgraduate course for microbiologists, with 5 students enrolled.

Twenty-five students completed the 14-month course for senior laboratory assistants, and 21 started the new course. A 6-week course in immunofluorescence was conducted for 8 technicians (100%).

WHO/UNDP

VENEZUELA-3301, National Institute of Hygiene

Purpose: Adaptation of the structure, organization, and programs of the National Institute of Hygiene to the needs of the country.

Probable duration: 1964-1971.

Assistance provided: 1 short-term consultant, and advisory services by Headquarters, Zone I Office, and project AMRO-4203 staff.

Work done: An analysis was made of the methods used in the preparation of DPT vaccine and its 3 components, and typhoid fever vaccine, as well as the methods employed in controlling the quality of both vaccines. Scientific, technical, and practical information about the preparation of these products was made available to professional staff of the laboratory.

PAHO/RB

VENEZUELA-4200, Nutrition

Purpose: Definition of a national nutrition policy to make it possible to carry out a nutrition and food program with the participation of various sectors.

Probable duration: 1965-1972.

Assistance provided: 1 medical officer and 1 short-term consultant; 2 short-term and 2 long-term fellowships.

Work done: The new structure and functions of the National Institute of Nutrition and its technical links with the Ministry of Health and Social Welfare and other sectors were determined (100% of the target). Nutrition sections were established in 7 regional health services (140% of the target), and the programs in 5 states were evaluated (80%).

Standards were prepared for the programs of nutrition education and supplementary feeding directed to preschoolers, schoolchildren, and workers (100%).

The nutrition services attended to 80,000 preschool-age children (100%), and 220,000 schoolchildren (90%). An application for 5 years' assistance in extending the supplementary food program for preschoolers and schoolchildren was prepared for submission to the World Food Program.

The salt iodization program to control endemic goiter was continued (50% of the target).

Four public health physicians and 12 nutritionist-dietitians were assigned by the Government to various states to strengthen the local programs.

Three schools of medicine included nutrition in their curricula (50% of the target).

Three physicians and 1 dietitian awarded PAHO/WHO fellowships for training abroad in nutrition returned and were teaching in Venezuelan universities (100% of the target).

The 3rd year course of study and hospital internship program for the Zulia State School of Nutrition were designed, and a supplementary course was inaugurated for dietitians wishing to earn a degree at Central University in Caracas.

Sixty-six physicians, 38 nutritionist-dietitians, 62 nursing auxiliaries, and 109 school cafeteria managers received training in 17 courses sponsored by the Institute (90%).

PAHO/RB, WHO/RB

VENEZUELA-4300, Mental Health

Purpose: Improvement of mental health services and extension of their coverage to make them available to the entire population of the country.

Probable duration: 1964-1971.

Assistance provided: 1 nurse.

Work done: A survey of the psychiatric nursing departments was carried out and initial work was done on their reorganization (95% of the target).

Mental health nursing personnel was prepared at the post-basic level (100%) and basic level (100%) through in-service training.

PAHO/RB, WHO/UNDP

VENEZUELA-4400, Dental Manpower Studies

Purpose: Comprehensive dental planning.

Probable duration: 1965-1971.

Assistance provided: 2 short-term consultants, and advisory services by project Venezuela-6200 staff; 1 grant.

Work done: Coding and review of the data from the morbidity survey (examinations and interviews) were completed,

and a start was made on tabulation and analysis of the information (70% of the target for the year). General data were gathered on the 3 schools of dentistry, their student bodies, curricula, and faculty (teaching resources) (70%). The survey of professional and auxiliary dental manpower was carried out (50% of the target for the year). Collection of data on institutional resources (services) providing dental care was initiated (10%).

PAHO/RB, PAHO/OF

VENEZUELA-4401, Dental Materials Center

Purpose: Quality control and standardization of dental materials; and development of training and research.

Probable duration: 1969-1975.

Assistance provided: 2 short-term consultants and 1 temporary adviser; equipment and supplies.

Work done: The Dental Materials Center commenced operations in the School of Dentistry of the Central University in Caracas; its basic (technical and administrative) personnel was recruited; equipment was installed; and the laboratory began work on standardization and certification of dental products (100% of the target). Five research projects were begun at the Center, 1 in the School at Mérida, and 1 in Maracaibo, the last on dental enamel sealers (100%). The 3rd national seminar on dental materials was held (100%). A dental materials guide was published and distributed (100%).

PAHO/RB, PAHO/OF, WHO/RB

KF

VENEZUELA-4500, Radiation Protection

Purpose: Reduction of all unnecessary exposure to ionizing radiations, both of persons exposed by reasons of their occupation and of the general population.

Probable duration: 1970-1972.

Assistance provided: Advisory services by Headquarters staff; equipment and supplies; 2 short-term fellowships.

Work done: Advisory assistance was rendered to the Radiophysical Health Service of the Ministry of Health and Social Welfare. Equipment for the calibration of radiation-emitting instruments used by specialized personnel was acquired.

WHO/RB

VENEZUELA-4800, Medical Care Services

Purpose: Implementation of an organizational and operational plan for hospitals and health centers, with a view to achieving the best possible coordination of available resources; and training of the personnel needed.

Probable duration: 1966-1971.

Assistance provided: 1 medical officer.

Work done: A substantial part of the organizational program for the Mérida Hospital was prepared; and proposed staffing plans and the 1971 program budget were drawn up.

The program for the organization of the Maracay Hospital was still in the initial stage, involving the collection of basic data.

The training of personnel was partly accomplished in re-

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gard to certain groups, including professional and auxiliary nursing staff, dietitians and assistant dietitians, maintenance personnel, etc.

The study of equipment required for the new hospitals was completed, and bids were requested.

The program for the organization of Cooperative Health Services for the States of Barinas and Guárico was carried forward through part of its first stage, involving the preliminary basic research. Initial work was done on the architectural plans for construction of the San Fernando de Apure, Los Teques, and Calabozo hospitals, and those for the Hospital del Este in Caracas were being prepared.

Plans were drawn up for the development of operational standards for ambulatory medical care centers, and a study on classification of hospitals or other medical care units was begun.

WHO/RB

VENEZUELA-4802, Hospital Maintenance and Engineering Center

Purpose: Development of a program for the operation, maintenance, and repair of health care facilities in the country.

Probable duration: 1968-1972.

Assistance provided: 1 project manager, 1 administrative methods officer, 8 short-term consultants, 1 temporary adviser, and advisory services by Headquarters staff; equipment and supplies, miscellaneous costs; 2 short-term and 4 long-term fellowships.

Work done: A hospital maintenance and engineering policy for the Ministry of Health and Social Welfare was established. Contractual requirements for the design, construction, and acceptance of new hospitals of the Ministry were improved, as were administrative practices with regard to preparation of job descriptions, systems analysis, and organizational structures for hospital maintenance and engineering at the national level.

Existing training courses were reviewed and improved and simplified training material was prepared. Plans were made to establish hospital maintenance training facilities at Maracay (pilot area).

WHO/UNDP

VENEZUELA-5000 (-4801), Rehabilitation

Purpose: Development of rehabilitation services and training of technicians.

Probable duration: 1963-1973.

Assistance provided: 1 physiotherapist, 1 occupational therapy adviser, 1 orthotics and prosthetics adviser, and advisory services by project AMRO-5000 staff; 2 short-term fellowships.

Work done: The program of the course in occupational therapy was revised to improve the training of therapists for professional rehabilitation of patients, and contacts were made with institutions in a position to cooperate in this part of the program (100% of the target).

Work began on organization of the first orthotics and pros-

thetics laboratory of the Ministry of Health and Social Welfare in a regional health service (100%).

The first psychiatric occupational therapy section of the Ministry of Health and Social Welfare, to be used as a practice center, was established (100%) and provided with basic equipment (75%).

Courses in physical and occupational therapy were given at the School of Public Health of the Central University for a total of 21 students (75% of the target).

Three technicians began their inservice training in orthotics and prosthetics (100%).

WHO/RB

VENEZUELA-6000, Medical Textbooks and Teaching Materials

Purpose: Raising the level of medical education by providing suitable, low-cost textbooks to students; establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: Advisory services by Headquarters and Zone I Office staff.

Work done: Sales totaled 352 copies of the *Tratado de patología*, 373 of *Bioquímica*, 302 of *Fisiología humana*, and 365 of the *Manual de farmacología*.

VENEZUELA-6100, School of Public Health

Purpose: Development of the School of Public Health through improvement of its programs.

Probable duration: 1961-

Assistance provided: Advisory services by project Venezuela-6200 staff; 2 short-term fellowships.

Work done: The School of Public Health graduated 31 professionals as Masters in public health, 9 in hospital administration, 29 in clinical medicine, 22 in nursing, 9 in hospital supervision, 11 in sanitary inspection, and 11 in cytotechnology.

WHO/RB

VENEZUELA-6200, Medical Education

Purpose: Improvement in the quality of medical education.

Probable duration: 1961-1971.

Assistance provided: 1 medical officer and 3 short-term consultants; 1 grant; equipment and supplies; 6 short-term and 2 long-term fellowships.

Work done: A survey was made of the training of health personnel, including trends in 21 professions during 1960-1969 (100% of the target).

Education offices were established in 6 of the 7 medical schools. Three national seminars on the purposes, goals, and structure of such offices were held, and a collection of 25 books on medical education was donated to each of them (80%).

Advisory assistance was given on request to various schools of medicine in the revision of their programs of study and the establishment of new teaching programs (100%).

A diagnosis of the administrative situation in the Bar-

quisimeto School of Medicine was performed to provide a basis for a long-term program of advisory services in this field (20%). Arrangements were made for the 5th national seminar on medical education, scheduled for 1971. A seminar was conducted for librarians from the schools of medicine; a human relations and medical pedagogy laboratory was organized for 30 professors from medical schools; and the 2nd seminar on social science education and research was held (100%).

PAHO/RB, PAHO/OF Milbank Memorial Fund

VENEZUELA-6300, Nursing Education

Purpose: Improvement in nursing education, in order to raise the level of nursing services offered to the community.

Probable duration: 1959-1973.

Assistance provided: 2 short-term consultants; 1 long-term fellowship.

Work done: At the request of the Ministries of Education and of Health and Social Welfare, the activities of this project were focused on planning and development of the nursing portion of the diversified undergraduate course of nursing studies, which was inaugurated in September; on selection and training of the 58 instructors who will teach the first year of this new program; on establishment of criteria for selection of students and for evaluation of students and the curriculum; on adoption of regulations for middle-level schools of nursing, and on determination of the course content for Nursing I.

PAHO/RB

VENEZUELA-6400, Sanitary Engineering Education (1964-1970) PAHO/CWSF, WHO/UNDP, WHO/OF (Government of Venezuela)

The purposes of this project were expansion and strengthening of the teaching of sanitary engineering to undergraduate civil engineering students at the Central University of Venezuela, the University of the Andes, Zulia University, and Andrés Bello Catholic University; establishment of a postgraduate program in sanitary engineering at the Central University; establishment of an experimental station and laboratories for research and practice teaching; and organization of extension courses and seminars on environmental sanitation. The international contribution included 15 advisers and professors, 28 short-term consultants, equipment and supplies; some local costs; and 8 short-term and 4 long-term fellowships.

The programs of study in sanitary engineering for undergraduate civil engineering students at the 4 participating universities were reviewed, and the teaching of this subject was expanded and strengthened as a result. Buildings with suitably equipped laboratories were provided to their departments of sanitary engineering. Short- and long-term fellowships, as well as local extension courses, were made available to members of the faculty to improve their knowledge and skills.

A postgraduate course was established at the Central University of Venezuela. Research projects were carried out, and 11 short courses and 5 seminars were held for a total of 536 participants, mainly from the Ministry of Health and Social

Welfare, the National Institute of Sanitary Works, and other government institutions concerned with sanitary engineering.

The program was a success and was so declared officially by the United Nations Development Program, which played an important part in the project.

VENEZUELA-6500, Veterinary Medical Education

Purpose: Improvement of the teaching of veterinary medicine, especially in regard to preventive medicine and the basic sciences, with a view to improving the programs for zoonoses control and food hygiene.

Probable duration: 1966-1973.

Assistance provided: Advisory services by Headquarters staff.

Work done: A survey of the veterinary medical services revealed that Venezuela has 604 veterinarians, whereas 6,000 are needed.

Veterinary medical education was undergoing a basic reorganization. Self-evaluation of existing teaching methods, curriculum, and administration was continued by the 3 schools of veterinary medicine. A basic plan of studies was introduced in all 3 schools.

At 2 meetings of the deans and directors of the schools held during the year, resolutions were adopted on the organization of the first seminar on veterinary medical education; short courses in epidemiology; use of visual aids; and retraining of 90 staff members during the next 5 years.

VENEZUELA-6600, Dental Education

Purpose: Training of auxiliary dental personnel; and strengthening of the program for the teaching of dentistry, particularly its preventive and social aspects.

Probable duration: 1966-1971.

Assistance provided: 8 short-term consultants, and advisory services by Headquarters staff; 1 short-term fellowship.

Work done: At the School of Dentistry of the Zulia University (Maracaibo), a cycle of general studies was organized and the teaching of pediatric dentistry, periodontics, and prosthetics was reviewed. The teaching was coordinated through multidisciplinary clinics; a plan for reorganizing the school's administration was prepared; and 4 communities were selected to serve as areas for strengthening the extra-mural instruction and performing studies on dental care systems. An operational plan for utilization of simplified dental equipment was put into practice (100% of the target for that year), and a program was prepared for the training of auxiliary dental personnel at the School (30% of the target for the year).

At the School of Dentistry of the Central University in Caracas, an Office of Education was established to plan and evaluate the instruction (100%). In the Mérida School of Dentistry, the teaching situation was diagnosed and recommendations were made for implementation in the short- and longer run (100%). Twelve professors from the dental schools took part in a human relations and medical education laboratory. The IV Congress of the Latin American Association of Schools of Dentistry (ALAFOD) was held.

WHO/RB

WEST INDIES-0500, Leprosy Control

One short-term fellowship was awarded.

WHO/RB

WEST INDIES-0701, Rabies Control (Grenada)

Purpose: Eradication of rabies in Grenada.

Probable duration: 1968-1971.

Assistance provided: Advisory services by the PAHO/WHO Country Representative, by Headquarters and Zone I Office staff, and by the health educator assigned to project AMRO-3401.

Work done: Baiting and trapping of mongooses was continued, but at a reduced pace. The Medical Research Council (Great Britain) was supporting research on mongoose ecology at the Trinidad Virus Research Laboratory, and on the basis of recent data it was presumed that the mongoose population was increasing. Only one trapping team was functioning, and immunization of dogs was minimal. There was an increase in animal rabies.

WEST INDIES-2100, Engineering and Environmental Sciences

Expenses incurred regarding fellowships awarded in 1969 were liquidated.

PAHO/OF

UNICEF

WEST INDIES-2200, Water Supplies

Purpose: Preparation of plans and designs for the improvement and expansion of water supply systems in several eastern Caribbean islands.

Probable duration: 1962-1972.

Assistance provided: 1 short-term consultant, and advisory services by project AMRO-2107 staff; 1 short-term (St. Vincent) and 1 long-term (Dominica) fellowships.

Work done: In Dominica, specifications and estimates were prepared for Phase 2 of the planned improvements (part of Water Area No. 1 and all Water Area No. 3), thus achieving 100% of the target. Construction of Phase 1 improvements (the first project in Area No. 1 and all of Area No. 5) was progressing slowly (75% of the target). Preliminary plans and estimates for the construction of 3 minor water systems (La Rivière Cyrique, Bagatelle/Warner, and La Plaine) were prepared and submitted to UNICEF for approval (100%).

In Grenada, specifications and estimates were forwarded to the Canadian International Development Agency (CIDA) for equipment and materials for the St. George's and South St. George's water system improvements (100%). CIDA materials for those projects were received and distributed but no equipment arrived. The Central Water Commission was officially established in February.

In St. Lucia, construction of the Northwest Coast Project was completed, and 35% of the Castries project was completed (70% of the target).

In St. Vincent and the Grenadines, the survey of water resources and waterworks facilities was progressing close to

schedule, through the joint effort of the CIDA consultant and the Central Water Authority (90%).

At a 3-day conference of water engineers, in which PAHO/WHO, the British Development Division, and CIDA participated, it was recognized that many of the facilities currently under construction, or planned, in the eastern Caribbean area would be without trained and qualified personnel to operate them when completed. To meet the problem, the conference defined the needs for the training of waterworks personnel in the area and designed a syllabus of the various job classifications for such personnel.

Dominica, Grenada, St. Lucia, and St. Vincent made an analysis of their waterworks personnel needs for the next 5 years and adopted a 4-year training plan in which the British Development Division, CIDA, and PAHO/WHO will cooperate. Plans were drawn up for a course for water laboratory personnel, which was scheduled for 1971.

WHO/UNDP

WEST INDIES-2300, *Aedes aegypti* Eradication

Purpose: Eradication of *A. aegypti* from Antigua, the British Virgin Islands, the Cayman Islands, Dominica, Grenada, Montserrat, St. Kitts, St. Lucia, and St. Vincent.

Probable duration: 1969-1975.

Assistance provided: Advisory services by project AMRO-2301 staff; equipment and supplies.

Work done: Antigua completed its preparatory phase activities and began the initial survey, the results of which indicated the presence of *A. aegypti* in 42.6% of the houses in St. John and surrounding areas.

Dominica and St. Vincent began to organize their eradication campaigns.

Grenada completed the preparatory phase, trained 34 field workers, and began the initial survey.

The Cayman Islands carried out 3 treatment cycles in Cayman Brac and 4 in Little Cayman. The index of infestation, which in the initial survey had been 33% in Cayman Brac and 22% in Little Cayman, was reduced to 5% and 2%, respectively.

St. Lucia began the attack phase with 4 treatment cycles, 2 of them partial. By the end of the year, of the 27 originally infested localities, where the index of positive houses had been 16.7%, 9 had become negative, 13 had positivity rates of less than 1%, and the other 5 had rates of between 2 and 6%.

PAHO/RB

WEST INDIES-3100, Health Services

Purpose: Formulation and implementation of health programs as part of the socioeconomic development plans, with the maximum utilization of local resources.

Probable duration: 1969 (activities previously conducted under project AMRO-3107).

Assistance provided: 1 nurse (from November), 1 short-term consultant, 2 temporary advisers, and advisory services by staff of the Eastern Caribbean Office and of project AMRO-3107; common services; 20 short-term and 6 long-term fellowships (1 each Bermuda, Grand Cayman, Montser-

rat, and Nevis; 2 each Bahamas and St. Lucia; 3 St. Kitts; 4 Antigua; 5 St. Vincent; and 6 Dominica).

Work done: The quadrennial projections of activities were prepared for all the islands (100% of the target). The National Health Plan for St. Kitts/Nevis was being prepared (10% of the target). The Cayman Islands and the Bahamas made plans to reorganize their nursing services.

WHO/RB

WEST INDIES-3103 (-3107), Health Services (St. Lucia)

Purpose: Implementation and evaluation of an integrated health program.

Probable duration: 1963-

Assistance provided: Advisory services by staff of the Eastern Caribbean Office and of project AMRO-3107.

Work done: The quadrennial projections of activities were prepared. A study of the organization and administration of the health service was in progress, with British Government assistance. At the Victoria Hospital, the medical records department was reorganized, new procedures were introduced, and staff was trained (50% of the target). The leprosy control program was strengthened by the training of the public health inspector in charge of field operations (100% of the target).

UNICEF

WEST INDIES-3104, Health Services (Montserrat)

Purpose: Evaluation of the existing integrated health program as a basis for the preparation of a National Health Plan.

Probable duration: 1965-

Assistance provided: Advisory services by staff of the Eastern Caribbean Office and of project AMRO-3107.

Work done: The quadrennial projections of activities, completed during the year, identified 2 new main areas for assistance: development of human resources for the proposed new hospital and for the expanded water supply service currently under construction. For the *Aedes aegypti* eradication program, supplies were delivered and staff was trained (75% of the target). The School of Nursing was being strengthened.

UNICEF

WEST INDIES-3105, Health Services (Antigua)

Purpose: Reorganization of the Health Ministry and preparation of staff in order to achieve the targets of the integrated health program.

Probable duration: 1968-

Assistance provided: Advisory services by staff of the Eastern Caribbean Office and of project AMRO-3107.

Work done: The quadrennial projections of activities were prepared. For the *Aedes aegypti* eradication program, which was put into operation, personnel were trained, maps were prepared, and supplies and equipment were provided. The School of Nursing was strengthened. A desalination plant

(capacity, 1 million gallons daily) went into operation, earth-dams were constructed, and a new reservoir was filled.

UNICEF

WEST INDIES-3106, Health Services (St. Vincent)

Purpose: Implementation of the integrated health program and its continuing evaluation as the basis for the preparation of a National Health Plan in 1972.

Probable duration: 1968-

Assistance provided: Advisory services by staff of the Eastern Caribbean Office and of project AMRO-3107.

Work done: The quadrennial projections of activities were prepared. Emphasis was given to the development of community nutrition, family planning, reorganization of the general hospital, and the data retrieval services. Improvements were made in the liquid waste disposal services for Kingstown (100% of the target) and in the solid waste disposal system (20%). The community mental health program increased its follow-up care services, and the number of hospitalized mental patients was reduced.

UNICEF

WEST INDIES-3107, Health Services (Dominica)

Purpose: Implementation and evaluation of an integrated health program.

Probable duration: 1965-

Assistance provided: Advisory services by staff of the Eastern Caribbean Office and of project AMRO-3107.

Work done: The quadrennial projections of activities were prepared. A study of the organization and administration of health services was in progress (100% of the target). The assessment of the hospital dietary service was completed, and a new reporting system was developed for the public health inspectorate. Procedures for water quality control were being developed, and basic information for watershed area No. 1 was collected (90% of the target).

UNICEF

WEST INDIES-3108, Health Services (Grenada)

Purpose: Strengthening of health services.

Probable duration: 1969-

Assistance provided: 1 short-term consultant, and advisory services by the PAHO/WHO Country Representative and by projects Trinidad and Tobago-3100 and AMRO-3501 staff; 2 short-term and 2 long-term fellowships.

Work done: Activities for the implementation of a health planning process were continued. A workshop on health planning was held in St. George's, and the Ministry's special medical adviser attended the health planning course in Jamaica under a PAHO fellowship. Data collection and processing were improved. The hospital records clerk in St. George's received further orientation and (apart from outpatient and casualty records) achieved 80% of the target in organizing the hospital statistics.

The preparatory phase of the *Aedes aegypti* eradication program achieved 100% of the target (active phase to commence in January 1971). Control programs against yaws,

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poliomyelitis, leprosy, tuberculosis, and other communicable diseases were continued and led to a noticeable decrease in incidence figures. The sizable reduction in cases of water-borne diseases was encouraging.

A psychiatric unit was established at the General Hospital.

WHO/RB

UNICEF

WEST INDIES-3111, Health Services (British Virgin Islands)

Purpose: Implementation of an integrated health program.

Probable duration: 1970.

Assistance provided: Advisory services by staff of the Eastern Caribbean Office and of projects AMRO-3107 and -3501.

Work done: The quadrennial projections of activities were completed. The proposed reorganization of the refuse collection and disposal service was not begun. The preparation of plans for water and sewerage services for Long-Look, Road Town, and East-End was begun. The medical records services were being reorganized.

UNICEF

WEST INDIES-3204, Training of Nurse Educators (Caribbean Area)

(1969-1970) Grant to PAHO: UNICEF

The purpose was to improve the education of nurses in the Caribbean area by preparing nurse-tutors in courses on the teaching of family-centered nursing care. The Organization provided advisory services by staff of Headquarters, Zone I Office, and other projects in the Caribbean.

Two 6-week courses were held, one in Jamaica (1969) and the other in Barbados (1970). Each course was attended by 18 nurse educators from 11 countries and territories of the English-speaking Caribbean. All 36 participants attended with fellowships.

WEST INDIES-3300, Laboratory Services

Purpose: Development of the laboratory services in Dominica in order to provide tissue pathology services for that island and also for Antigua, Montserrat, and St. Kitts/Nevis.

Probable duration: 1968-1973.

Assistance provided: 2 temporary advisers, and advisory services by Eastern Caribbean Office staff; supplies.

Work done: The laboratory at the General Hospital in Dominica continued to provide services in tissue pathology and cytology to Antigua, Montserrat, and St. Kitts/Nevis. The laboratory at the hospital in Antigua was enlarged to double its previous size.

PAHO/RB

WEST INDIES-3500, Health Statistics

Purpose: Establishment, in the ministries of health of 8 Caribbean Governments, of statistical units capable of providing comprehensive and accurate health data for the planning, management, and evaluation of the health services.

Probable duration: 1970-

Assistance provided: 1 health statistician, and advisory services by the medical records librarian assigned to project AMRO-3501.

Work done: A preliminary assessment of the health and vital statistics situation in each of the 8 countries was made in conjunction with the preparation of the quadrennial projections of activities. Consultant services were furnished to the statistical offices in Barbados and Dominica and to hospitals in Barbados, the British Virgin Islands, and St. Lucia. Initial planning was carried out for a 3-month course in health statistics and medical records to be given in Barbados in 1971.

PAHO/RB

WEST INDIES-4200, Nutrition

Purpose: Improvement of the nutritional status of the population in the eastern Caribbean area, by means of applied nutrition programs, nutrition education programs, and planning of nutrition services.

Probable duration: 1962-

Assistance provided: 1 public health nutritionist, and advisory services by staff of the Eastern Caribbean Office.

Work done: In Dominica, the hospital food services were reviewed and recommendations for their improvement were submitted. In St. Lucia, an evaluation was made of the expanded nutrition program. In St. Vincent, 22 cooks were given training in basic institutional feeding. Dietary services for government institutions were reviewed.

WHO/RB

FAO, UNICEF

WEST INDIES-4300, Mental Health

Purpose: Development of community mental health services in Dominica and St. Vincent.

Probable duration: 1969-1973.

Assistance provided: 2 short-term consultants, and advisory services by staff of the Eastern Caribbean Office.

Work done: In Dominica, plans were drawn up for a new mental hospital unit, as part of the modernization of the General Hospital, and brief inservice training was provided for medical officers (10% of the target).

In St. Vincent, follow-up of discharged mental patients by the public health inspectorate was fully operational. Procedures for the treatment of cases in the General Hospital were demonstrated to medical officers and nurses (100% of the target).

PAHO/RB

WEST INDIES-4800 (-4802), Medical Care and Hospital Administration

Purpose: Efficient operation of all hospitals in the eastern Caribbean area.

Probable duration: 1969-

Assistance provided: Advisory services by projects AMRO-3107, -3501 and 4801 staff; 1 short-term fellowship (Grenada) and 5 long-term (Montserrat, St. Kitts, and 3 from St. Lucia).

Work done: The medical records departments at Victoria Hospital in St. Lucia and at Peebles Hospital in the British

Virgin Islands were reorganized (100% of the target). Studies on the administration of Kingstown General Hospital in St. Vincent and of Princess Margaret Hospital in Dominica were begun (50% of the target).

The recommendations for improvement of the hospital laundry service in Antigua were implemented, and new equipment was installed. Advisory services were provided to the laundry service in Dominica (100%).

Six countries participated in a seminar on food services in institutions.

WHO/UNDP

WEST INDIES-4808, Hospital Administration (Montserrat)

One long-term fellowship was awarded.

WHO/UNDP

WEST INDIES-6300, Nursing Education (1970) PAHO/RB

The purpose was the development in certain eastern Caribbean islands of plans for the training of personnel to meet nursing needs, and preparation of graduate nursing staff for the improvement of nursing service and the teaching and supervision of students in clinical areas. The Organization provided 1 nursing adviser.

A 4-week course on the methodology of nursing studies was held for 14 graduate nurses, and a 6-week course on family-centered nursing care was conducted for 18 nurse educators. Nursing committees were established in Dominica and St. Kitts to draw up plans for meeting nursing needs. St. Lucia was preparing to undertake studies of nursing activities prior to the establishment of a planned system for nursing. At the year's end the project was integrated with project AMRO-6301.

AMRO-0100, Epidemiology (1970) PAHO/RB

The purpose was to prevent the possible introduction of cholera into the Americas.

In 1970 the disease spread to areas in the Near East and Africa where it had not been endemic. In view of the risk of the entry of cholera into the Americas, the Organization sent the countries information on surveillance, control measures, and treatment of cases. It also provided vaccine to Chile, Guatemala, Haiti, Jamaica, Panama, and Trinidad and Tobago, as well as technical assistance to Brazil and Colombia for preparation of the vaccine.

A course on bacteriological diagnosis of cholera, organized with the cooperation of the U.S. Center for Disease Control, was attended by professionals from 13 countries in the Hemisphere.

AMRO-0102, Epidemiology (Zone II)

Purpose: Development in the countries of the Zone of programs for the control of communicable diseases; establishment of epidemiological and laboratory services; and training of personnel.

Probable duration: 1965-

Assistance provided: 1 epidemiologist; a limited amount of supplies.

Work done: A Seminar on International Sanitary Control was held in Cuba in August.

The Government of the Dominican Republic was preparing a National Communicable Disease Control Program.

See also project Cuba-0100.

PAHO/RB

AMRO-0103, Epidemiology (Zone III)

Purpose: Development of epidemiological services in the countries of Zone III; and training of personnel in epidemiological procedures.

Probable duration: 1961-

Assistance provided: 1 epidemiologist (part of the year), advisory services by project AMRO-0403 staff, and 1 secretary; equipment and supplies.

Work done: The yellow fever control and *A. aegypti* eradication programs of the countries in the Zone were intensified during the period. El Salvador, Honduras, and Panama continued to be reinfested, the latter country until April. Honduras encountered serious budgetary problems that impaired the effectiveness of its program. Costa Rica, Guatemala, and Nicaragua prepared programs of regular surveillance for implementation starting in 1971.

In leprosy control, the situation in Costa Rica, Guatemala, and Honduras was evaluated, and participation of the health services was suggested as the only means of extending the present coverage.

The venereal disease programs in Costa Rica and Guatemala were evaluated. Costa Rica had under study a reorganization of its services in 1971.

The vaccination programs continued to move slowly, with shortages of biologicals and other resources detracting from the effectiveness of the work. Costa Rica successfully conducted a program of mass vaccination against measles, poliomyelitis, and smallpox.

The epidemic outbreak of bacillary dysentery caused by *Shigella dysenteriae*, Serotype I, in Guatemala showed a resurgence and spread to El Salvador, Honduras, and Nicaragua. The search for an effective vaccine against the disease continued.

See also the -0400 projects of Costa Rica and Honduras, the -2300 projects of Guatemala, Honduras, Nicaragua, and Panama, projects AMRO-0403 and AMRO-2303, and the -3100 projects of these 5 countries and El Salvador.

PAHO/RB

AMRO-0104, Epidemiology (Zone IV)

Purpose: Development in the countries of communicable disease control programs; establishment of epidemiological and laboratory services; and training of personnel.

Probable duration: 1966-

Assistance provided: 1 epidemiologist (part of the year), 1 secretary, and advisory services by project AMRO-0304 staff.

Work done: Outbreaks of plague were brought under

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control in Ecuador and Peru. There were some epidemic outbreaks of yellow fever in Peru as a result of the limited population coverage of the vaccination campaign. Louse-borne typhus showed an upsurge in Ecuador. Epidemic outbreaks (923 cases) of poliomyelitis (Poliovirus I) occurred in Bolivia, Colombia, and Ecuador.

The programs of smallpox, BCG, poliomyelitis, measles, and DPT vaccination were carried forward.

See also the -0900 projects of Ecuador and Peru.

PAHO/RB

AMRO-0106, Epidemiology (Zone VI)

Purpose: Implementation of communicable disease control programs; promotion of epidemiological surveillance; improvement of laboratory services as a resource for communicable diseases control; and training of personnel.

Probable duration: 1958-

Assistance provided: 1 epidemiologist and 1 secretary.

Work done: In Chile, assistance was provided in the control of venereal diseases. Two courses, 1 for physicians and 1 for survey workers, were held. Advisory services were extended in the field of tuberculosis.

In Uruguay, assistance was provided in the study of a new organization for the epidemiological services, in the improvement of morbidity records, and in the introduction of new systems for the registration of immunizations.

See also projects -0100 for Argentina and Paraguay.

PAHO/RB

AMRO-0108, Research Training Program in Virology

Purpose: Study of the ecology of pathogenic arboviruses, especially the role of migratory birds in the spread of arboviruses in temperate and tropical areas in the northern part of the Western Hemisphere; and provision of research training in this field.

Probable duration: 1961-1971.

Assistance provided: Advisory services by Headquarters staff.

Work done: In the course of research carried out under this program in British Honduras, Honduras, and Mexico, 7 arboviruses were isolated for the first time in Mexico: Tlacotalpan (1961), Venezuelan encephalitis (1963), Nepuyo (1963), Patois (1964), Zegla (1964), St. Louis encephalitis (1965), and Minatitlán (1970). Tlacotalpan and Minatitlán have been described as new arboviruses. The first 6 viruses were isolated by the PAHO/Cornell University group, and the last one at the National Institute of Virology in Mexico City by a former postdoctoral trainee of this program.

Extensive training in virology continued to be given at the Department of Microbiology, Cornell University Medical College. Field training was given through an 8-week graduate course comprising field research and training in virology, entomology, vertebrate zoology, and ecology held at sites in the tropical Atlantic lowlands of Mexico, and through graduate-student participation in field research programs in British Honduras, Guatemala, Honduras, and Mexico. Since the start of the program 33 trainees have participated in field programs in Mexico: 6 from that coun-

try, 1 from Iran, 1 from Jamaica, 1 from Japan, 1 from Peru, and 23 from the United States of America.

**Cornell University,
University of Minnesota**

AMRO-0200, Malaria Technical Advisory Services (Interzone)

Purpose: Provision of assistance and technical advisory services in malaria eradication, in fields in which permanent country advisers are not required.

Probable duration: 1955-

Assistance provided: 2 parasitologists, 1 program analyst (medical officer), 1 economist, 1 laboratory technician, 2 short-term consultants, and 1 secretary; equipment and supplies.

Work done: Technical assistance was rendered to 13 national eradication programs for improvement of microscopic diagnosis services; expanded cooperation was provided in the selection and distribution of parasitological material for demonstration purposes; advisory services were given in investigating the susceptibility of *P. falciparum* to the 4 aminoquinolines; and further work was done on assessing the *in vitro* method for determining the degree of susceptibility. Assistance was given in the performance of immunoepidemiology studies in Brazil; and the Bolivia project was aided in the training of field personnel and the planning of an experimental field program of mass chemotherapy with 2 combinations of chloroquine, primaquine, and pyrimethamine (see Bolivia-0201). The advisory services to Brazil in connection with data processing were continued and completed. The assistance to Paraguay in evaluation procedures and in the performance of the study on the economic impact of malaria eradication was carried forward (see Paraguay-0201).

PAHO/RB, PAHO/SMF, WHO/RB

AMRO-0201, Malaria Technical Advisory Services (Zone I)

Purpose: Assistance to and coordination of malaria eradication work in Zone I.

Probable duration: 1969-

Assistance provided: 1 medical officer, 1 secretary, and advisory services by staff of projects -0200 of Guyana and Surinam.

Work done: Medicated salt distribution continued to be used in French Guiana, Guyana, and Surinam as the principal attack measure. House-spraying with DDT was used as a supplementary measure in certain selected localities. The results were generally satisfactory wherever the measures were applied correctly.

In French Guiana, 8,237 blood smears were examined and 117 positive cases were found, most of them imported from Brazil. Early in the year a mixing plant for medicated salt was constructed, equipment and supplies having been provided by the Organization.

In Guyana, malaria transmission appeared to have been

interrupted, no autochthonous cases having been detected in any part of the country. Among the 63,623 blood smears examined from January to December, only 18 cases were found: 15 were imported and 3 unclassifiable (owing to lack of definite information) but suspected of having been imported. At the year's end, the entire malarious area was in either the consolidation or the maintenance phase.

In Surinam, encouraging results were obtained along the Surinam River, where the population's acceptance of medicated salt improved during the year. However, on the Marowijne/Tapanahoni/Lawa River, the salt distribution was insufficient owing to administrative and operational difficulties. From January to December, 48,702 blood smears were examined and 1,019 malaria cases diagnosed (2.17%) (as compared with 38,194 smears examined and 741 cases found, or 1.94%, in 1969).

In Dominica, Grenada, Jamaica, St. Lucia, and Trinidad and Tobago, where malaria eradication has been achieved, vigilance was carried out effectively and no autochthonous cases were recorded.

PAHO/RB

AMRO-0203, Malaria Technical Advisory Services (Zone III)

Purpose: Assistance to the countries of Zone III in their malaria eradication work, by providing technical and administrative advisory services, coordinating research activities, and collaborating in the training of personnel.

Probable duration: 1958.

Assistance provided: 1 Zone malaria adviser, 1 epidemiologist, 2 administrative methods consultants, 1 draftsman, and 1 secretary; equipment and supplies.

Work done: The 5 Central American countries completed their 3-year plan, begun in 1968. In April and May, their strategy was reviewed in the light of Resolution WHA22.39 of the Twenty-Second World Health Assembly. Costa Rica was placed in the category of countries offering likely prospects of eradicating malaria within a short period, while El Salvador, Guatemala, Honduras, and Nicaragua were classed in the group of countries for which no definite period for reaching that goal can be set, owing to resistance of the vector to DDT. Replacement of DDT with a more effective insecticide for interrupting malaria transmission was recommended.

In Panama, the 2nd year of the 3-year plan was completed, and the review team recommended continuance of the plan. In British Honduras, the activities programmed for the year proceeded on schedule, and interruption of malaria transmission was all but achieved. Surveillance work and preventive measures will be continued.

The X Meeting of the Working Group on Coordination of Malaria Eradication Programs in Central America and Panama was held in San José, Costa Rica, in August. The relevant plans for 1971 were presented and criteria were established for intercountry coordination of activities.

Quarterly spraying programs with the new insecticide propoxur (OMS-33) were started in Nicaragua in April and El Salvador in August in part of the problem area in which *A. albimanus* is highly resistant to DDT.

PAHO/RB, PAHO/SMF

AMRO-0216, Research in the Epidemiology of Malaria Eradication in Problem Areas

Purpose: Investigation of possible methods for interrupting the transmission of malaria in areas where technical problems have been encountered.

Probable duration: 1967-

Assistance provided: 1 medical officer, 1 entomologist, and 2 sanitary inspectors; local costs; equipment and supplies.

Work done: Operations began in the large-scale field trial involving partial spraying of houses with propoxur (OMS-33) to determine its effect on malaria transmission. The experimental area, situated along the coastal plains of El Salvador (Department of La Paz) contains 6,500 houses and 25,000 inhabitants. Nine spraying cycles were completed at intervals of 35 days, each involving the application of an average of 60 g of insecticide per house (2 swathes of insecticide, on the ceiling and on the angle between the ceiling and the walls). To evaluate the results, parasitological and entomological data were being collected on a regular basis in the experimental area and a neighboring control area. The observations under way were contributing toward a better understanding of the behavior of the vector and the epidemiology of malaria in the area.

PAHO/RB, PAHO/SMF

AMRO-0217, Field Investigations of Drug Treatment for Malaria

Purpose: Investigation of methods for increasing the effectiveness of mass drug treatment programs for malaria eradication, and to reduce the costs of administering the drugs in the field and increase their acceptance by the general population.

Probable duration: 1966-1971.

Assistance provided: Advisory services by Headquarters and projects Colombia-0200 and AMRO-0200 staff; contractual services.

Work done: Projects Bolivia-0201, Panama-0200, and Colombia-0200 participated in these studies. These were carried out by using the services of a consultant to collect and analyze the data on a mass treatment program carried out in Colombia during the 2 preceding years with a combination of three antimalaria drugs (chloroquine, primaquine, and pyrimethamine). The data collected are being prepared for computer processing.

PAHO/SMF

AMRO-0218, Rural Health Services and Malaria Eradication Campaigns

Purpose: Participation of health services in all phases of the malaria eradication campaign; and intensification of efforts aimed at extending the health services to rural communities, utilizing, where possible, the resources and work systems of the malaria program.

Probable duration: 1967-1972.

Assistance provided: 1 medical officer.

Work done: In Bolivia (Department of Cochabamba), the number of blood smears obtained by the health services was 10% above that in 1969. The Cochabamba Health Unit

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included malaria surveillance in a public health seminar for 22 physicians from the provinces.

In Colombia, the Department of Health of Valle del Cauca Department trained 50 health promoters, including blood sampling procedures in the training program; this personnel was later assigned to work principally in small rural communities.

In Ecuador (Manabí Province), the coverage of the rural population was increased with the establishment of 43 rural health posts staffed by trained nursing auxiliaries; activities included the taking of blood specimens, which increased 113% over 1969.

In Peru, 14 departments with 1,603 malarious localities progressed to the maintenance phase and were transferred to the peripheral health services. Two short courses on epidemiological surveillance of malaria were held, one for 21 physicians from the departments that were reclassified and the other for 25 physicians from the Cañete Valley. Thirty-seven nursing auxiliaries, 20 laboratory assistants, and 3 evaluation aides were also trained. (The target set for training activities was achieved to an extent of 80%.)

PAHO/RB

AMRO-0219, Data Processing and Operations Research in Malaria Eradication (1970)

The purpose was to conduct research on the applicability of high-speed data processing methods for routine and/or selective use in malaria eradication activities. The Organization provided advisory services by project AMRO-0200 staff.

Preliminary work was begun (under AMRO-0200) in April 1967 in Rio de Janeiro, Brazil; when the needs and existing facilities had been reviewed, a plan of action was outlined. Training of personnel, mounting of equipment, and designing of computer programs occupied most of the year 1968. In 1969 the project was processing 27 "programs" covering routine information on spraying operations, epidemiological evaluation, and payroll. These programs were tested, with satisfactory results, in the Rio de Janeiro, Paraná, and Santa Catarina sectors of the eradication program.

In June 1969 the cost-benefit aspects of this project were analyzed by national and PAHO officials; savings had to be effected, and the high cost of the automated data processing had much weight in the decision to discontinue the project. Interest in reactivating the project was expressed and therefore it was kept open during the second half of 1969. The project gave assistance to the Ministry of Health of Peru, the Regional Library of Medicine in São Paulo, and the Health Department of the State of Rio Grande do Sul, on various aspects of electronic data processing. No further activities were carried out and the project was closed in December 1970.

AMRO-0220, Field Research in Malaria Eradication (Interzone) (1969-1970) PAHO/SMF

The purpose was to develop measures for coping with emergency situations. The Organization provided advisory

services through staff assigned to projects Bolivia-0200 and AMRO-0200, funds for payment of local personnel, equipment, antimalaria drugs, and other supplies in support of a field trial of mass treatment in Bolivia.

Under project Bolivia-0201, which was supported by funds of project AMRO-0220, the plan of action was directed toward the elimination of malaria foci in the southern part of the Bolivian Andes. A combination of chloroquine, pyrimethamine, and primaquine was introduced, the 3-drug dosage being given for 3 consecutive days in an attempt to obtain prompt radical cure of *Plasmodium vivax* infections; at present, radical cure of these infections takes 14 days. The area selected was the Pilcomayo River valley in Tarija, covering 24,673 km² and containing 240 localities and about 15,000 inhabitants. Upon termination of project AMRO-0220 at the year's end, the field trial was continued under project Bolivia-0201.

AMRO-0300, Smallpox Eradication (Interzone)

Purpose: Eradication of smallpox by vaccinating at least 80% of the population of the countries where the disease is endemic; and organization of suitable systems of epidemiological surveillance and maintenance vaccination.

Probable duration: 1951-

Assistance provided: 1 medical officer, and advisory services by Headquarters staff; contractual services; equipment and supplies.

Work done: All the countries except Brazil were in the maintenance phase. Argentina reported 24 cases in the Province of Misiones, one imported and the others autochthonous.

Brazil continued its intensive immunization program, the 30,654,265 persons vaccinated in 1970, added to those inoculated in previous years, raising the total number of persons immunized to 76,780,430 (83% of the country's total population).

All the countries having agreements with the Organization continued their activity, although in some of them, for budgetary reasons, the work fell behind the schedule envisaged in the plans of operations, which called for covering 80% of the population over a period of approximately 3 years.

The Organization continued to provide assistance for the following activities: establishment or reorganization of laboratories for the production of freeze-dried vaccine and for diagnosis; training fellowships; advisory services in epidemiology, statistics, and evaluation; provision of equipment and supplies, vehicles, launches, jet-injectors, and other equipment; and the services of a reference laboratory to test the potency, purity, and stability of the vaccines produced.

PAHO/RB, WHO/RB

AMRO-0304, Smallpox Eradication (Zone IV)

Purpose: Assistance to the Governments of the countries of the Zone in smallpox eradication, as part of the hemisphere-wide eradication program, by immunizing at least 80% of the population.

Probable duration: 1967-1972.

Assistance provided: 1 medical officer.

Work done: Bolivia, Colombia, Ecuador, and Peru vaccinated 4,536,283 persons during the year. The 4 production laboratories prepared 19,063,050 doses of freeze-dried vaccine.

Training in the use of the ped-o-jet injector in Bolivia and Ecuador opened up new prospects for increasing the number of vaccinations and changing the vaccination strategy in urban areas. The cooperation of the malaria services in smallpox vaccination activities in Colombia was evidence of the interest which this program holds for other health sector activities. Colombia will have 30 million pesos available for smallpox eradication and for DPT and BCG vaccination in areas beyond the reach of the peripheral health services. Smallpox mortality and morbidity has remained at zero since 1964 in Bolivia and Ecuador and since 1967 in Colombia and Peru.

WHO/RB

AMRO-0306, Smallpox Eradication (Zone VI)

Purpose: Eradication of smallpox from the countries of the Zone, by means of vaccination of 90% of the population.

Probable duration: 1967-1972.

Assistance provided: 1 statistician.

Work done: A total of 5,508,021 persons were vaccinated in the 4 countries of the Zone: 4,044,357 in Argentina, 820,144 in Chile, 273,718 in Paraguay, and 369,802 in Uruguay. The activities in Argentina and Uruguay were under continuous evaluation; the proportion of "takes" in persons vaccinated for the first time was 95%.

See also projects -0300 for Argentina, Chile, Paraguay, and Uruguay.

WHO/RB

AMRO-0400, Tuberculosis Control (Interzone)

Purpose: Planning, implementation, and evaluation of the programs for operational studies and research in tuberculosis control; and training of personnel.

Probable duration: 1957-

Assistance provided: 1 temporary adviser, 1 short-term consultant, and advisory services by Headquarters and Zone Offices staff.

Work done: The Governments continued to receive assistance in tuberculosis control activities through rational application of available knowledge and resources; in improving the collection of statistical, epidemiological, and operational data; and in training medical and technical personnel. They were also aided in their efforts to utilize the network of basic health services in the control of tuberculosis.

In Brazil, advisory assistance was provided to the tuberculosis control programs in the States of Rio Grande do Sul and Ceará. Cuba was assisted in the design and conduct of an investigation of non-specific tuberculin sensitivity and in a course on administration of control programs. In Mexico, assistance was given to the laboratories performing activities related to the tuberculosis control program, and advisory services were rendered in connection with the installation of a machine for sealing ampoules of freeze-dried BCG vaccine.

PAHO/RB, WHO/RB

AMRO-0402, Tuberculosis Control (Zone II)

Purpose: Assistance to the countries of the Zone in developing tuberculosis control programs, integrating them into the general health services, and training of personnel.

Probable duration: 1969-

Assistance provided: 1 medical officer.

Work done: Assistance was given to all the countries in the Zone. Cuba and Mexico planned their national tuberculosis control programs and began the work in verification areas. Detailed studies of the damage done by tuberculosis in the Dominican Republic and Haiti were carried out, and the former country was planning a national control program.

A course in administration of tuberculosis control programs was held in Havana, Cuba, for 18 physicians, 8 microbiologists, and 8 nurses. A seminar on tuberculosis chemotherapy and bacteriology, held in Mexico, was attended by clinicians, epidemiologists, and bacteriologists from Colombia, Cuba, Honduras, and the host country.

See also the -0400 programs for Cuba, the Dominican Republic, and Mexico.

WHO/RB

AMRO-0403, Tuberculosis Control (Zone III)

Purpose: Assistance to the countries of the Zone in developing tuberculosis control programs, integrating them into the general health services, and training of personnel.

Probable duration: 1963-

Assistance provided: 1 medical officer.

Work done: The integrated tuberculosis control programs continued to be strengthened and expanded in Costa Rica, El Salvador, Guatemala, and Honduras. Training courses were offered for physicians, nurses, laboratory technicians, and nursing auxiliaries.

Guatemala began a plan of cooperation between the health services and tuberculosis programs in Region V, in the Quezaltenango area. From January to September, 207,991 PPD tests and 89,054 BCG vaccinations were performed.

Panama completely reorganized its tuberculosis program and began the development of a horizontal structure supervised by the Central Region, where training courses were held.

PAHO/RB

AMRO-0404, Tuberculosis Control (Zone IV)

Purpose: Assistance to the countries of the Zone in developing tuberculosis control programs, integrating them into the general health services, and training of personnel.

Probable duration: 1962-

Assistance provided: 1 medical officer; a limited amount of supplies.

Work done: In Bolivia, 180,630 persons were vaccinated with BCG between January and October (41.6%). In the work areas of Tarija and La Paz, 1,233 persons with tubercular symptoms were examined and 174 of them were found to have the disease. A seminar was held for nurses, and a physician was trained in administration of tuberculosis programs. Coordination was established among agencies participating in tuberculosis control work and between them

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and the Department of Preventive Medicine of San Andrés University.

In Colombia, 7,849 new cases of tuberculosis were reported (up to September), and 43,327 persons with respiratory symptoms were examined. A total of 3,544,037 persons under 15 years of age were vaccinated (65.4%). The average hospital stay was reduced to 109 days (82.5%). Eight physicians were trained (66.6%), a course was held for specialized physicians, and a refresher and evaluation seminar was conducted for graduates of the courses. A Bacteriology Committee was established. New regulations were issued for the control program.

In Ecuador, a convention of phthisiologists was held, and a nationwide BCG vaccination program was planned and conducted, with 97,363 persons vaccinated (up to September) in urban areas and 29,001 in rural areas. The clinics diagnosed 1,745 new cases of tuberculosis among 8,900 persons with symptoms.

In Peru, a training seminar on tuberculosis and a National Tuberculosis Congress were held. A total of 927,648 persons were vaccinated with BCG (up to August); and 7,068 new cases were diagnosed. A physician was trained in administration of tuberculosis programs.

WHO/RB

AMRO-0409, Courses on Tuberculosis Epidemiology

Purpose: Training in epidemiology, planning, evaluation, and operations research for administrators and supervisors who will participate in the work of incorporating tuberculosis control programs in the national health services.

Probable duration: 1969-1971.

Assistance provided: 3 temporary advisers, and advisory services by Headquarters staff; 1 grant.

Work done: In cooperation with the Government of Venezuela, the Organization sponsored an international course on tuberculosis epidemiology and administration of control programs, attended by 14 persons from 12 Latin American countries.

PAHO/RB

AMRO-0410, Courses on Tuberculosis Bacteriology

Purpose: Training of personnel in tuberculosis bacteriology methods and techniques, with emphasis on their importance in regard to epidemiological information, follow-up of treatment, and evaluation of programs.

Probable duration: 1969-1971.

Assistance provided: 1 short-term consultant and 1 temporary adviser; cost of course.

Work done: In collaboration with the Government of Venezuela, the Organization sponsored an international course on tuberculosis bacteriology, which was attended by 12 participants from 11 countries of the Americas.

WHO/RB

AMRO-0500, Leprosy Control (Interzone)

Purpose: Assistance to the countries in developing leprosy control programs; integrating them into the general health services; and training of personnel.

Probable duration: 1958-

Assistance provided: 1 leprologist.

Work done: In Bolivia, a course for field auxiliaries was offered. In Colombia, a meeting of medical officers of the leprosy control campaign was held from 4-6 May. In Costa Rica, short courses were conducted for newly-graduated physicians going into rural practice. In Havana, Cuba, a training course on prevention and treatment of physical disabilities in leprosy cases was held for 16 physicians and 1 physiotherapist. Mexico continued its regular training activities in dermatology institutions (Mexico City and Guadalajara). In Panama, training in leprosy diagnosis continued to be offered in the health centers. The Dominican Republic trained 5 field auxiliaries.

PAHO/RB

AMRO-0600, Yaws Eradication and Venereal Disease Control (Interzone)

Purpose: Provision of advisory services on yaws eradication and venereal disease control.

Probable duration: 1961-

Assistance provided: Advisory services by the epidemiologists assigned to projects AMRO-0102, -0103, -0104, and -0106.

Work done: An inquiry was made in all the countries of the Americas as to the extent of the problem of venereal diseases. The findings formed the basis for the Technical Discussions held at the XVIII Pan American Sanitary Conference (Washington, D.C., October 1970). Following those Discussions, the Organization assisted the health services of the countries to promote a greater awareness of the magnitude of the venereal disease problem and the need for better organization and execution of control programs.

AMRO-0700, Pan American Zoonoses Center

Purpose: Provision of technical assistance to the countries for the control of zoonoses, by means of personnel training programs, laboratory services, research, and technical advisory services and information.

Probable duration: 1956-

Assistance provided: 1 director, 1 zoonoses specialist, 1 assistant virologist, 1 laboratory animal specialist, 1 audiovisual media officer, 1 assistant scientist, 1 administrative officer, and local personnel; contractual services; equipment and supplies.

Work done: Technical assistance in the control of canine rabies was provided in Argentina, Bolivia, Brazil, Colombia, Paraguay, and Peru. The agricultural authorities of Argentina and Peru were furnished assistance in connection with epidemiological research and control of bovine rabies. Cooperation was extended to the Governments of Argentina and Uruguay in the preparation of pilot programs for the control of hydatidosis, and to the Governments of Brazil, Chile, Colombia, Cuba, Peru, and Venezuela in the control of brucellosis. Advisory services were provided in Argentina, Colombia, Cuba, Nicaragua, and Peru in the control of bovine tuberculosis, and in Argentina, Chile, Colombia, Costa Rica, Guatemala, Honduras, Nicaragua, Uruguay, and Venezuela in matters of food hygiene.

The laboratories of the Center continued their work on standardization of biological products for use in diagnosis and immunization. The Center supplied biological reference material to most of the countries, as well as pathological materials for reference diagnosis, vaccines and antigens for quality tests, and strains for microbe classification. In the field of research, significant progress was made in the diagnosis of rabies, immunization of persons exposed to rabies, evaluation of rabies vaccines for use in bovines, simplified diagnosis of rabies caused by *Brucella ovis*, evaluation of vaccines for caprine brucellosis, and improvement of diagnosis of human hydatidosis.

The Center offered an international course on laboratory methods in hydatidosis; cooperated with WHO and FAO in the organization and conduct of an interregional seminar on hydatidosis control; and organized a seminar on bovine tuberculosis control. It organized or provided assistance for 15 national courses or seminars on various zoonoses (6 in Argentina, 3 in Brazil, 3 in Colombia, 1 in Cuba, 1 in Uruguay, and 1 in Venezuela). Individual training in field and laboratory procedures relating to various zoonoses, in food microbiology, and in the breeding and care of laboratory animals was provided at the Center to 30 fellows from 10 countries.

The staff of the Center prepared 36 papers, 9 of which were published. The quarterly bulletin *Zoonoses* and the monthly bulletin *Rabies Epidemiological Surveillance Bulletin* (both in Spanish and English) were issued regularly; a new number in the *Notas técnicas* series was published, and 3 earlier numbers were reissued.

The Scientific Advisory Committee met at the Center from 17 to 19 August.

**PAHO/RB, PAHO/OF, Government of Argentina,
WHO/RB Barbara Blood Ferro Fund**

AMRO-0702, Veterinary Public Health (Zone II)

Purpose: Development of veterinary public health services and education, with special reference to zoonoses control and food protection.

Probable duration: 1968-

Assistance provided: 1 public health veterinarian.

Work done: In Cuba, a seminar on zoonoses and one on quarantine stations were held (100% of the target). Technical advisory services were rendered in connection with rabies control and the program for bovine tuberculosis eradication (80% of the target). In Haiti, a diagnosis was made of the status of veterinary public health programs. The new school for veterinary technicians began its activities. The campaign for the vaccination of bovines against anthrax achieved 80% of its target.

The Dominican Republic continued its rabies control program in the areas around Santo Domingo, prepared a legislative bill for eradication of brucellosis, and drafted a proposed Food Sanitation Code (80% of the target).

See also projects Mexico-0700 and -6500.

PAHO/RB

AMRO-0703, Veterinary Public Health (Zone III)

Purpose: Development of veterinary public health services and education, with special reference to zoonoses control and food protection.

Probable duration: 1957-

Assistance provided: 1 public health veterinarian and advisory services by Headquarters and projects AMRO-0700 and -0800 staff.

Work done: Technical advisory services were rendered to the rabies control programs of Costa Rica, El Salvador, and Guatemala.

The authorities of El Salvador, Guatemala, Honduras, and Nicaragua were given advisory assistance in the control of Venezuelan equine encephalitis, especially in the vaccination programs. (More than 375,000 doses of vaccine were administered to horses.)

Assistance was provided to the Animal Health Services of Guatemala and Honduras in bovine tuberculosis control activities.

The IV Veterinary Public Health Seminar for Central America and Panama was held in Guatemala in June, followed by a course in food hygiene and inspection conducted by staff of the Pan American Zoonoses Center.

Cooperation was extended to the public health and agriculture authorities of Panama in the control of an outbreak of canine rabies. A course on food inspection procedures was held in October for veterinarians, nutritionists, and pharmacists.

WHO/RB

AMRO-0704, Veterinary Public Health (Zone IV)

Purpose: Development of veterinary public health services and education, with special reference to zoonoses control and food protection.

Probable duration: 1968-

Assistance provided: 1 public health veterinarian.

Work done: In Bolivia and Colombia arrangements were completed for initiating rabies control programs in 1971.

In Bolivia, Colombia, and Ecuador studies are being completed on bovine brucellosis control projects for presentation to the IDB with a view to financing.

In Peru the goat brucellosis control program represented an extremely useful undertaking for Latin America. Agriculture and health teams were working in close cooperation for the control of this zoonosis. In 1970 more than 85,000 goats were vaccinated with Rev. 1 vaccine furnished by the Organization.

Other zoonoses such as tuberculosis, equine encephalomyelitis, cysticercosis, hydatidosis, and leptospirosis were receiving attention from Governments.

As for the problem of food hygiene, noteworthy activities during the year were a feasibility study for a national program of regional slaughterhouses in Bolivia; advisory services on hygiene problems relating to milk and other food-stuffs in Peru; and in Colombia, cooperation in continuing the study of a food code and a project for improving regional slaughterhouses.

In Colombia 3 courses were held: on rabies diagnosis, on brucellosis diagnosis, and on food microbiology; they were

IX. PROJECT ACTIVITIES

attended by 60 professionals.

See also projects Peru-0700, -0701 and -6500.

WHO/RB

AMRO-0710, Rabies Control (Mexico-United States of America Border)

Purpose: Control of canine rabies along the United States-Mexico border.

Probable duration: 1966-1971.

Assistance provided: 1 public health veterinarian, 1 secretary, and advisory services by Headquarters staff; local costs; equipment and supplies.

Work done: A total of 100,430 dogs were vaccinated; 11 of the 12 cities included in the program achieved 80% of the vaccination target; and 8 cities captured more than 20% of the estimated number of stray dogs. The number of rabies cases was reduced by 82% in 1970; and the number of cases confirmed by laboratory procedures was reduced by 92% in comparison with 1967. During the year 33 cases of animal rabies were reported. Nine of the 12 cities were free of the disease.

PAHO/OF Center for Disease Control (USA)

AMRO-0713, Seminar on Bovine Tuberculosis Control (Santiago, Chile; 21-26 September 1970) WHO/RB

The purpose was to review the status of animal tuberculosis in the Americas. The Organization provided 7 temporary advisers, travel and per diem allowances for participants, other seminar costs, and advisory services by staff of the Pan American Zoonoses Center and of Headquarters.

The First International Seminar on Bovine Tuberculosis Control in the Americas was conducted under the auspices of PAHO/WHO with the cooperation of the Chilean Ministries of Health and of Agriculture. Participants included animal health officers from the agriculture ministries of the various countries of the Hemisphere. The Seminar reviewed the pathogenesis, pathology, and epidemiology of animal tuberculosis, control and eradication procedures, production and quality control of tuberculin, achievements of national eradication campaigns, and problems encountered by the various countries.

AMRO-0800, Pan American Foot-and-Mouth Disease Center

Purpose: Assistance to countries affected by foot-and-mouth disease in their efforts to control it, and to countries free of the disease in the application of preventive measures, through programs of research, training, and technical advisory services.

Probable duration: 1951.

Assistance provided: 1 director, 29 professionals as advisers in field work, research, and training, including 5 area consultants stationed in Panama City (Panama), Caracas (Venezuela), Bogotá (Colombia), Lima (Peru), and Asunción (Paraguay), 1 short-term consultant, and 20 temporary advisers; equipment and supplies; contractual services; 11 short-term and 2 long-term fellowships—Brazil (3),

Colombia (2), Ecuador (2), Paraguay (2), Peru (1), Uruguay (2), and Venezuela (1).

Work done: The Center continued cooperation with the countries free of foot-and-mouth disease in their preventive programs and with those affected by it in the planning, execution, and evaluation of their respective national campaigns.

The diagnostic and reference laboratories analyzed 416 samples of epithelium and vaccine virus sent in by various countries. Four new subtypes were discovered. A total of 591 cc of hyperimmune serum were delivered to diagnostic laboratories of various countries, the World Reference Laboratory, and the Plum Island Animal Disease Laboratory of the U.S.A. A total of 2,822 cc of suspensions of various strains of virus in different culture media were supplied to the countries.

A total of 77,040 doses of vaccine were sent to Brazil, Colombia, Guyana, and Paraguay, and assistance was furnished to Argentina, Brazil, Colombia, Ecuador, Paraguay, Peru, and Venezuela in the production and testing of foot-and-mouth disease vaccine.

Advisory services were rendered to the authorities of Bolivia, Colombia, Ecuador, and Venezuela in the preparation and review of applications for loans from the IDB for their foot-and-mouth disease control programs.

The epidemiological data gathered through the hemisphere system of surveillance of vesicular animal diseases were tabulated, analyzed, and published monthly.

A guide for the establishment and operation of biostatistical units in animal health services, with special reference to foot-and-mouth disease, was prepared.

Technical assistance was furnished to Brazil, Chile, Colombia, Curaçao, and Venezuela in the investigation of foot-and-mouth disease outbreaks.

Assistance was given to the authorities of Argentina in the study of a project to determine the immunity provided by Italian vaccines (prepared with European strains) against the foot-and-mouth disease subtypes present in the country.

Two international courses were conducted: 1 on evaluation of campaigns, in Santiago, Chile, for 14 participants from 8 countries, and 1 on the testing of foot-and-mouth disease vaccines, in Montevideo, Uruguay, for 9 participants from 9 countries. A national refresher course was held in Asunción, Paraguay, for 35 participants, and another in Havana, Cuba, on preventive programs, for 32 participants. Eighteen professionals from various countries were trained at the Center's headquarters.

The research activities included studies on inactivated and modified live virus vaccines, immunization of hogs and calves, and other subjects.

During the year 8 scientific papers were published and another 7 were in the final stages of preparation.

The following meetings were held: XII Meeting of the Committee on Animal Health of South America (COTERSA), in Buenos Aires, Argentina (10-11 April); the III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, in Buenos Aires, Argentina (14-17 April); a meeting of the Scientific Advisory Committee of the Center, in Rio de Janeiro, Brazil (12-14 August); and the Round-Table of the VI Pan American Congress of Veterinary Medicine

and Animal Industry, in Santiago, Chile (28 September-3 October).

See also Chapter I-A of this Report.

PAHO/RB, PAHO/OF Governments of Argentina and Brazil

AMRO-1000, Parasitic Diseases

Purpose: Planning of a comprehensive program to combat parasitic diseases; development of better control measures; and stimulation of national research and control programs.

Probable duration: 1966-

Assistance provided: 1 epidemiologist and 1 secretary.

Work done: Preliminary talks were held with representatives of Argentina, Brazil, Peru, and Surinam concerning agreements for national programs. Two draft proposals for UNDP assistance to projects in Brazil were drawn up. A report on centers for research and training in parasitology in Latin America was prepared. The Organization was represented at a conference in Mexico on the chemotherapy of intestinal helminth infections, and a paper was presented at a WHO-sponsored study group on the control of snails with molluscicides.

PAHO/RB

AMRO-1007, Schistosomiasis

Purpose: Development of national programs of schistosomiasis control and research.

Probable duration: 1960-

Assistance provided: 1 short-term consultant, 3 temporary advisers, and advisory services by Headquarters staff; 1 grant; equipment and supplies.

Work done: Four countries were visited, to give advice on national programs. The Organization sponsored a research project on the causes of schistosomiasis.

PAHO/RB

AMRO-1008, Chagas' Disease

Purpose: Determination of the epidemiological characteristics of the disease, its prevalence, and its severity; support for national control programs.

Probable duration: 1960-

Assistance provided: 2 short-term consultants, and advisory services by Headquarters staff; contractual services; equipment and supplies.

Work done: Visits were made to Argentina, Brazil, Peru, and Uruguay in connection with national control programs. The collaborative study on the serologic diagnosis of the disease was continued. The 7 collaborating workers developed a standard procedure for evaluation of antigens and a standard method for the complement-fixation test. Two of the 8 antigens studied were found superior to the others and plans were laid to determine which of the 2 should be the standard reference antigen. A meeting of the collaborators was held in Costa Rica in December.

Research in serology was also under way in Brazil and

Guyana. Other studies dealt with modification of strains of *T. cruzi* and susceptibility of the vectors to infection.

The national authorities of Peru, with the collaboration of the University of Arequipa, were drawing up plans for a control campaign.

PAHO/RB, PAHO/OF

The Wellcome Trust

AMRO-1012, Technical Meeting on the Diagnosis of Chagas' Disease

(San José, Costa Rica, 14-17 December 1970) WHO/UNDP

The primary purpose was to review experimental data on the complement fixation test for Chagas' disease obtained as a result of a collaborative study undertaken in 7 laboratories of the Americas. The objectives of the study included: comparison of diagnostic antigens with respect to specificity and sensitivity; development of a critical procedure for comparison of antigens; standardization of the complement fixation test; and consideration of other serologic tests and of factors affecting such tests. The Organization provided advisory services, travel and per diem for 11 of the participants, and other costs of the meeting.

The meeting of the Study Group on Serologic Diagnosis of Chagas' Disease was held in San José, Costa Rica, with 14 participants. The Group prepared a report with general and technical recommendations concerning the complement fixation test, the preparation of antigens, and methodology for their evaluation.

AMRO-2100, Engineering and Environmental Sciences (Interzone)

Purpose: Technical assistance to the Governments in the planning and execution of their sanitary engineering and environmental sanitation programs.

Probable duration: 1958-

Assistance provided: 1 short-term consultant, 3 temporary advisers, advisory services by Headquarters and Zone Offices staff, and 1 secretary; contractual services; equipment and supplies.

Work done: Priority continued to be given to assisting the countries in the solution of waste collection and disposal problems. The Secretariat of State for Public Health of Argentina made loans to 3 provinces under the program of cooperation with provincial and local authorities in the solution of solid waste collection and disposal problems. In Chile, a feasibility study was made on waste collection and disposal in Greater Santiago and operation of those services, and a nationwide program in this field was being prepared for cities of more than 50,000 inhabitants. Costa Rica and Guatemala submitted technical assistance applications to the IDB as a direct result of a course held in Panama for the Central American countries.

Three courses on street cleaning and garbage disposal were held in universities in Chile, Panama, and Venezuela.

PAHO/RB

AMRO-2101, Engineering and Environmental Sciences (Zone I)

Purpose: Improvement of the organization of the environmental health services; provision of technical advice to the

IX. PROJECT ACTIVITIES

agencies responsible for water supply, sewerage services, and other aspects of environmental health.

Probable duration: 1960-

Assistance provided: 1 sanitary engineer and 1 secretary.

Work done: The collection of basic data on the major environmental health problems was continued as an integral function of all country projects. Further technical assistance in the field of administrative management was given to the water and sewerage authorities in Jamaica, Trinidad and Tobago, and Venezuela. Assistance in regard to design, construction, maintenance, and operation of services was rendered to various autonomous agencies in the area. The creation of new agencies was under consideration in Barbados, Guyana, and Surinam.

The Organization furnished technical advice to the Canadian International Development Agency (CIDA) and the Governments of the eastern Caribbean area on plans for the construction of water supply systems that will be financed with \$5,000,000 allocated to the area for a 5-year period.

Activities to promote new programs in public sewerage and water pollution control were undertaken in various countries of the Zone where existing problems were more clearly defined. Great impetus was given to those highly important fields by the First Regional Symposium on Water Pollution Control and by the XII Congress of the Inter-American Association of Sanitary Engineering (AIDIS), both held in Caracas in August.

See also the -2100 and -2200 projects of the Zone I countries.

PAHO/RB

AMRO-2102, Engineering and Environmental Sciences (Zone III)

Purpose: Technical assistance to the countries of Zone II in improving the organization of environmental sanitation, water supply, and sewerage services, and in the training of personnel.

Probable duration: 1960-

Assistance provided: 1 sanitary engineer and 1 secretary; equipment and supplies.

Work done: Advisory services were rendered to the Ministry of Public Health of Cuba through short-term consultants in environmental sanitation, ventilation and lighting, and work physiology; and to the University of Havana in the conduct of 2 courses in water fluoridation and occupational health.

In Haiti, advisory services were provided to the Ministry of Health and Population in conducting a program in basic rural sanitation in the Mirebalais and Cayes areas, and to the Autonomous Metropolitan Water Commission in the improvement of the system and services of Port-au-Prince and Pétionville, through short-term consultants in hydrogeological surveys, billing, and collections.

In the Dominican Republic, assistance was furnished to the Ministry of Public Health in the development of a basic rural sanitation program; and to the National Water Supply and Sewerage Institute in carrying out the first stage of a national water supply and sewerage program for rural areas, which was accomplished to an extent of 70%, in preparing an application for a loan from the IDB for the second stage,

and in an administrative rationalization and study of water rates, through short-term consultants.

See also projects -2100 and -2200 of the countries mentioned and of Mexico.

WHO/RB

AMRO-2103, Engineering and Environmental Sciences (Zone III)

Purpose: Improvement in the organization of the national and local environmental sanitation and water supply and sewerage services.

Probable duration: 1960-

Assistance provided: 1 sanitary engineer and 1 secretary; equipment and supplies.

Work done: See the -2100 and -2200 projects of the Zone III countries.

PAHO/RB

AMRO-2104, Engineering and Environmental Sciences (Zone IV)

Purpose: Improvement in the organization of the national and local environmental sanitation and water supply and sewerage services.

Probable duration: 1960-

Assistance provided: Advisory services by project Peru-3100 staff and 1 secretary.

Work done: In Bolivia the rural sanitation program for the Cochabamba, Tarija, and Santa Cruz areas was expanded. In Colombia the Environmental Sanitation Division performed a study, at the national level, of water quality in public supply systems. In Ecuador, initial work was done on preparing a comprehensive sanitation program for the city of Cuenca. In Peru the Environmental Sanitation Department collaborated intensively in the environmental sanitation programs for the areas affected by the earthquake of 31 May 1970.

The urban and rural water supply and sanitary sewerage programs in the countries of the Zone were carried forward. In Bolivia, work proceeded on the enlargement of the water supply systems of La Paz, Cochabamba, Sucre, Potosí, and Santa Cruz. The National Water and Sewerage Corporation (CORPAGUAS) continued the program for provision of water to 60 medium-sized communities. In Colombia, the sanitation works programs for urban and rural areas were intensified. The fluoridation program, expected to benefit 5 million persons, was carried forward. In Ecuador, the Quito Water Company continued work on expansion of the city's water supply system. The city of Guayaquil obtained a US\$7,600,000 loan from the IDB for expansion of the sewerage system.

In Peru, the Sanitation Works Department of the Ministry of Housing did intensive work to cope with the problems caused by partial or total destruction of water supply facilities in the cities stricken by the earthquake of 31 May. The Department continued its program of sanitation works carried out with the aid of 2 IDB loans. The Lima Sanitation Corporation was very actively involved in technical and administrative reorganization. A group of consultants from the

Organization provided large-scale advisory services to the Corporation over a 6-week period in a study and review of administrative procedures. The National Water Supply Program for Rural Areas, carried out by the Ministry of Health, progressed to the second stage, and negotiations were begun with the IDB for a further loan for the third stage.

National and local sanitation agencies in the 4 countries received advisory services from the Organization in administration and management.

In Colombia, Ecuador, and Peru, the watershed development programs continued. Twelve short courses were held in the countries of the Zone.

PAHO/RB

AMRO-2106, Engineering and Environmental Sciences (Zone VII)

Purpose: Improvement in the organization of environmental sanitation, water supply, and sewerage services.

Probable duration: 1960-

Assistance provided: 1 sanitary engineer and 1 secretary; equipment and supplies.

Work done: Strengthening of environmental sanitation structures continued in Argentina at both the national and provincial levels.

Noteworthy progress was made in stream pollution control, especially in Argentina, Chile, and Uruguay. In Uruguay, the studies of the Santa Lucía River Basin were completed, and a start was made on the feasibility studies for sanitary improvement of the Montevideo beaches. In air pollution control, the sampling stations continued their operations in Buenos Aires, Mendoza, Córdoba, Santa Fe, and Tucumán, Argentina, and in Santiago, Chile, and Montevideo, Uruguay. In solid waste disposal, Argentina conducted a national trash disposal program which, through a National Revolving Fund, will provide assistance to provincial authorities in the operation of sanitary landfill equipment.

In water supply and sewerage, the countries of the Zone continued to make satisfactory progress. Argentina established a Ministry of Water Resources, which began operation during the year.

Twelve intensive courses were conducted for a total of 339 participants, and 4 applied research projects were completed during the year in the countries of the Zone. The Institute of Sanitary Engineering of the National University of Buenos Aires again offered 2 complete postgraduate academic courses in sanitary engineering (water and sewerage) and public health.

PAHO/RB

AMRO-2107 Engineering and Environmental Sciences (Caribbean Area)

Purpose: Development of activities, planned on the basis of factual data, for the control or elimination of hazards to health stemming from the environment.

Probable duration: 1959-

Assistance provided: 2 sanitary engineers, and advisory services by Zone I Office staff; equipment and supplies.

Work done: The field work for the environmental health manpower survey was completed in 7 countries and terri-

tories. In 5 countries preliminary studies were started or construction plans were completed for sewerage schemes in the capital cities. Advisory services were given on refuse collection and disposal to 3 countries. Special attention was given to possibilities of introducing water chlorination in 5 cities not currently equipped with disinfection facilities. All countries and territories in the eastern Caribbean area had major water supply programs under way.

See also the -2100 and -2200 projects of the countries in the eastern Caribbean area.

WHO/UNDP

AMRO-2108, Seminar on Sanitary Engineering (Zone III)

Purpose: Study of the problems of greatest concern in the field of sanitary engineering.

Probable duration: 1969-1971.

Assistance provided: Advisory services by staff of Headquarters, Zone III Office, and country projects.

Work done: Assistance was furnished in compiling information and preparing 2 documents presented to the IV Regular Meeting of the Central American Public Health Council (XV Meeting of Ministers of Public Health of Central America and Panama), one on the evaluation of compliance with the recommendations of the Permanent Committee on Sanitation and the other on updating and evaluating water supply, sewerage and latrine installation programs in the Central American countries.

The usual seminar was omitted this year because the persons involved attended the XII Congress of AIDIS, held in Caracas, Venezuela, in August, at which the topics of concern to them were discussed.

AMRO-2114, Pan American Center for Sanitary Engineering and Environmental Sciences (Lima)

Purpose: Provision of specialized technical and scientific assistance to the countries of the Region in the field of sanitary engineering and environmental sciences; development of an international reference center for the collection, preparation, and distribution of technical information; and conduct of selected training and research activities.

Probable duration: 1968-

Assistance provided: 1 director, 1 general environmental engineer, 1 specialist in air pollution, 1 in housing and urbanization, 1 in physical planning and rural community development, 1 in water treatment, 1 in systems analysis, 1 administrative assistant, local personnel, and 1 short-term consultant in industrial hygiene; equipment and supplies; common services.

Work done: Advisory services were rendered to 16 Member Countries in one or more of the above-mentioned fields of specialization. Coordination of the Pan American Air Pollution Sampling Network continued to be a prime function of the Center. The Network was expanded to include 29 stations, with the equipment for 13 financed by the Organization. Equipment was ordered for 23 additional stations. Air pollution programs were reviewed in Argentina, Chile, Colombia, Cuba, and Uruguay.

IX. PROJECT ACTIVITIES

Eleven countries were assisted in improving their industrial hygiene activities. A second section of the final report on the UNDP project at the Institute of Occupational Health and Air Pollution Research in Chile was drafted to summarize the results of the more than 30 research studies carried out there.

There was a marked shift from programs of housing to those of urban and rural development planning. The Center's advisers were thus engaged mostly in regional and comprehensive planning; they provided assistance to the World Bank, the IDB, and FAO as well as to 6 Member Countries. A good deal of effort was expended in assisting Peru with emergency planning following the earthquake in May.

A Water Treatment Plant Advisory Project was initiated during the year. A thorough search of available literature was undertaken, pilot-plant studies were conducted, and a start was made on preparation of a manual presenting new concepts of plant design. Advice on economical expansion and improvement of existing facilities was provided in Colombia, Ecuador, and Peru.

Staff of the Center collaborated in 14 different training courses, conferences, and seminars on air pollution, industrial hygiene, housing and planning, and water treatment, and participated in 3 international conferences, held in Switzerland, the United States of America, and Yugoslavia.

In addition to papers prepared by individual advisers, the Center published the Proceedings of the Latin American Air Pollution Seminar (Rio de Janeiro, December 1968), a second edition of a manual of operations for air sampling stations, and an evaluation of results of mixed-media filtration at the water treatment plant in Cúcuta, Colombia (all of them in Spanish).

See also project Chile-4601.

PAHO/RB, WHO/RB, WHO/OF

AMRO-2118, Pan American Air Pollution Sampling Network

Purpose: Development of practical approaches to the monitoring of environmental pollutants in the Americas.

Probable duration: 1970-

Assistance provided: Advisory services by project AMRO-2114 staff.

Work done: After approval of the UNDP/TA project, a 9-month contract was negotiated with Battelle Memorial Institute, a non-profit organization well qualified in the environmental field. The contract emphasized water-quality monitoring measures and provided for a review of current activities and needs in 6 or more selected countries, to be conducted with the assistance of PAHO/WHO staff. It also called for the preparation of a guide book on environmental monitoring (with emphasis on water), so as to enable each country to select, from a range of strategies and procedures, a monitoring program to suit its particular needs. The Pan American Center for Sanitary Engineering and Environmental Sciences (project AMRO-2114) will have the primary role in the project.

AMRO-2200, Water Supplies (Interzone)

Purpose: Advisory services to the countries with respect to the planning, financing, administration, and execution of na-

tional water supply and sewerage programs and to the organization and administration of central and local agencies providing such services.

Probable duration: 1959-

Assistance provided: 1 sanitary engineer, 2 short-term consultants, 1 temporary adviser, and 3 secretaries; equipment and supplies.

Work done: The Organization continued to assist all the countries and territories of the Region in planning and developing their national water supply programs for urban and rural areas. Between 1961 and 1970, funds allotted for water supply and sewerage had risen to more than \$2.025 billion, of which \$729.21 million was derived from international loans and the rest for national sources. An estimated 74 million persons were being served by these works.

In 1970, the countries and territories had 50 applications for loans for urban and rural water and sewerage services pending consideration by international lending agencies.

Four manuals on different topics of concern to professionals in the countries' water and sewerage agencies were issued in the technical series of the Department of Engineering and Environmental Sciences.

Close cooperation continued to be maintained with the appropriate technical departments of the IDB and the World Bank and was extended to the Canadian International Development Agency, which has been very active in the Caribbean area.

See also Chapter I-B of this Report.

PAHO/RB, PAHO/SFHP, WHO/RB

AMRO-2203, Water Supplies (Zone III)

Purpose: Development of the water supply and sewerage programs of the countries in the Zone.

Probable duration: 1964-

Assistance provided: 1 administrative methods consultant, 1 consultant in well-drilling, 1 short-term consultant, and 1 secretary.

Work done: The urban sewerage programs continued to be carried out in 5 countries of the Zone. Water supply programs in the rural areas were under way in all the countries.

The Organization continued to provide advisory services to all the countries in their well-drilling programs, including both the operational and training aspects. Nicaragua made great strides in its program.

Costa Rica continued its negotiations with the IDB for a loan for water supply and sewerage projects in 5 provincial cities; Nicaragua, for its part, initiated similar negotiations for 10 cities and obtained an IDB loan of US\$12 million for urban sanitation works, including the Managua sewerage system.

The first stage of the technical and administrative advisory assistance to the National Water and Sewerage Service of Costa Rica was carried out through the assignment of 5 consultants who prepared operational manuals and recommendations. The Organization continued to advise the National Water and Sewerage Department (DENACAL) of Nicaragua in administrative matters, the first evaluation indicating that 80% of the recommendations had been implemented.

In community promotion, intensive work was done in the Honduras program, where the necessary administrative structures were established, 2 training centers were set up, assistance was obtained from the WFP, 202 communities were studied and 242 development committees organized, 419 construction and service projects were carried out, and 17 courses were conducted for community and basic services volunteers. In Nicaragua, a course on community promotion was offered for DENACAL personnel.

PAHO/RB

AMRO-2213, Studies of Water Resources

Purpose: Over-all study of the potential water resources of the Region and their present and future use, with emphasis on the provision of additional water supplies; and study of the problems of waste water disposal and the resultant pollution of surface water and groundwater.

Probable duration: 1965-1970.

Assistance provided: 1 sanitary engineer (part of the year), 1 temporary adviser, and advisory services by Zone Offices and country projects staff; equipment and supplies.

Work done: The Organization continued to cooperate with the Economic Commission for Latin America (ECLA) through the participation of a sanitary engineer in its water resources activities. Work continued on preparation of the final reports on water resources of the Central American countries and Panama, Paraguay, and Uruguay.

WHO/UNDP

AMRO-2214, Symposium on Water Pollution Control

(Caracas, Venezuela; 16-21 August 1970) PAHO/RB

The purpose was to study and evaluate the status of water pollution in Latin America and the Caribbean area and consider the policies that should guide the formulation of national programs of water pollution control. The Organization defrayed the costs of attendance of 30 participants from 25 countries of the Hemisphere, simultaneous interpretation facilities, and provided 7 short-term consultants the services of specialized staff members from Headquarters and Zone Offices.

Basic information was collected on water pollution in the various countries. Guidelines were prepared for the assessment of the problem and the formulation of national and local programs of control.

The Symposium was attended by 131 participants from 25 countries. Fourteen speakers presented a variety of papers. Recommendations were made to the Governments, to PAHO, and to international financing agencies.

AMRO-2219, Water Meters

Purpose: Development of a plan of operations for a program of research and training in connection with household water meters.

Probable duration: 1969-1971.

Assistance provided: 1 short-term consultant; costs of preparing a course.

Work done: The second volume of the reference manual on household water meters was under review.

A research project on the use and operation of water meters was carried out concurrently in Bogotá, Guatemala City, and São Paulo. The research was done, respectively, by the School of Engineering of the National University of Colombia, the Regional School of Sanitary Engineering for Central America and Panama of San Carlos University in Guatemala, and the School of Public Health of the University of São Paulo, Brazil.

PAHO/OF

IDB

AMRO-2220, Administration of Public Environmental Services

Purpose: Institutional improvement and administrative reform of water and sewerage agencies and other environmental services.

Probable duration: 1970.

Assistance provided: 1 sanitary engineer, 2 administrative methods consultants, 3 short-term consultants, 1 temporary adviser, and 1 secretary; equipment and supplies; contractual services.

Work done: During the year, technical assistance was given to 12 countries of the Hemisphere by means of 15 separate missions performing a total of 85 consultant/months of services. Under the new program involving the participation of United States universities, 12 courses and seminars were conducted for a total of 300 participants. Standards, policies, and principles of administration and management were emphasized during these courses. Under other projects, 28 fellowships were awarded, mainly for observation trips.

Effective advisory services were rendered to the National Institute of Sanitary Works of Venezuela and the Water and Sewerage Superintendency of São Paulo; these are considered the main accomplishments during the year, owing to the complexity and size of the institutions concerned. In the area of rural services, the institutions receiving advisory services in administration and management, in Costa Rica, the Dominican Republic, and Nicaragua, managed to achieve a high proportion of their goals.

Country contributions for the financing of technical assistance services for institutional improvement and administrative reform totaled \$2.4 million; 33% was financed with funds of the institutions receiving advisory services and the rest with funds from the IDB, IBRD, UNDP, and AID. For the first time it was possible to obtain AID participation in these advisory services, agreements having been concluded with Panama and Peru with contributions of approximately US\$150,000.

PAHO/RB, PAHO/CWSF PAHO/OF, WHO/RB

AID

AMRO-2300, *Aedes aegypti* Eradication

Purpose: Coordination and evaluation of the *A. aegypti* eradication programs in the Americas.

Probable duration: 1954-

Assistance provided: 1 medical officer, 1 entomologist, and

IX. PROJECT ACTIVITIES

1 sanitarian, and 2 short-term consultants; equipment and supplies; contractual services.

Work done: Evaluation and guidance was provided in connection with the activities of the campaign in Barbados, Brazil, the Cayman Islands, Colombia, Cuba, El Salvador, Honduras, Jamaica, the Netherlands Antilles, and Panama. The surveillance activities in British Honduras, Ecuador, and Guatemala were reviewed.

The insecticide testing unit which operates in Jamaica in cooperation with the Government and the University of the West Indies completed the field tests of Baygon and Dursban and performed tests of the susceptibility of strains of *A. aegypti* from various countries and territories of the Hemisphere. Assistance was given the Government of Jamaica in planning the campaign in initiating activities in a limited area of the country.

The Scientific Advisory Committee on Dengue Surveillance held its first meeting, and the Study Group on the Prevention of *Aedes aegypti*-Borne Diseases met in February 1970. In addition, a preliminary cost-benefit study on the prevention of *A. aegypti*-borne diseases was carried out.

See also project AMRO-2308.

PAHO/RB

AMRO-2301, *Aedes aegypti* Eradication (Caribbean Area)

Purpose: Eradication of *A. aegypti*.

Probable duration: 1950-

Assistance provided: 1 medical officer, 3 sanitarians; equipment and supplies.

Work done: Eradication campaigns were successfully promoted in the Bahamas, British Virgin Islands, Dominica, and St. Vincent (80% of the target). More than 400 field inspectors and squad leaders were trained in several countries and territories of the area (95%). In Surinam a solution was found to the problem of roof-gutter breeding. A joint application for UNDP assistance for the eastern Caribbean islands, Guyana, and Surinam was prepared and submitted.

The attack phase of the campaigns was in progress during the year in Aruba, Barbados, French Antilles, French Guiana, Guyana, St. Lucia, and Surinam, while the preparatory phase was nearing completion in Antigua, Bonaire, Curaçao, Grenada, Montserrat, and Netherlands Antilles. Spraying operations on a limited scale were in progress in Jamaica and Venezuela (80% of the target).

PAHO/RB, WHO/UNDP

AMRO-2303, *Aedes aegypti* Eradication (Zone III)

Purpose: Eradication of *A. aegypti* in El Salvador, Honduras, and Panama; and coordination of surveillance work in the other countries of Zone III.

Probable duration: 1968-

Assistance provided: 1 sanitarian and 1 short-term consultant.

Work done: British Honduras, Costa Rica, Guatemala, and Nicaragua intensified their surveillance activities. In El Salvador (reinfested in 1965), available resources were only sufficient for a single treatment cycle in the capital, where

73,382 of the existing 90,524 houses were treated. The 4th verification cycle, covering 34,978 houses, showed 1,661 houses to be infested. The house positivity index was 4.7% (compared to 4.4% in 1969).

In the area of the Ilopango airport which had yielded negative results in various periods, there were 1 negative and 2 positive verifications, each of the latter showing only 2 houses positive for *A. aegypti*.

Susceptibility tests of *A. aegypti* strains from San Salvador and Soyapango indicated initial resistance of the vector to DDT, together with continued susceptibility to dieldrin and organophosphorus insecticides.

PAHO/RB

AMRO-2308, Scientific Advisory Committee on Dengue Surveillance in the Americas

(Washington, D. C., 15-16 January 1970) PAHO/RB

In view of the increased frequency and intensity of outbreaks of dengue in the Caribbean area and in certain parts of northern South America, the Scientific Advisory Committee met to consider methods for improving surveillance of the disease in the Americas. The Organization defrayed the costs of attendance of 11 participants (temporary advisers) and provided the services of staff members.

The Committee proposed the establishment of a program that would make possible the discovery of dengue epidemics in their early stages, assure immediate detection of any occurrence of the dengue/hemorrhagic fever syndrome, regularly monitor and evaluate the status of the disease as a public health and economic problem, and provide knowledge of the natural history of dengue viruses.

Because of the growing importance of epidemics of Venezuelan equine encephalitis in Latin America and the fact that the geographic areas involved and the investigative resources available are similar to those for dengue, the Committee also recommended that PAHO develop and coordinate a continuing research program on that disease and establish a PAHO Advisory Committee on Venezuelan Equine Encephalitis to guide those activities.

AMRO-2309, Study Group on the Prevention of *Aedes aegypti*-Borne Diseases

(Washington, D. C., 9-14 February 1970) PAHO/RB

The XIX Meeting of the Directing Council approved Resolution XXIII requesting the Director to sponsor a meeting of a multidisciplinary group for the purpose of reviewing strategy and methods for the prevention of diseases transmitted by *Aedes aegypti* in the Americas, and of defining, as necessary, the objectives and guidelines of a study that would examine all possible alternative systems, as well as the consequences of different systems. The Organization contributed 11 temporary advisers and defrayed the costs of the meeting.

The Study Group comprised experts in epidemiology, environmental sanitation, virology, public health administration, entomology, and anthropology. Its recommendations were set forth in the report of the meeting.

AMRO-2400, Public Health Aspects of Housing and Urbanization

Purpose: Expansion of the knowledge of health and environmental sanitation of professionals responsible for planning, programming, and execution of low-cost housing and urbanization projects in the countries of the Region.

Probable duration: 1962-1971.

Assistance provided: 1 sanitary engineer.

Work done: Three regional courses on housing and urban development were held, providing training in matters of environmental sanitation to 62 officials from national housing agencies of 13 countries.

The consultant participated in the interagency mission for the establishment of multinational rural housing demonstration projects in Colombia, Ecuador, and Venezuela (from August to October).

The Institute of Territorial Credit of Colombia was given advisory assistance in a revision of its design criteria and standards for sanitation facilities to serve low-cost housing developments.

Advisory services were extended to Colombia, Ecuador, Peru, and Venezuela on minimum standards of urbanization for use by national housing institutions.

PAHO/RB

AMRO-3107, Public Health Administration (Caribbean Area)

Purpose: Assistance to the Governments of the eastern Caribbean area in the formulation and implementation of health programs, within their socioeconomic development plans and with a view to the maximum utilization and coordination of local resources and the sharing of specialized services.

Probable duration: 1963-

Assistance provided: 1 medical officer (the PAHO/WHO Representative for the eastern Caribbean), 1 nurse, 1 administrative methods officer, 1 short-term consultant, advisory services by project AMRO-4801 staff, and 1 secretary; costs of a course; supplies.

Work done: Quadrennial projections of activities were prepared for Antigua, Barbados, British Virgin Islands, Dominica, Montserrat, St. Kitts/Nevis, St. Lucia, and St. Vincent (100% of the target). A study of the organization and administration of the health services of Dominica and St. Lucia was begun (100%). A 4-week course on methodology of nursing studies was conducted in Barbados for 14 participants (100%). Work was continued on the preparation of a national health plan for St. Kitts/Nevis (10% of the target).

PAHO/RB, WHO/RB

AMRO-3108, Field Office: United States-Mexico Border

Purpose: Cooperation in the joint study and planning of health activities along the United States-Mexico border; exchange of epidemiological information between the two countries; and performance of the duties of Secretariat of the United States-Mexico Border Public Health Association.

Probable duration: 1942-

Assistance provided: 1 medical officer, 1 sanitary engineer, 1 nurse, and 2 temporary advisers (1 of them served 2 consultancies); secretarial and conference services; common services.

Work done: The XXVIII Annual Meeting of the United States-Mexico Border Public Health Association was held in Mexicali, Baja California, in March. The resolutions approved dealt with surveillance against rabies and other zoonoses along the border; exchange of personnel; continuing education in nursing; establishment of binational committees on the environment, development, and use of resources; the health of adolescents; increase and evaluation of laboratory resources; venereal disease control; bilingual personnel in the health services; tuberculosis control; control of tobacco smoking; and family planning in homes with one or more tubercular spouses. In addition, recommendations were approved on special veterinary public health meetings and participation of organized groups in health programs on both sides of the border.

Another discussion between the Minister of Health and Welfare of Mexico, the Surgeon General of the United States Public Health Service, and the Director of the Pan American Sanitary Bureau, attended also by expert personnel from both countries, took place during the Meeting; the topics were *Aedes aegypti*, rabies, and tuberculosis control, epidemiological surveillance, and air pollution control.

Binational meetings were held on *Aedes aegypti*; tuberculosis control; epidemiological surveillance against zoonoses; sanitary landfills in the 2 Nogales; survey of health resources in the Ciudad Juárez-El Paso area; and air pollution control.

Information on *Aedes aegypti* reinfestation in 1970 in communities of the border States of Coahuila and Tamaulipas was received for transmission to the United States health authorities.

The pilot tuberculosis control project was begun in March in Ciudad Juárez. The program, in its first stage, covered 5 Mexican communities.

A 3-day binational seminar on venereal disease control was held in January for 50 persons; a course on administrative aspects of tuberculosis control programs was offered in Ciudad Juárez in February; and Mexican professionals attended special courses in tuberculosis in various places in the United States. A 4-day binational course in administration of public garbage-disposal services was held in May in Nuevo Laredo, Tamaulipas, for 120 participants; training courses were offered in Sonora for 1,200 food handlers; and training courses for auxiliary nursing personnel were conducted in Agua Prieta, Mexicali, Tijuana, and Ensenada. The third stage of the survey of health resources in the Ciudad Juárez-El Paso area was carried out with the assistance of faculty and students from the School of Medicine of the University of Chihuahua and the Houston, Texas, School of Public Health.

The local and/or regional binational health committees continued their regular work and cooperated in the implementation of the resolutions of the XXVIII Annual Meeting of the Border Association.

Officials of the Bureau took part in various international meetings, including those of the International Boundary and Water Commission, the International Good Neighbor Coun-

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cil, and the Association of Border Cities, and in several meetings of public health associations of border states.

PAHO/RB, WHO/RB

AMRO-3110, Research Development and Coordination

Purpose: Development and implementation of a biomedical research program in fields that are directly relevant to health problems of the Region; promotion of multinational co-operative efforts among biomedical scientists so as to make the best possible use of existing resources for research and research training; strengthening of biomedical communications and resources; and improvement of the effectiveness of health expenditures through the application of operations research methodologies to the planning and administration of programs.

Probable duration: 1962-

Assistance provided: 1 research assistant, 43 temporary advisers, and 2 secretaries; costs connected with the meeting of the PAHO Advisory Committee on Medical Research; and publications.

Work done: The Ninth Meeting of the PAHO Advisory Committee on Medical Research was held from 15 to 19 June, in Washington, D.C. In a special one-day session the question of metabolic adaptation and nutrition was thoroughly reviewed; *Scientific Publication PAHO 222* recorded the papers and discussions presented. Other matters considered by the Advisory Committee included: (a) review of the findings from the INCAP/ICNND nutrition surveys conducted in Central America and Panama by INCAP and the Interdepartmental Committee on Nutrition for National Defense; (b) an assessment of the principal centers in which research and training in parasitology are being carried on in tropical America; (c) a report on the PAHO/WHO program for advanced training in immunology; and (d) reports on PAHO-sponsored scientific meetings and symposia, including those on nuclear medicine, Chagas' disease, *Aedes aegypti*-borne diseases, maternal nutrition and family planning, zoonoses, and foot-and-mouth disease.

A summary report on 123 research projects that were stimulated, coordinated, or financially assisted by the Organization was published in the document entitled *Research in Progress, 1970* (Doc. RD49/5 (9)-R).

The preparation of the material for the Spanish and Portuguese editions of the *Manual on Tumor Nomenclature* was completed and the volumes were being prepared for publication.

Assistance was given in organizing a workshop in pediatric pathology in conjunction with the Inter-American Investigation of Mortality in Childhood; in analyzing available information on training programs in genetics in Latin America; and in preparing a standard collection of visual aids to be distributed in connection with the PAHO textbook program.

Other activities carried out under this project included the International Conference on the Application of Vaccines against Viral, Rickettsial, and Bacterial Diseases of Man, held at Headquarters from 14-18 December (see project AMRO-3310) and the International Symposium on Mycoses,

held at Headquarters on 24-25 February (see project AMRO-3130).

PAHO/RB, PAHO/OF

Merck Sharp and
Dohme International,
NIH, U.S. Army

AMRO-3122, River Basin Development in the Americas

Purpose: Incorporation of health activities in river basin development projects in the Americas; and assistance in studies on water quality and optimum utilization, beginning with the River Plate basin.

Probable duration: 1967-1977.

Assistance provided: 1 medical officer, 1 sanitary engineer, 1 short-term consultant, and 1 secretary; costs of a meeting; computing services.

Work done: In the River Plate basin project, assistance was provided in connection with engineering aspects, including water needs for domestic and industrial use and water quality. A meeting was held with the ambassadors of the River Plate countries, members of the project's Secretariat, and the Director of International Affairs of the Argentine Republic.

In regard to the Guayas River basin, the basic document was prepared and advisory assistance was given in the preparation of programs, including the medical and engineering aspects.

With respect to the Aconcagua River basin, meetings were held with the authorities and a legislative bill was revised to provide for the inclusion of a health representative on the relevant corporation. Stress was laid on the need to compile basic information on the medical and engineering aspects. A training course on systems analysis was scheduled.

In the Bogotá River basin, the studies on water pollution in the river were continued.

As the first stage in the preparation of new programs, visits were made to the Lempa River basin in El Salvador and the Kingston Bay area in Jamaica.

See also project Uruguay-3102.

PAHO/RB, PAHO/OF

IDB, Institute for Latin
American Integration

AMRO-3125, Special Seminars in Zone III

Purpose: Cooperation with the countries of the Central American Isthmus in arranging seminars and meetings of working groups in various public health disciplines to analyze in depth the relevant problems, norms and specific activities, and to make concrete recommendations to the Central American Public Health Council.

Probable duration: 1970-

Assistance provided: Advisory services by Headquarters and Zone III Office staff; costs for the seminar.

Work done: The IX Seminar on Health Education in the Central American Isthmus was held in Panama from 14 to 17 July, under the sponsorship of the Government of Panama and PAHO. It was attended by 40 educators from the 6

countries of the Isthmus, 3 from Brazil and Ecuador, and 8 observers. The discussion centered on the topic "Evaluation of the Educational Component of Health Programs." The recommendations of the Seminar were submitted to the Central American Public Health Council for consideration.

PAHO/RB

AMRO-3126, Operations Research

Purpose: Promotion and application of operations research concepts and methods to health programs, both at Headquarters and in the field.

Probable duration: 1970-

Assistance provided: 1 temporary adviser; equipment and supplies; contractual services.

Work done: A document entitled "A Birth-Life-Death Model for the Evaluation and Planning of a Health Services Program" was submitted to the Ninth Meeting of the PAHO Advisory Committee on Medical Research (ACMR).

An analytical model was developed for gauging the effectiveness of student admission policies in terms of turnover in each year of the medical course and the number of yearly graduates.

In the course on research methods held at the Latin American Center for Medical Administration (CLAM) in Argentina, lectures were given on the critical path method, on project analysis and evaluation techniques, and on other areas of operations research. Advisory services were rendered and a working document prepared concerning the feasibility of including research on health services as part of the CLAM program.

Advisory assistance was also provided for the evaluation of the pilot health areas project in Colombia.

In the survey of inventories of the Kingston, Jamaica, blood bank, the processing of data was completed and their analysis begun. Following a visit to the Regional Library of Medicine in São Paulo, Brazil, a preliminary study was made on the utilization of statistical procedures for descriptive and control purposes.

An informal seminar on the critical path method was held in the Department of Human Resources, and advisory services on applications of the method (X-ray research projects, cost-benefit studies of *Aedes aegypti* programs, intensive care units, etc.) were rendered to other requesting departments. The critical path method was made available to the Zone V Office for future use in health projects at the country level. A draft of a manual on use of the critical path method in health projects was prepared.

The Organization was represented at 2 annual meetings of the American Association of Operational Researchers.

Initial arrangements were made for the symposium on application of systems analysis to health services, to be held during the Ninth Meeting of ACMR.

PAHO/RB

AMRO-3129, Research Training in Biomedical Sciences

Purpose: Provision of research training in the biomedical sciences so as to enable workers from Latin America and

the Caribbean area to broaden their experience within the Hemisphere.

Probable duration: 1969-

Assistance provided: 1 grant and processing of applications, and general administration by Headquarters staff.

Work done: Twenty applications for research grants were received from Argentina, Bolivia, Brazil, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, and Nicaragua. Seven grants were awarded, 4 were rejected, and 9 were being processed.

PAHO/OF

The Wellcome Trust

AMRO-3130, Conference on Mycology

(Washington, D. C., 24-25 February 1970) Grants to PAHO: United States Army, E. R. Squibb and Sons, Inc., and Cyanamid International

The International Symposium on Mycoses was convened as a result of the growing realization that these infections constitute a major public health problem. The Organization defrayed the cost of attendance of 32 participants (24 temporary advisers) and other costs of the meeting and provided the services of its staff members. The Symposium was attended by more than 60 investigators from the Americas and Europe. The 32 scientific papers provided up-to-date information on public health considerations, recent advances in diagnostic procedures, therapy, ecology and epidemiology, training, and future trends. The group recommended that PAHO lend its support to the creation of a Permanent Coordinating Committee for the Mycoses.

The proceedings of the Symposium (*Scientific Publication PAHO 205*) provide a comprehensive view of current developments in all aspects of medical mycology.

AMRO-3131, Caribbean Health Ministers Conference

Purpose: Establishment of a secretariat for the Caribbean Health Ministers Conference.

Probable duration: 1970-

Assistance provided: 1 grant.

Work done: The Second Caribbean Health Ministers Conference took place in Barbados in April. Resolutions were passed on the institutionalization of the Conference as well as on rural health care, hospital maintenance, recruitment, specialist services, drug control, paramedical education, and postgraduate medical education.

It was subsequently decided to incorporate the secretariat of the Conference into the existing regional organization of the Caribbean Governments, situated in Guyana; accordingly, at the year's end the post of Chief, Health Section, Commonwealth Caribbean Regional Secretariat, was advertised. During 1970 there were 2 meetings of the Permanent Committee of the Conference. The Organization sent observers to all those meetings.

PAHO/RB

AMRO-3200, Nursing Services (Interzone)

Purpose: Planning, organization, and administration of nursing services.

Probable duration: 1968-

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Assistance provided: 1 short-term consultant and 1 secretary; equipment and supplies.

Work done: A guide entitled *Descriptive Study Methods in Nursing* was prepared to assist nurses to develop a proper attitude toward research; formulate research studies that will produce information needed for planning and programming; acquire knowledge of the descriptive research method and of the techniques and tools for data collection and analysis.

PAHO/RB

AMRO-3201, Nursing (Zone II)

Purpose: Assistance to the countries in determining nursing needs, programming nursing and midwifery services within the context of national health planning, coordinating educational and research activities, and promoting exchange of information.

Probable duration: 1959-

Assistance provided: 1 nurse and 1 secretary; supplies.

Work done: The adviser assisted the countries with the following activities: organization of a meeting which studied the possibility of establishing a regional body for the coordination of nursing activities in the eastern Caribbean area and made plans for a new survey of schools of nursing; planning and organization of postbasic courses in nursing administration, education, and research; determination of nursing needs for an integrated medical care program and for mental health programs incorporated into the general health services in Venezuela; development of the pilot project to expand maternal and child health services in Jamaica; and studies related to the nursing component in national health planning in Grenada.

PAHO/RB

AMRO-3202, Nursing (Zone II)

Purpose: Development of systems of nursing in the countries of Zone II in order to prepare nursing personnel adequate in quantity and quality to meet the needs.

Probable duration: 1963-

Assistance provided: 1 nurse and 1 secretary.

Work done: In Cuba 2 seminars on nursing-midwifery were held, one at Havana and the other at Santiago, Oriente.

In Haiti the Nursing Office was reorganized, the central level being strengthened and an intermediate level set up with 8 district nurses. A start was made on the comprehensive health program at Les Cayes; a register of personnel resources was established; the 3 schools were reorganized; an educational program for nursing educators was set up; and a plan for the evaluation of auxiliaries was under way.

In Mexico a national study of nursing resources was in progress; the number of training programs for nursing technicians increased from 3 to 12, and 261 persons were trained in the course of the year. In the National Polytechnic Institute, 15 teacher nurses graduated, 5 of them having specialized in psychiatry and 10 in the administration of nursing services; and the maternal and child education and psychiatric nursing programs at the School of Nursing of the University of Nuevo León were reviewed. The School of

Nursing at the University of San Luis Potosí drew up a new curriculum; in 5 courses held, 186 auxiliaries were trained.

The Dominican Republic produced a preliminary draft of nursing legislation; completed the study of personnel resources; strengthened nursing at the central and intermediate levels; reorganized the nursing departments of 12 hospitals, 3 maternity subcenters and 5 health centers; worked out educational programs for nursing personnel at all levels; trained lay midwives; increased maternal and child care through clinics run by nursing personnel; made a study of the activities of nursing auxiliaries and reorganized the auxiliary training plan; and reviewed the curriculum of the 2 schools of nursing.

PAHO/RB

AMRO-3203, Nursing (Zone III)

Purpose: Development of nursing systems in the countries of Zone III in order to prepare nursing personnel adequate in quantity and quality to meet the needs.

Probable duration: 1963-

Assistance provided: 2 nurses and 1 secretary.

Work done: With the help of continuing education programs, the tasks programmed for the year were completed 100%: 4 series of 3 study sessions, with intervals of supervised practical projects, on the administration of nursing services, attended by 101 nurses from Costa Rica, El Salvador, Guatemala, and Panama; a short theoretical and practical 2-week course on prenatal supervision, for 28 health center nurses and regional supervisors, at Managua, Nicaragua; a series of lectures and discussions on the administration of nursing wards and the clinical supervision of students, for nurses at the General Hospital of British Honduras; and a short course on audiovisual teaching media, for 16 nurses from 6 of the countries of the Zone.

Specialized advisory services were rendered to the General Hospital, Managua, with a view to reorganizing various nursing wards and inservice training of personnel; to the Maternal and Child Hospital, Tegucigalpa, for the organization of the new obstetrical and neonatal nursing service and the reorganization of the services of the equipment and sterilization station; to the Santo Tomás Hospital, Panama, for the reorganization of the Department of Nursing; to the "Carit" Maternity Institute, San José, Costa Rica, in the evaluation of the obstetrical and neonatal nursing service and reorganization of the wards for newborn, normal, pathological, and premature babies, and organizing a short course on neonatal care and pediatric techniques for its staff.

In addition, advisory services were rendered for theoretical and practical programs to train nursing staff in matters of organization, teaching methods, and curriculum development at the School of Nursing of British Honduras; for the teaching of nursing administration and the preparation of final-year students at the School of Nursing of the University of Honduras for rural practical work; for the evaluation and planning of courses for auxiliaries in Nicaragua; and for the conduct and evaluation of the teaching program for maternal and child nursing in the final year of basic studies at the School of Nursing in Panama.

PAHO/RB

AMRO-3204, Nursing (Zone IV)

Purpose: Development of nursing systems in the countries of Zone IV in order to prepare nursing personnel adequate in quantity and quality to meet the needs.

Probable duration: 1952-

Assistance provided: 1 nurse and 1 administrative assistant.

Work done: The Organization worked with the countries of the Zone in 4 seminars on nursing education and 2 on nursing services, and in the meeting of the Working Group on Planning in Nursing (Peru), attended by 28 nurses from 8 Latin American countries.

See also projects Ecuador-3100 and -6300, Peru-3100, -4800, and -6300, and AMRO-4816.

PAHO/RB**AMRO-3206, Nursing (Zone VI)**

Purpose: Development of nursing systems in the countries of Zone VI in order to prepare nursing personnel adequate in quantity and quality to meet the needs.

Probable duration: 1963-

Assistance provided: 1 nurse and 1 secretary; equipment and supplies.

Work done: Changes were observed in the approach to nursing education programs, such as the introduction of new areas under the responsibility of the Schools of Nursing, and efforts to achieve joint planning.

Argentina closed 5 of the 6 schools of midwifery and transferred their programs to the schools of nursing. In Chile the first professional group given a combined nursing and midwifery training through a flexible program is about to graduate from the Southern University of Valdivia.

See also project Chile-3200.

PAHO/RB**AMRO-3210, Hospital Nursing Services**

Purpose: Development of continuing education programs in nursing service administration.

Probable duration: 1966-

Assistance provided: 1 nurse and 1 short-term consultant on nursing in intensive and coronary care units; equipment and supplies.

Work done: The following university hospitals received assistance with the planning, organization, and evaluation of nursing services in intensive care units, and with the preparation of nursing personnel for those units: José Joaquín Aguirre Hospital, Santiago, Chile; San Juan de Dios Hospital, Bogotá, Colombia; the Clinical Hospital, Montevideo, Uruguay; and 4 in Perú: San Marcos University Hospital, the Workers Social Security Hospital and the Central Air Force Hospital in Lima, and San Juan de Dios Hospital in Callao.

PAHO/RB**AMRO-3211, Seminars on Planning for Nursing**

Purpose: Assistance to the countries in the preparation of nursing leaders to participate in the planning of nursing activities.

Probable duration: 1969-1971.

Assistance provided: Advisory services by Headquarters and Zone Offices staff; costs of workshop.

Work done: A 2-week workshop on planning was held in Lima, Peru (11-22 May), for 28 nurses and nurse educators holding key positions in 8 Latin American countries.

WHO/RB**AMRO-3300, Laboratory Services (Interzone)**

Purpose: Collaboration with the Governments in improving health laboratory services, in establishing new sections in existing laboratories, and in expanding and improving the production and control of biological products.

Probable duration: 1955-

Assistance provided: 1 temporary adviser, and advisory services by Headquarters and project AMRO-3303 staff; equipment and supplies.

Work done: There was gradual improvement in the laboratory diagnosis services in the countries of Latin America, but during the year the greatest emphasis was placed on improvement in the quantity and quality of the biologicals that were being produced. Some countries were also beginning to produce the more sophisticated immunizing agents. Mexico started production of live poliomyelitis vaccine and measles vaccine, which require careful measures to ensure quality control. The Organization continued to supply vaccine strains, standards, biological reagents, as well as information, to assist the countries to develop their diagnostic, control, and research activities; 511 items were supplied in response to 44 requests from 9 countries.

WHO/RB**AMRO-3301, Laboratory Services (Caribbean Area) (1965-1970) PAHO/RB (UNICEF)**

The purpose was to assist in improving clinical and public health laboratory services in the countries of Zone I. The Organization provided 1 short-term consultant in 1965 and another in 1966, and 2 others in 1967; 2 grants; fellowships (awarded under other projects); laboratory materials; and advisory services by staff members.

The original objectives were to develop at the University of the West Indies in Kingston, Jamaica, a program for training laboratory technicians for the English-speaking countries and territories in the Caribbean area. A survey to evaluate problems and available resources was conducted in 1965, and training courses for technicians were begun. The University prepared technical manuals on hematology, clinical pathology, histology, microbiology, enteric bacteriology, and blood banking. These manuals were distributed and put into use in the area. From 8 to 10 technicians were trained annually at the University on fellowships awarded under various PAHO/WHO projects.

The short-term consultants assisted the University in developing its programs and facilities; in 1970 the microbiology

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department and the laboratory animal facilities were re-organized.

The project was very effective in assisting the countries through training and consultation services.

AMRO-3303, Laboratory Services (Zone III)

Purpose: Cooperation with a view to developing and making better use of the existing health laboratories in the countries of Zone III.

Probable duration: 1965-

Assistance provided: 1 laboratory technician and 1 temporary adviser; supplies.

Work done: Advice was given to each country of the Zone on updating their laboratories and their tuberculosis control techniques. Several countries extended their local laboratory service network and their physical plant. For example, El Salvador set up 12 health unit laboratories, and Honduras was constructing a new building for the Central Laboratory. In addition, it had equipment for 10 local laboratories. The Schools of Medical Technology of Nicaragua and Panama graduated their first groups of students.

Another important activity in which the project was actively involved was the meeting of the Working Group on Tuberculosis at Managua, Nicaragua. One of the main items of its agenda was the participation of health laboratories in national tuberculosis control programs.

See also the -3300 projects of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

PAHO/RB

AMRO-3306, Laboratory Services (Zone VI)

Purpose: Advisory services to health laboratories to improve their efficiency, with emphasis on the establishment of laboratories at all levels of health organizations.

Probable duration: 1970-

Assistance provided: Advisory services by Headquarters and project AMRO-0106 staff.

Work done: In Argentina, through the Department of Medical Care, assistance was provided in developing a national laboratories system to improve the identification of health problems, especially in the field of communicable diseases. An organizational scheme, defining the functions at each level, was designed; technical standards were formulated; and a training program for auxiliary technical personnel was initiated.

In Chile, numerous activities were carried out with a view to the introduction of substantial structural changes in existing services in order to establish an adequate health laboratories system. The Bacteriological Institute, which is the country's central reference laboratory, is undergoing a technical and administrative reorganization. A program of training in various aspects of microbiology was initiated, and the methods for the production of biologicals are being improved. Action was being taken to place the project on an adequate financial basis by obtaining assistance from the United Nations Development Program.

In Paraguay, a short-term consultant furnished assistance in the improvement of techniques for bacteriological diagnosis of tuberculosis.

Uruguay received the services of Headquarters staff for a preliminary situation study designed for the establishment of an adequate organization for providing laboratory services to which the Government attaches high priority.

See also project Chile-3300.

AMRO-3310, International Conference on the Application of Vaccines against Viral, Rickettsial, and Bacterial Diseases of Man

(Washington, D.C., 14-18 December 1970) Grant to PAHO: Merck Institute for Therapeutic Research, WHO/RB

Rapid advances in the 4 years since the holding of the first international conference on this subject led to the decision to hold another meeting on the application of vaccines against viral, rickettsial, and bacterial diseases of man, with emphasis on the practical problems involved in using the many human vaccines that have been developed. The Organization defrayed the cost of attendance of 138 participants (101 temporary advisers) and other costs of the meeting, and provided the services of its staff members.

Approximately 300 scientists from 50 countries attended the meeting, including 138 participants selected from countries with marked differences in their problems and in the conceptual approaches to their solution, and with varying levels of economic development. Sixty-seven scientific papers were presented and the participants held a series of formal and open discussions. The Organization made plans to publish the proceedings.

AMRO-3311, Training of Laboratory Personnel

Purpose: Training of laboratory personnel in short intensive courses on specific subjects.

Probable duration: 1968-

Assistance provided: 1 temporary adviser, and advisory services by Headquarters and Zone Offices staff; cost of courses; equipment and supplies.

Work done: The resources of this project were devoted largely to the strengthening of laboratory services for tuberculosis control in Central America. At the fourth meeting of the Working Group on Tuberculosis, held in April in Managua, Nicaragua, the Central American countries agreed on plans for a control program that will include the screening of all symptomatic patients at hospitals and health centers, confirmation of diagnosis by direct microscopic examination of sputum, and provision by the central laboratories of facilities for cultures and testing of resistance to antibiotics.

A consultant spent 1 week at the central laboratory of each of the 6 countries to assist with the training of personnel, the improvement of techniques for identification of *Mycobacterium tuberculosis* through cultures, and the standardization of antibiotic sensitivity tests.

Two-day courses were held in several places in each country to train laboratory technicians in small hospitals and health centers in the identification of *M. tuberculosis* by direct microscopic examination.

PAHO/RB

AMRO-3314, Trinidad Regional Virus Laboratory

Purpose: Development of the activities of the Trinidad Regional Virus Laboratory as part of the network of virus disease surveillance centers in Latin America.

Probable duration: 1969-

Assistance provided: Advisory services by Headquarters staff; 1 grant.

Work done: The Laboratory developed its virus disease surveillance program for the Caribbean area for yellow fever, dengue, Eastern equine encephalitis, and Venezuelan equine encephalitis. Other research activities were initiated in the fields of human parasitology and animal parasitology. Training programs were started.

WHO/RB**AMRO-3315, Immunology Research and Training Center (São Paulo)**

Purpose: Provision of postgraduate training on the theory and laboratory techniques of immunology for students from Brazil and other Latin American countries, and development of a research program on basic immunological mechanisms and their application to local public health problems.

Probable duration: 1969-

Assistance provided: 2 temporary advisers.

Work done: Ten students from Brazil and Argentina completed the 4-month course; 5 other students from the University of São Paulo attended the lectures and seminars but did their laboratory work at the Microbiology Department of the University.

Visiting lecturers and examiners from Argentina, Chile, France, and the United States of America participated in the course along with the 6 permanent staff members of the Center. Research projects included studies on the immunochemistry of snake venoms, and on anaphylactic antibodies.

WHO/RB**AMRO-3400, Health Education (Interzone)**

Purpose: Assistance to the Governments in the establishment and efficient operation of specialized health education services within the framework of the national health organizations.

Probable duration: 1968-

Assistance provided: 3 short-term consultants and 1 temporary adviser.

Work done: A Study Group prepared a methodological model for the evaluation of the educational component of health programs; the model was being tested in the field at the end of the year. Assistance was provided to 11 Governments in the determination of advisory services required, in the redefinition of functions, and in the planning of health education activities. In the Central American countries, a study was made of their educational needs in connection with comprehensive maternal and child health care programs, including family planning. El Salvador was selected as the site for a pilot project.

The IX Central American Seminar on Health Education, held in Panama, was attended by 40 health educators from the 6 countries of the area. The First Puerto Rican Con-

ference on Health Education, attended by 120 Puerto Rican health educators, was held in San Juan. The First Brazilian Health Education Workshop, held in São Paulo, Brazil, was attended by 50 participants and 30 observers.

Initial work was done on an analysis of the programs of study, teaching resources, requirements, and work program in the field of health education in the Schools of Public Health of the Universities of Chile, Puerto Rico, and São Paulo, with a view to determining the feasibility of a program for the exchange of faculty among the 3 schools, which are the only ones training health educators for Latin America.

WHO/RB**AMRO-3401, Health Education (Caribbean Area)**

Purpose: Assistance to the Governments in the establishment of effective health education services in the Caribbean area.

Probable duration: 1963-

Assistance provided: 1 health educator; equipment and supplies.

Work done: In Barbados, assistance was given in developing the health education component of the programs of *Aedes aegypti* eradication, nutrition, dental health, hospital dietary service, and inservice training of teachers.

The authorities in the British Virgin Islands were advised on the organization of health education services in conjunction with the community development program, and on specific activities in the environmental sanitation program.

In Grenada, advisory services were rendered to the health education officer, and assistance was furnished in the rabies control program.

Surinam was given help in identifying and solving remaining obstacles to malaria eradication in the interior and in promoting instruction on malaria in the schools of those areas.

The establishment of health education services was promoted in St. Kitts, and in St. Lucia assistance was given in developing educational material for the schistosomiasis project and in demonstrating methods of mobilizing community support for the *A. aegypti* program.

Advisory services and visual aids were furnished to the Community Development Officer and the Health Inspector in St. Vincent in connection with the activities of voluntary health groups.

WHO/UNDP**AMRO-3407, Regional Center for Functional Literacy in Rural Areas for Latin America (CREFAL)**

Purpose: Training of personnel, through international courses and meetings, for the conduct of health education activities within a functional literacy program.

Probable duration: 1961-

Assistance provided: 1 medical officer, and advisory services by Zone II Office staff.

Work done: A functional literacy course was held at CREFAL from July to December for 70 students, almost all from the general education sector, from 19 Latin American countries.

The Second Seminar on Functional Literacy in Latin

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America (10 days), held by the Center in Lima, Peru, for 70 participants from nearly all the Latin American countries, examined the status of literacy programs in the Region, with emphasis on their trends and priority needs.

WHO/RB

FAO, ILO, OAS, UN, UNESCO

AMRO-3410, Training of Teachers in Health Education

Purpose: Assistance to the Governments in the training of teachers for health education in the elementary and secondary schools.

Probable duration: 1970-

Assistance provided: Advisory services by Headquarters staff.

Work done: Brazil prepared a study to evaluate the present training of teachers in health matters and the needs for the teaching of health education in primary schools. Joint health and education committees were established to perform these studies in the States of São Paulo, Minas Gerais, and Pernambuco. A school health education workshop was conducted in Recife for 52 participants, and refresher courses in school health education were offered in Minas Gerais for 435 coordinators and supervisors of school health education in that state. A 4-week course on the design of school health education curricula was held in São Paulo for 48 participants from five states.

AMRO-3500, Health Statistics (Interzone)

Purpose: Development of a regional program to improve basic statistical data for use in health programs, to extend education and training in this field, and to develop statistical research.

Probable duration: 1960-

Assistance provided: Advisory services by Headquarters staff; 1 secretary.

Work done: The biennial meeting of the Regional Advisory Committee on Health Statistics was postponed in order to make the arrangements for the First Meeting of the Regional Advisory Committee on Computers in Health (see project AMRO-3516). The establishment of the latter Committee had been recommended by the Regional Advisory Committee on Health Statistics in 1968, in view of the increasingly important role of computers in health activities in the Americas.

PAHO/RB

AMRO-3501, Health Statistics (Zone I)

Purpose: Assistance to the countries and territories of Zone I in the improvement of their vital and health statistics systems.

Probable duration: 1964-

Assistance provided: 1 statistician, 1 medical records librarian, and advisory services by the statistician assigned to project West Indies-3500; common services.

Work done: Major emphasis was placed on improvement of medical records departments in hospitals. Renovation or construction of new records offices was being carried out at the San Fernando and Port-of-Spain General Hospitals in Trinidad and at Lionel Town Hospital in Jamaica. Re-

organization of the records system was completed at the hospitals in Grenada and St. Lucia and initiated in 9 others in the Zone. Training of medical records officers and clerks was carried on at 41 hospitals in 9 countries or territories, either as part of the survey and assessment process or in formal training periods.

Data requirements of the larger countries of the Zone were being studied, and the possibility of developing standardized forms and procedures for use in selected countries and territories, particularly the smaller ones, was being explored.

PAHO/RB

AMRO-3502, Health Statistics (Zone II)

Purpose: Assistance to the Governments of the countries of Zone II in the improvement of their vital and health statistics systems.

Probable duration: 1958-

Assistance provided: 1 statistician, and advisory services by project AMRO-6708 staff.

Work done: In Cuba, strenuous efforts were made to train statistical personnel. Courses at auxiliary level were given in the 6 provinces to a total of about 160 pupils, and a course at intermediate level in Havana to some 30 students. Seminars on health research methods were held in Havana and Santiago (Oriente) for over 50 officials of the Ministry of Public Health, with the participation of teaching staff from the University of Havana. Similarly, a course in hospital statistics was arranged for 35 technicians responsible for hospital statistics at the level of major hospitals, regions, and provinces. The compilation of statistics on hospital morbidity in the large hospitals of Havana and Santiago was begun.

Haiti reorganized its communicable disease notification system; the statistics relating to services in establishments under the Ministry of Public Health and Population for 1968-1969 were published; the use of the forms for hospital statistics registers tried out in the University Hospital was extended to the entire country. A first course was held for health statistics and medical records auxiliaries with financial assistance from UNICEF, for 24 students from Port-au-Prince and 26 from the rest of the country.

In Mexico the new system of hospital statistics records and reports tried out previously in the State of Hidalgo, was extended to all establishments under the Coordinated Public Health Services in States and Territories. Substantial progress was made with the organization of state statistics departments. A 6-week course on medical records was held for the staff of hospitals in the Federal District. In January the general census of population of the country was taken.

In the Dominican Republic a plan of work on hospital records was prepared, and the national census of population and housing was carried out.

WHO/RB

AMRO-3503, Health Statistics (Zone III)

Purpose: Assistance to the Governments of the countries of Zone III in the improvement of their vital and health statistics systems and in the use of statistical data in planning and administration.

Probable duration: 1955-

Assistance provided: 1 statistician, advisory services by 1 short-term consultant in medical records assigned to project British Honduras-3100 and by project AMRO-6708 staff, and 1 secretary.

Work done: Significant achievements during the year were the completion of the collection of basic information for the Inter-American Investigation of Mortality in Childhood in El Salvador (project AMRO-3513), the preparation of the first part of the report on nursing needs and resources in Guatemala, and the training of statistical personnel in Costa Rica, El Salvador, and Panama.

In Costa Rica, under the auspices of the Ministry of Public Health, the 5th course in medical records and statistics was given for 20 students from that country and from Brazil, El Salvador, Guatemala, Honduras, Mexico, and Panama. A computer, installed in the General Statistical Office in 1970, will make available better facilities for producing all statistics.

The National Health Service of El Salvador conducted a 3-month course for 15 statistical auxiliaries from hospitals and health centers.

The Third Meeting of the Permanent Central American Commission on Health Statistics, held in Quezaltenango, Guatemala, was devoted to 2 subjects: health statistical services and surveys of health resources. The Commission recommended that civil registration offices for births and deaths be established in hospitals.

The section of the Health Code of Honduras governing medical certification of cause of death was put into operation in the capital and in San Pedro Sula. An expert from the United Nations assisted the national authorities with these activities.

The statistical systems for medical care in Panama were reorganized, and a survey of health resources was undertaken.

A 3-week course for 10 statistical auxiliaries from hospitals and health centers was given in British Honduras.

PAHO/RB, WHO/RB

AMRO-3504, Health Statistics (Zone IV)

Purpose: Assistance to the Governments of the countries of Zone IV in the improvement of their vital and health statistics systems.

Probable duration: 1956-

Assistance provided: 1 statistician, and advisory services by the statisticians assigned to projects AMRO-0304, -6707, and Bolivia-3500, and by the medical records consultant of AMRO-6708.

Work done: In Bolivia, a new system of collecting health statistics was introduced in the establishments of the Ministry of Social Welfare and Public Health, and resulted in considerable improvement in the reporting of data. A 4½-month course was given for 18 statistical auxiliaries and a 2-week course on the *International Classification of Diseases* was conducted for 25 coders.

The Committee on Revision of Health Statistics in Colombia drew up a plan to coordinate and extend the health statistics activities of the Ministry of Public Health and the National Department of Statistics. Training activities in Bogotá included a 9-week course for 13 statistical auxiliaries

and a course on the *International Classification of Diseases* attended by 30 persons.

The program of auxiliary-level training of Ecuador's Ministry of Public Health completed its first stage; courses were conducted in the 3 health zones of the country for 114 statistical auxiliaries from hospitals.

The Ministry of Health of Peru, following the recommendations of its Permanent Commission on Statistics, initiated the analyses and programming for the electronic processing of statistical data. The School of Public Health conducted the first course for instructors in civil registration; 33 statisticians participated. Courses for 83 statistical auxiliaries were organized in 3 health zones.

The study of human reproduction undertaken in 2 communities of Peru entered its last stage with the completion of the 3-year period of data collection from a total population of 5,800.

See also project Bolivia-3500.

WHO/RB

AMRO-3506, Health Statistics (Zone VI)

Purpose: Assistance to the Governments of the countries of Zone VI in the improvement of their vital and health statistics systems.

Probable duration: 1959-

Assistance provided: 1 statistician and 1 secretary.

Work done: In Argentina, the national plan for vital and health statistics completed its 4th year of operation. It was expanded to include a larger number of hospitals with medical records departments, and there was a considerable increase in the number of statistical publications at the provincial and national level that print the data compiled by the program. More man-hours and machine-hours were available for programming and computation at the national level. At the 5th national meeting on health statistics, all the programs were realigned, after an evaluation of their status carried out about the middle of the year. Improvements were made in the notification of communicable diseases, and more effective control measures were established. Some progress was also made in this connection in Paraguay and Uruguay. In Uruguay there was an increase in coverage of hospital statistics to 100%, and mortality statistics were produced on time. In Paraguay there was a considerable increase in registration of births.

In Chile a 2-year course in biostatistics was started, leading to the degree in that field; 12 students participated, including 4 from other countries. In Argentina, 3 intermediate-level courses in health statistics were attended by 90 technicians (9 from abroad), and in Chile 19 participants attended another. In Argentina, training was given to 358 medical records auxiliaries in 15 courses. The Biostatistics and Demography Center (Argentina-6202) organized and conducted 14 courses on biostatistics and 9 on demography designed to give advanced training in these subjects to medical personnel, in which 300 and 320 officials, respectively, were trained.

See also projects Argentina-6202 and AMRO-3513 and -6700.

WHO/RB

AMRO-3513, Inter-American Investigation of Mortality in Childhood

Purpose: Determination of the factors responsible for mortality in infancy and childhood as the basis for actions to improve the health of children and prevent excessive mortality in early life.

Probable duration: 1966-1972.

Assistance provided: Field staff for the collection of data in 13 projects in Latin America, including the principal collaborators, interviewing physicians, nurses and social workers, secretaries, and Central Office staff for processing and analysis of data (1 medical officer, 2 statisticians, 2 temporary advisers, clerical and secretarial services).

Work done: In 13 projects in Latin America data on nutrition, sociological factors, and environmental conditions were collected for approximately 35,000 families in which death of a child under 5 years of age occurred in the 2-year period 1968-1970, and for approximately 20,000 families selected through probability sampling in the same areas. All available medical information for the determination of underlying and associated causes of death was also obtained. The field work in all 13 projects was scheduled for completion in 1970, but delays occurred in several projects owing in part to the discovery of unregistered deaths in early life, which were being investigated and included. The social and medical data were being coded and processed in the Central Office.

A progress report was presented to the Ninth Meeting of the PAHO Advisory Committee on Medical Research in June. Nutritional deficiency as an underlying or associated cause was found to be responsible for high proportions of the deaths in the 1-4 year group (70% in one area). The areas with the high death rates under 5 years were found to have low percentages of homes with piped water supplies.

In addition to the 13 projects in Latin America, projects were under way in San Francisco, California, U.S.A., and in the Province of Quebec, Canada. The provisional results of the Investigation were being used widely in meetings and in teaching in the countries where projects were in progress.

PAHO/RB, PAHO/OF

AID

AMRO-3516, Regional Advisory Committee on Computers in Health

(Buenos Aires, Argentina, 13-17 April 1970) WHO/RB

The purpose was to review the current status and future prospects of the use of computers in health activities in the Region. The Organization provided travel and per diem for 9 temporary advisers and defrayed the costs of the meeting.

The Regional Advisory Committee was composed of representatives of 8 Governments and 3 expert advisers. Its report was published as *Scientific Publication PAHO 211*.

AMRO-3600, Administrative Methods and Practices in Public Health (Interzone)

Purpose: Assistance to Governments in improving the organization and administration of health services and the training of health personnel in administration.

Probable duration: 1959.

Assistance provided: 1 administrative methods consultant

(7 months), 1 short-term consultant, and 2 secretaries; 1 grant to defray the costs of a course.

Work done: Technical assistance continued to be provided to the countries in the field of health services administration and training in administration, through support and guidance of advisers in the field.

The Sixth Latin American Course in Administration for Public Health Officials (4 months) was held at the Institute of Organization and Administration (INSORA) of the University of Chile. It was attended by 28 students awarded PAHO/WHO fellowships under other projects.

PAHO/RB

AMRO-3601, Administrative Methods and Practices in Public Health (Zone I)

Purpose: Assistance to the Governments in the development of adequate organizational and administrative methods and procedures for the health services.

Probable duration: 1968-

Assistance provided: 1 administrative methods officer, 1 short-term consultant, and 1 secretary; costs of a workshop.

Work done: "Diagnostic reports" on administrative practices were prepared for the Ministries of Health of Jamaica and Surinam, and others were prepared for health institutions in Dominica and St. Lucia and for the Medical School of Barquisimeto, Venezuela. A manual of organization and administration of nursing services in Trinidad and Tobago was completed. Training activities included a workshop for 40 senior medical officials in the Jamaican Health Ministry; courses in administrative techniques (personnel, accounting, and supply) in Guyana (1), Jamaica (1), and Trinidad and Tobago (2), for a total of 94 participants; and the 5th course on administration for intermediate-level personnel in the health services of the Caribbean, with 42 participants.

The Ministry of Health of Trinidad and Tobago took definite steps to streamline its administrative machinery; reports and a manual developed by PAHO/WHO staff were serving as a basis for complete reorganization of the Supply Division. A national drug formulary was completed and put into use.

The progress made in the program of administrative improvements for the Jamaica and Trinidad and Tobago water and sewerage services was being evaluated. In Venezuela major programs of administrative reform were initiated by the National Sanitary Works Institute (INOS) as well as by the National Committee on Public Administration.

PAHO/RB

AMRO-3602, Administrative Methods and Practices in Public Health (Zone II)

Purpose: Assistance to the Governments in developing suitable administrative methods and practices for their health services.

Probable duration: 1970-

Assistance provided: 1 administrative methods consultant.

Work done: In the Dominican Republic, the Government formulated a national plan of administrative development, prepared a civil service law, modernized the purchasing

regulations of the Ministry of Public Health and Social Welfare, and made an analysis of the health sector for inclusion in the administrative development plan. Basic control, records, and information standards were established in 6 health care facilities; auxiliary services were organized in 4 hospitals; and cost determination methods were introduced in 25 establishments. Nineteen officials received training in hospital administration, and 27 in hospital costs, in two theoretical and practical courses. A central level official was awarded a fellowship for administrative studies at the Institute of Organization and Administration of the University of Chile.

PAHO/RB

AMRO-3603, Administrative Methods and Practices in Public Health (Zone III)

Purpose: Assistance to the countries of Zone III in improving the structure, organization, and operation of administrative services in the ministries of health.

Probable duration: 1963-1975.

Assistance provided: 1 consultant in administrative methods for health services.

Work done: In Costa Rica, a preliminary diagnosis of the organic structure and operation of the Ministry of Public Health was performed, and structural, organizational, and operational reforms were proposed. A tentative plan was drawn up for the establishment of a National Health Service.

In El Salvador, a tentative plan was also prepared for the establishment of a National Health Service.

In Guatemala, assistance was rendered in the general preparation of the comprehensive plan of administrative reforms in the Ministry of Health and Social Welfare and in planning the structural changes necessary for establishing health services for the metropolitan area.

In Panama, the plan for developing the administrative services was revised, and preliminary general regulations for the health services were prepared.

PAHO/RB

AMRO-3606, Administrative Methods and Practices in Public Health (Zone VI)

Purpose: Assistance to the Governments in improving the administration of health services.

Probable duration: 1963-

Assistance provided: 1 administrative methods consultant.

Work done: Advisory services were provided to the Secretariat of State for Public Health of Argentina on data processing, mechanization of procedures, and personnel training. Assistance was given to the School of Public Health of the National University of Buenos Aires in the organization of the 5th intensive course in health administration for administrative officers.

In Chile cooperation continued with the National Health Service for the consolidation of the personnel administration program, the training of 896 officials, and the improvement of the supply situation; a report was drawn up on the evaluation of the program budgeting system; and assistance was given for the preparation of a report on the financial organization of the Bacteriological Institute.

In Paraguay advisory services were rendered on a project for reorganizing the administrative services of the Ministry of Public Health and Social Welfare and establishing the National Environmental Sanitation Service (SENASA).

In Uruguay the advisory services continued in connection with the administrative rationalization of the Ministry of Public Health, with special reference to budgets, accounting and personnel, and for the establishment of a telex system within the country. Assistance was also given in a seminar for hospital administrators.

The Organization sponsored the Sixth Latin American Course in Administration for Public Health Officials at the Institute of Organization and Administration of the University of Chile (4 months). There were 28 participants, 8 from the countries of the Zone.

PAHO/RB

AMRO-3700, Health Planning (Interzone)

Purpose: Cooperation with the Governments and with other international organizations in the planning process.

Probable duration: 1961-

Assistance provided: 1 liaison officer, 1 short-term consultant, and 1 secretary; common services.

Work done: Assistance was rendered to 3 countries in the determination of areas requiring additional financing for the development of specific programs within the framework of their national health plans. Guides and outlines for sectoral analyses, institutional diagnoses, analysis of investment plans, and evaluation of health sector projects were prepared and were being used by the Zone consultants in the countries. Initial work was done on the first revision of the outline of the quadrennial projections of assistance to be provided by the Organization to the countries within the long-range planning process. The program to coordinate activities with UNICEF and other organizations was carried forward.

PAHO/RB, WHO/RB

AMRO-3701, Health Planning (Zone I)

Purpose: Assistance to the Governments of Zone I in the systematic planning of health services, within the context of socioeconomic development plans.

Probable duration: 1965-

Assistance provided: 1 medical officer and 1 administrative assistant.

Work done: Quadrennial projections of activities were prepared in cooperation with national staff. An international health planning course for the English-speaking areas of the Caribbean was held at the University of the West Indies in Jamaica. Workshops on health planning were held in Bermuda and in Guyana. The latter country drew up the first draft of a 10-year national health plan.

PAHO/RB, WHO/RB

AMRO-3703, Health Planning (Zone III)

Purpose: Cooperation with the Governments of the countries of Zone III in the formulation and implementation of

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health plans; organization of planning units in the ministries of health; and training of personnel in planning techniques.

Probable duration: 1968.

Assistance provided: 1 medical officer.

Work done: In drawing up their quadrennial projections, the countries of the Zone outlined health policies for the 1971-1980 decade. The diagnosis and the policies drawn up in making the projections served to reinforce the decisions to redesign country health plans. Thus Costa Rica, Honduras, Guatemala, El Salvador, and Panama took steps to introduce new processes or to modify them where a plan was actually in operation. The plans in Costa Rica and Honduras contain recommendations for policy and structural changes. Guatemala restarted work on its health plan, and El Salvador made an evaluation of its plan. Panama continued with the execution of its health plan and the adaptation and improvement of the administrative structure of the Ministry of Health. An investment plan was prepared for submission to the Inter-American Committee on the Alliance for Progress with a view to obtaining external financing.

PAHO/RB

AMRO-3704, Health Planning (Zone IV)

Purpose: Cooperation with the Governments of the countries of Zone IV in the formulation and implementation of health plans; organization of planning units in the ministries of health; and training of personnel in planning techniques.

Probable duration: 1968.

Assistance provided: Advisory services by project AMRO-3715 staff; equipment and supplies.

Work done: A diagnosis was made of the planning process in the 4 countries of the Zone. In addition, Bolivia prepared the development strategy for health as part of the economic and social development strategy, and began to apply it.

In Colombia 2 research projects on health planning were begun: 1 in Antioquia, which will last 3 years, and the other in Valle del Cauca, from 5-10 years. Adjustments were made in the experiment on program budget formulation and control at Palmira (Valle).

PAHO/RB

AMRO-3706, Health Planning (Zone VII)

Purpose: Cooperation in planning the health sector in the context of economic development in each country in the Zone, and in the investigation and experimental use of methodological tools for facilitating the planning process.

Probable duration: 1967.

Assistance provided: 1 medical officer.

Work done: Argentina was putting into operation in the northeastern region (5 provinces), a selective planning scheme based on a group of programs concerned simultaneously with general matters and those of institutional coverage, according to circumstances.

In Chile, the application of the Health Plan operating under the National Health Service and the National Medical Service for Employees was strengthened. This Plan is based on programming at establishment level, with the special participation of chiefs of services. The activities carried out

were being evaluated at the national level in respect of the degree of achievement of targets by the Zone Technical Boards. Implementation is supervised in the field, on a permanent basis, and over the whole country.

Paraguay prepared an action schedule including a program for the technical rationalization of all hospitals under the Ministry of Public Health and Social Welfare. A study was made of fields of possible investment with a view to obtaining external financing. This study, part of a wider intersectoral survey covering the entire country, was presented to the Inter-American Committee on the Alliance for Progress.

In Uruguay, the maternal and child program for Montevideo was formulated as the first stage in the national program. A preliminary report was drawn up in connection with the investment project for the Norte Hospital and the pediatric section of the Pereira Rossell Hospital.

PAHO/RB

AMRO-3708, Health Legislation

Purpose: Cooperation with Governments on the analysis and updating of health legislation, and the revision of the Pan American Sanitary Code.

Probable duration: 1970.

Assistance provided: 1 short-term consultant (budgeted to the XVIII Pan American Sanitary Conference, to which the report on the study was presented).

Work done: The study (begun in 1969) on health legislation in the Hemisphere was completed. It comprised material produced in 28 countries, including the English-speaking countries, during the period 1948-1968. The study, which covered the constitutions, special legislation, and penal codes, pointed up the need to bring the current legal provisions up to date so that they can be used as tools in the planning processes. The next stage in the program involves the preparation of guidelines for the formulation of health codes in keeping with the needs of countries and the advances of technology. The Pan American Sanitary Code will also be revised.

AMRO-3715, Pan American Program for Health Planning

Purpose: Development and dissemination of knowledge, as well as training of personnel, to assist in the establishment of health planning processes in the countries of the Region.

Probable duration: 1968.

Assistance provided: 1 director of the program, 1 training director, 1 assistant director for training, 1 research director, 1 statistician, 2 training officers, and 3 short-term consultants; grants; common services; equipment and supplies.

Work done: The design for an experimental mathematical model was completed, as was the programming for a reduced version of the same model that was planned in the Computer Department of the University of Venezuela (100%). Advice was given in the formulation of a preliminary proposal of a similar model for Argentina (100%).

An international course on health planning was conducted at the Center for 30 professionals (400 hours) (100%), and a similar international course (250 hours) was

offered in English at Kingston, Jamaica for 12 professionals (60%).

Progress was made in preparing a computer program based on the CENDES/PAHO method (40%).

The procedure for developing information by types of countries was designed (100%), and the corresponding information was collected and processed for 84% of the countries in the Region.

A preliminary analysis of relationships between health and development was made (50%).

Classes and lectures were offered in various courses of the Latin American Institute for Economic and Social Planning, ILO, the Latin American Demography Center, the University of Chile, Columbia University (USA), and PAHO Headquarters (100%).

Preliminary drafts were prepared for a guide to the preparation and evaluation of health investment projects, as well as for studies on planning of health and environmental sanitation activities (10%), health planning and mental health (5%), and health policy (30%). A document on methods and models for analysis of the health sector (unscheduled) was also prepared. A model for the teaching of the CENDES/PAHO method was prepared (100%).

A preliminary study on planning of health and food and nutrition activities was completed (100%).

PAHO/RB, WHO/UNDP

AMRO-4108, Clinical and Social Pediatrics

Purpose: Postgraduate training in social pediatrics for specialists in pediatric medicine and other professionals in related fields responsible for teaching or care in services or health care programs.

Probable duration: 1961-1973.

Assistance provided: Advisory services by Headquarters and Zone VI Office staff and by PAHO/WHO Country Representatives in Colombia and Chile; 9 short-term fellowships: Bolivia (2), Guatemala (2), Honduras (1), Paraguay (1), Peru (1), and Venezuela (2).

Work done: Two courses in clinical and social pediatrics were held at Santiago, Chile, (27 April-31 July) and Medellín, Colombia (7 September-28 November), with 26 and 19 participants respectively, mostly pediatricians, but in addition to 4 selected nurses.

See also projects Colombia-4101 and Chile-4103.

PAHO/OF

UNICEF

AMRO-4109, Nursing-Midwifery (Interzone)

Purpose: Assistance to countries in the improvement of maternity care services and in the training of midwives.

Probable duration: 1961-

Assistance provided: 1 nurse-midwife; equipment and supplies.

Work done: Assistance was rendered to 10 countries in 5 Zones. Reviews of the curricula in nursing-midwifery, midwifery, and maternal-child nursing at the postbasic, baccalaureate, basic, complementary, and auxiliary levels were carried out in Argentina, Chile, Colombia, the Dominican Republic, Mexico, and Peru. Refresher courses were held in

northeastern Brazil for 14 nurse-supervisors and 39 rural extension workers. Project staff gave assistance to Brazil in connection with the International Training Center in Nursing and Midwifery and with plans for the establishment of a general maternal and child health project; and cooperated in the 6-day seminar on maternal and child health and family welfare, held in Costa Rica and attended by 27 participants from Central America and Panama, and in the 1-month course on perinatal problems conducted in Brazil for 38 physicians and nurses from 14 Latin American countries.

A suggested plan of nursing activities for the health and population dynamics program was prepared; the Guide for the Training and Supervision of Lay Midwives was revised; and 4 annotated bibliographies on nursing-midwifery and related areas were prepared and distributed to PAHO nursing staff.

See also projects Brazil-3101, -3107, and -4100, Cuba-3100, Dominican Republic-3100, Uruguay-4102, and the -6300 projects of Colombia, Dominican Republic, Mexico, and Peru.

PAHO/RB, PAHO/SFHP

AMRO-4119, Maternal and Child Health (Fellowships)

(1970) Grant to PAHO: Ford Foundation

Four short-term fellowships (1 to Argentina and 3 to Cuba) and 4 long-term fellowships (all to Chile) were awarded to professionals for studies in maternal and child health at the Latin American Center for Perinatology and Human Development. All of the fellows attended the course on scientific bases of comprehensive care of the mother, the fetus, and the newborn child.

See also project Uruguay-4102.

AMRO-4200, Nutrition Advisory Services (Interzone)

Purpose: Cooperation with countries in formulating and executing food and nutrition policies; training of nutrition specialists; establishment or strengthening of nutrition activities in health services; organization of a nutrition education program; supplementary feeding and specific protection directed mainly toward mothers and children, through the maternal and child protection services; and technical organization of feeding services in health institutions.

Probable duration: 1958-

Assistance provided: 6 short-term consultants, 15 temporary advisers, advisory services by Headquarters staff, and 1 secretary; equipment and supplies; contractual services.

Work done: The problems common to the development of nutrition programs throughout the Region were identified, and guidelines were drawn up for programming and evaluating nutrition projects and activities as part of health services projects. On the basis of the guidelines, a start was made on the unification and reorientation of the nutrition projects of each country with a view to adapting them to existing conditions and resources.

The responsibilities of the health sector in the matter of planning and developing national food and nutrition policies were defined. The Organization participated, along with FAO, UNICEF and ECLA, in the preparatory work on the

organization and conduct of 4 subregional conferences to promote the formulation and execution in all the Latin American countries of biologically focused food and nutrition policies.

An interagency working group analyzed the present status of applied nutrition programs receiving assistance from PAHO, FAO, and UNICEF, with a view to reorienting their future work.

A meeting of Latin American pediatricians and representatives of infant food industries was held in Bogotá, Colombia, to study matters relating to breast feeding and weaning foods that can be used in programs for the prevention of protein-calorie malnutrition, and to establish the machinery for cooperation between the private sector and public health groups working on maternal and child protection and nutrition programs.

See also projects AMRO-4203 and -4207.

PAHO/RB, WHO/RB

AMRO-4201, Nutrition Advisory Services (Zone I)

Purpose: Planning, organization, and implementation of nutrition programs in the Zone I countries as an integral part of health services.

Probable duration: 1961.

Assistance provided: 1 medical officer; equipment and supplies.

Work done: The applied nutrition programs continued in Barbados, Guyana, St. Lucia, and Trinidad and Tobago. The program in St. Kitts-Nevis came to an end. Trinidad and Tobago set up a National Nutrition Council, comprising administrative and technical personnel from the Ministries of Health, Education, Agriculture, and Planning, with a view to working out a national food and nutrition policy. As a prerequisite, the Government carried out a food consumption survey covering approximately 1,000 families.

Guyana set up a post of nutritionist.

A review of feeding services was made in Barbados, Dominica, Guyana, and St. Vincent. St. Kitts and Guyana initiated the integration of nutrition into the national health plans. Courses were organized for various groups of health personnel.

The Organization cooperated with the World Food Program in devising a system for the evaluation of some of its health care programs.

See also projects Barbados-4200, Guyana-4200, West Indies-4200.

WHO/RB

AMRO-4203, Institute of Nutrition of Central America and Panama

Purpose: Development of the program of the Institute of Nutrition of Central America and Panama involving advisory services to the member countries, research, and training.

Probable duration: 1949.

Assistance provided: 1 director, 3 medical officers, 3 scientists, 1 programmer, 1 administrative officer, 1 agricultural economist, 1 nutritionist, 1 technical officer, 1 editor, 2 short-term consultants, and 15 temporary advisers; 28 long-term fellowships were also granted through INCAP: Costa

Rica (3); El Salvador (5); Guatemala (4); Honduras (2); Nicaragua (7); and Panama (7).

Work done: The Institute provided advisory services to the member countries, for the purpose of helping them to define and implement a national food and nutrition policy. In Costa Rica and Nicaragua multisectoral seminars were held at a high technical and political level, and served to establish the necessary bases for the development of this policy. A series of satisfactory low-cost diets were devised for distribution among the member countries.

The program for the eradication of endemic goiter with iodized salt, which was very successful in Guatemala and was introduced in El Salvador and Honduras in 1968, was initiated in Panama. Legal steps were also taken with a view to starting the program in Costa Rica and Nicaragua.

The commercial distribution of Incaparina was begun in Costa Rica, and progressed very satisfactorily in Colombia and Guatemala.

The programs for the care of slightly or moderately undernourished preschool children was in full operation in 5 of the countries of the area, but particularly so in Costa Rica and Guatemala. These are carried out through services for nutritional education and recuperation or similar programs concerned with supplementary feeding, with a strong educational component for mothers.

The Food Reference Laboratory began to function in the new INCAP building, and a nucleus was established which, with a minimum of installations, equipment, and technical personnel, provides specialist services for the analysis of pesticide residues in food.

The academic programs in INCAP were attended by 132 students from 14 countries. The second graduation from the INCAP School of Nutrition, University of San Carlos, Guatemala, took place in 1970, 13 students obtained the title of nutritionist; and toward the end of the year 6 medical officers attending the postgraduate course in public health with special reference to nutrition and maternal and child care were awarded the M.Sc. degree.

In the field of research, the Institute continued its studies on enrichment of corn; the longitudinal study of intestinal colonization in children; the possible effect of malnutrition on the mental development of children; and various other studies which are described in greater detail in Chapter II-B of this Report.

With regard to publications, 141 scientific articles were printed in 1970 (78 in Spanish and 63 in English).

With economic assistance from UNICEF and the Research Corporation, a Conference on Protein Resources in Latin America was held at the Institute in February. It was attended by distinguished figures from the scientific world in Latin America, and a special volume including 30 scientific papers presented at the Conference will be published in 1971.

PAHO/RB, PAHO/OF¹

¹ Grants received from:

Hoffmann-La Roche
Jonah Macy, Jr. Foundation
Massachusetts Institute of Technology
Nestlé Alimentana, S.A.
National Institutes of Health
Nutrition Foundation, Inc.

AMRO-4204, Nutrition Advisory Services (Zone IV)

Purpose: Planning, organization, and implementation of nutrition programs in the countries of Zone IV as an integral part of the health services.

Probable duration: 1956-

Assistance provided: 1 medical officer and 1 secretary; supplies.

Work done: The first national nutrition seminar was held in Bolivia. A School of Nutrition and Dietetics was being organized at the San Andrés University. Nutrition activities continued as part of the extension project of the health units of Cochabamba and Tarija, and a national nutrition coordinator was appointed.

In Colombia, the program continued to progress satisfactorily under the guidance and supervision of the Bureau of Nutrition of the Colombian Family Welfare Institute. The food assistance project being conducted by the World Food Program in cooperation with the Andean Mission showed significant progress in nutrition education of the community.

The III Inter-American Regional Seminar on Mentally Retarded Children was held with the participation of 200 professionals.

See also projects Colombia-4202; Ecuador-4202, -4203, and -4204; and Peru-4200 and -4202.

WHO/RB**AMRO-4207, Caribbean Food and Nutrition Institute**

Purpose: Assistance to the Governments of the eastern Caribbean area in the formulation and implementation of national food and nutrition policies; incorporation of nutrition activities into national development plans; inclusion of nutrition education in schools; and dissemination of information.

Probable duration: 1963-

Assistance provided: 1 director, 1 medical nutritionist, 1 nutrition educator, 1 nutritionist-dietitian, 1 administrative assistant, 1 short-term consultant, 12 temporary advisers, and 1 secretary; funds for common services and technical advisory committee; administration of grants providing, in addition, 1 medical nutritionist, 1 statistician, 1 sociologist, 1 administrative assistant, 2 secretaries.

Work done: Interdisciplinary workshops in nutrition were conducted in Antigua, Grenada, and Jamaica and the Institute participated in a similar activity organized by the OAS in Trinidad and Tobago (90% of the target). Participation in nutrition training for medical, agricultural, and nursing students was maintained or expanded (90%). Assistance was given in courses for training hospital food-service workers in Barbados, Guyana, and St. Vincent (100%).

Analysis of the results of the Barbados National Food and Nutrition Survey (1969) was completed (100% of the target). A nutrition survey among vulnerable groups in Jamaica was completed and the results analyzed. A food con-

sumption survey of 1,000 families in Trinidad and Tobago was carried out and the findings were being studied. Investigations into infant feeding practices were completed and the results were presented at a technical group meeting which approved the *Guidelines to Young Child Feeding in the Contemporary Caribbean*, published as *Scientific Publication PAHO 217*. Another technical group meeting was held on the subject of food and dietary services (100% of the target).

The Institute's bimonthly newsletter *Cajanus* was issued regularly. Contact was maintained with the libraries of all professional and technical schools offering nutrition instruction in the area in order to promote the exchange of books and journals in this field. An Interim Food Composition Table for the Caribbean Area was published and distributed (100% of the target).

**PAHO/RB, PAHO/OF, RF, Research Corporation
WHO/RB****AMRO-4225, Graduate Course in Public Health Nutrition**

Purpose: The development of a curriculum in public health nutrition leading to a Master's degree, for graduate students at the School of Public Health of the University of Puerto Rico.

Probable duration: 1969-1973.

Assistance provided: 1 nutrition educator.

Work done: The program was transferred from the Department of Preventive Medicine of the School of Medicine to the new School of Public Health. The course is open to physicians, nutritionists-dietitians, nutrition investigators, and educators. In 1970, of the 7 students seeking a Master's degree in public health nutrition, 4 were from Colombia, Peru, and Venezuela.

WHO/RB**AMRO-4230, Nutrition Training**

Purpose: Strengthening of nutrition training in university-degree programs in Latin America.

Probable duration: 1969-

Assistance provided: 1 nutrition adviser.

Work done: Nineteen university-degree courses in nutrition and dietetics had been or were being organized according to the recommendations made at the Caracas Conference (1966). Most of the schools graduated their first class (with 4 years of academic training and practice) in 1969. During 1970 emphasis was placed on the development or reorientation of an academic curricula directed toward preventive and therapeutic nutrition and complemented by field work appropriate for the nutrition programs in the respective countries. Faculty members were receiving fellowships (under other projects) for both long- and short-term training to better prepare them for their responsibilities. Graduates of these programs were being assigned to positions in ministries of health at the national and local levels, to institutes of nutrition, universities, and hospital programs.

Assistance was rendered to 2 countries in organizing a short-term training program for nutrition assistants who will

Research Corporation
Rutgers-The State University
UNICEF
U.S. Army Research and Development Command
World Health Organization

IX. PROJECT ACTIVITIES

have limited responsibilities and work under proper supervision.

PAHO/RB

AMRO-4300, Mental Health (Interzone)

Purpose: Strengthening of mental health programs in the countries, with emphasis on care, prevention and rehabilitation services, training of personnel, and research.

Probable duration: 1965.

Assistance provided: 1 temporary adviser, and advisory services by Headquarters staff.

Work done: Assistance was given to Brazil (State of Rio Grande do Sul) and El Salvador in the preparation of their mental health programs. A team consisting of a psychiatrist and a male nurse helped the authorities of Grenada to install a psychiatric service in a general hospital. The Government of Venezuela was given advice on the planning of a mental health unit in the Caracas Children's Hospital. Technical assistance was given to the Governments of Dominica and St. Vincent with a view to continuing the program to improve the psychiatric services and introduce simple community mental health measures.

Assistance in the organization of psychiatric nursing services was provided through the work of a consultant who visited Costa Rica and Dominica; and help in the same field continued to be given to the Government of Venezuela.

The Organization cooperated actively in the organization of a seminar on emotional problems in childhood and youth held at Bridgetown, Barbados, in August, and in the holding of the First Caribbean Conference on Mental Retardation at Kingston, Jamaica, in September. It worked with the authorities of Rio Grande do Sul, Brazil, on the organization of a forum on the use of and traffic in substances producing addiction, held at Porto Alegre in September; and it helped to organize a seminar on mental health and public health services sponsored by the Ministry of Health and Social Welfare of Venezuela in October.

The Regional Adviser visited 13 countries and discussed with the health authorities the possibility of implementing the recommendations of the Working Group on the Administration of Psychiatric and Mental Health Services convened by the Organization and the Government of Chile in 1969.

PAHO/RB

AMRO-4400, Dental Health (Interzone)

Purpose: Incorporation of dental health in national health plans, and strengthening of operations research activities in the dental health services.

Probable duration: 1954.

Assistance provided: 2 short-term consultants, 7 temporary advisers, and advisory services by Headquarters staff; equipment and supplies.

Work done: Courses in dental public health were offered in the Schools of Public Health in Buenos Aires, Argentina; São Paulo, Brazil; Medellín, Colombia; and Lima, Peru.

Assistance was provided in the tabulation and programming of data obtained in the national dental survey in Venezuela. In Colombia a preliminary report on human resources in dentistry was published, and data collection for the national

study on dental education and government institutions providing dental care was going forward.

Three short courses on the design of simplified dental equipment were conducted in Argentina, Brazil, and Chile, and such equipment was installed in the community clinic at the University of Concepción, Chile. Research studies on the use of simplified equipment were continued in Medellín, Colombia, and assistance was provided in the appropriate use of the equipment at the University of Zulia, Venezuela, where selection of population groups for community dental health projects was completed.

See also projects Venezuela-4400 and -4401.

PAHO/RB

AMRO-4409, Fluoridation

Purpose: Promotion of fluoridation of water supplies and training of engineering and others responsible for the design and operation of fluoridation installations.

Probable duration: 1967.

Assistance provided: 5 short-term consultants; 3 temporary advisers, and advisory services by Headquarters staff; and cost of courses.

Work done: Training courses in fluoridation engineering techniques were conducted in Havana, Cuba, and Belo Horizonte and Recife, Brazil, for a total of 97 participants. Laboratory equipment was made available to both countries to assist in the analysis of fluoride content of water supplies.

Advisory services were provided to Argentina, Brazil, Chile, Colombia, Costa Rica, Haiti, Mexico, and Venezuela in connection with specific fluoridation programs. The benefits of fluoridation in Latin America were extended during the year with the expansion of programs in Brazil and Venezuela and the reinitiation of fluoridation in Guatemala. Three other countries decided to introduce fluoridation.

The research study on the fluoridation of table salt was continued to Colombia, and a study on methods of applying certain topical fluoride compounds was completed in Brazil.

The report on the status of fluoridation in the Americas was published and distributed, and a manual for operators of fluoridation plants prepared. The Spanish edition of a text on water fluoridation entitled *Fluoruración del agua potable* was completed (*Scientific Publication PAHO 203*). Papers on the experiences of 25 years of fluoridation and on a scheme for fluoridation of a rural water system were published.

PAHO/RB, PAHO/OF

KF

AMRO-4410, Laboratory for Testing of Dental Materials

Purpose: Improvement of the materials used in dental treatment; establishment of centers and development of specifications and systems to ensure quality control; conduct of research; and training of teachers and research workers in this field.

Probable duration: 1968.

Assistance provided: 3 short-term consultants, and advisory services by Headquarters staff; printing costs.

Work done: A center for the testing of dental materials was established at the Central University of Caracas, Vene-

zuela. A seminar on the subject of dental materials was held for 20 teachers of 3 dental schools in Venezuela, and a committee to initiate a program of certification and control of such materials was established.

Research projects on the application of new types of dental materials in community programs were initiated in Zulia, Venezuela, and in Medellín, Colombia.

The Spanish volume *Guía de materiales dentales*, a translation of the American Dental Association's guide to dental materials, was published and distributed.

PAHO/RB, PAHO/PAHEF

AMRO-4411, Human and Material Resources in Dentistry

Purpose: Study of human and material resources in dentistry; and formulation of plans for the development of dental health resources in terms of equipment and personnel.

Probable duration: 1967-

Assistance provided: Duty travel and per diem for a dentist loaned as short-term consultant by the U.S. Public Health Service, 1 secretary, and advisory services by Headquarters staff.

Work done: Demonstration courses on the design, assembly, and manufacture of simplified dental equipment were given at the School of Dentistry in Concepción, Chile; at the Technician Training School in La Plata, Argentina; and at the Center for Research in Social Dentistry of the Federal University of Rio Grande de Sul, Pôrto Alegre, Brazil. They were attended by dentists and dental auxiliaries and mechanics.

Samples of simplified dental equipment were made available to those institutions. A draft manual on simplified dental equipment was prepared and information on such equipment was furnished to interested universities and health ministries.

In Venezuela the national health survey covered the areas of dental manpower resources and education, and the survey on dental care in institutions was initiated. Tabulation of data on the survey of dental conditions and on the personal interview survey in Zulia State was started. The School of Dentistry made progress in the development of a new curriculum in which instruction will be combined with practice in delivering dental care in rural and urban areas. A consultant rendered advice to the School on techniques for training auxiliary personnel.

In Colombia assistance was provided in the survey on manpower resources in dentistry. A preliminary report was published.

PAHO/RB

AMRO-4500, Health Aspects of Radiation (Interzone)

Purpose: Cooperation with countries in the measurement of radioactivity in air, water, and food samples, formulation of radiation protection programs, and use of radioisotopes in medicine.

Probable duration: 1958-

Assistance provided: 2 short-term consultants and 1 secretary; supplies.

Work done: Advisory services were rendered through visits to authorities and technicians in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Panama, Peru, and Venezuela. Assistance was given to countries in assessing manpower and material resources and determining the sources of radiation and the exposure levels of the population. The information was being centralized, so as to provide a basis for preparing multinational collaborative programs. Assistance was given in drafting legislation and regulations, training program personnel, and installing and operating radiotherapy equipment and film dosimetry laboratories.

Fifteen centers in the Region were participating in a joint program with the International Atomic Energy Agency for comparative studies of dosimetry in different countries. Research in the field of radiobiology was promoted, and a program to coordinate the various groups of clinical researchers in the Region was started.

See also the -4500 projects of the countries.

PAHO/RB, WHO/RB

AMRO-4507, Radiation Health Protection

Purpose: Cooperation with Governments in the adoption of administrative or technical measures for protection against radiation hazards.

Probable duration: 1964-

Assistance provided: 1 health radiation physicist; equipment and supplies.

Work done: Technical advisory services were rendered to various countries in matters relating to establishment and organization of national radiation protection services; evaluation of risks of occupational and other exposure to radiation; development of radiation protection standards and regulations; interagency coordination in public health and atomic energy activities; and training of national personnel in these fields.

Colombia, Ecuador, and Jamaica drew up proposed standards to assign responsibility to health ministries for establishing and promoting the development of radiation protection programs.

Bolivia, Colombia, Costa Rica, Ecuador, and Panama prepared standards and regulations for radiation protection.

Film dosimetry services were rendered at the national level in Bolivia, Chile, Colombia, Ecuador, Jamaica, Peru, and the West Indies. In Venezuela, part of the country's requirements were being covered.

Public health radiation physicists of Colombia and Ecuador received training in the field in facilities-inspection services and design of structural shields.

The programs for the monitoring of environmental radioactivity were carried forward in Chile, Colombia, Guyana, Jamaica, Peru, Trinidad and Tobago, and Venezuela. In Argentina, Bolivia, and Ecuador, surveillance was carried out only intermittently, owing to technical defects in the equipment.

The program of food radioactivity control continued on a regular basis in the countries of the Region.

Argentina and Chile cooperated closely in the conduct of their radiation protection programs.

Short training courses (a total of 128 hours) in radiation protection were given in Argentina and Colombia for 28 professionals.

IX. PROJECT ACTIVITIES

See also the -4500 projects for Argentina, Bolivia, Chile, Colombia, Ecuador, Jamaica, Peru, and Venezuela.

PAHO/RB

AMRO-4509, Radiation Surveillance

Purpose: Organization of programs for the radiation surveillance of air and food, especially milk, in order to determine the amounts and kind of radionuclides present and assess the possible health hazards to the population.

Probable duration: 1963-

Assistance provided: Advisory services by project AMRO-4507 staff; a limited amount of supplies.

Work done: Measurement of samples continued in the laboratories of the U.S. Public Health Service, and the results were published monthly in *Radiological Health Data and Reports*. The high levels of Cesium-137 found in milk in Jamaica continued to be studied with the cooperation of New York University (USA). Ecuador, which has 3 stations, will undertake its own measurement; the necessary equipment and the services of a consultant were provided for this purpose.

PAHO/RB

AMRO-4512, Study Group on Radiobiology Techniques

(Washington, D.C., 3-6 March 1970) WHO/RB

The purpose was to assemble a group of experts to draw up recommendations on the establishment of a multinational program in nuclear medicine. The Organization defrayed the expenses for 8 temporary advisers and for the costs of the meeting.

The meeting was attended by experts from Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, and Venezuela. Observers from 4 institutions of the United States of America and one member each from the International Atomic Energy Agency and the Inter-American Nuclear Energy Commission of the OAS also participated, as did staff of PAHO and WHO. The group discussed the establishment of priorities for a multinational program in clinical research involving the use of radioisotopes; standardization of techniques; and methods for improving communication among research workers. Recommendations to both national laboratories and international organizations were included in the group's report.

AMRO-4600, Inter-Regional Seminar on Occupational Health Education and Training

(Santiago, Chile, 23 November-4 December 1970)

The principal aims of the Seminar were to arouse the interest of public health officials, professors, and occupational health specialists in matters in this field, particularly with reference to developing countries; study and propose suitable instruction programs at the undergraduate and graduate levels; and prepare a document which developing countries may use as a guide in the organization of occupational health programs and the training of their personnel.

The Seminar was held at the Institute of Occupational Health and Air Pollution Research. The Organization pro-

vided advisory services by staff of Headquarters and of projects Chile-4601 and AMRO-2114. It was attended by 20 participants from 11 countries of the Americas.

AMRO-4617 (-4610 to -4616), Manganese Poisoning and Metabolic Disorders

Purpose: Research on the mental and neurological syndrome produced by chronic inhalation of manganese.

Probable duration: 1964-1971.

Assistance provided: 1 short-term consultant and 2 temporary advisers; equipment and supplies.

Work done: Treatment of chronic manganese poisoning with dihydroxyphenylalanine (L-DOPA) in miners consistently exposed in Chile resulted in a reduction of muscular hypertonia and improvement in postural reflexes. In one case of muscular hypertonia in which the drug accentuated the process, the effect was successfully challenged with 5-hydroxytryptophane. The use of dopaminergic drugs such as apomorphine appears to enhance the effect of L-DOPA and may make it possible to reduce the doses employed, both in manganese poisoning and Parkinson's syndrome.

PAHO/OF

USPHS

AMRO-4700, Food and Drug Control (Interzone)

Purpose: Improvement of the national services responsible for control of the health aspects of the preparation and sale of foods, drugs, and biological products, whether of local origin or imported.

Probable duration: 1959-

Assistance provided: 1 food and drug consultant, 2 short-term consultants, and 1 secretary; supplies.

Work done: A 5-week intensive training course was conducted for 9 analysts from the national drug control agencies of Latin America and the Caribbean area. Instruction was provided by staff of the U.S. Food and Drug Administration laboratory in Washington.

A model drug control law was presented at the Sixth Seminar on Food and Drug Control for Central America and Panama (see project AMRO-4710), and at the Regional Seminar on Drug Control in Maracay, Venezuela (project AMRO-4711). A report on the drug control situation in the eastern Caribbean area was presented at the Second Conference of Caribbean Health Ministers (Barbados, April 1970).

Advice was given to the University of Chile on the curriculum of the School of Chemistry and Pharmacy, and technical assistance was rendered to the Government of Peru in connection with the proposed reorganization of the national drug control services.

PAHO/RB

AMRO-4703, Food Reference Laboratory (Zone III)

Purpose: Establishment of a reference laboratory for food analysis as a division of the Institute of Nutrition of Central America and Panama, with the twofold purposes of furnishing advisory services and training personnel for laboratories of the countries of the area.

Probable duration: 1966-

Assistance provided: 1 laboratory adviser, 1 scientist, and 1 laboratory assistant; equipment and supplies; local costs.

Work done: The Reference Laboratory was operating with a Gas Chromatography Section, which gave priority to the control of pesticide residues (in which 60% of the target was achieved), and a section for autoanalysis for biochemical determinations (9%). A pilot survey was carried out to determine the level of pesticide residues in food in Guatemala (80%). The project assumed responsibility for analytical testing of the production of Incaparina in Colombia, Guatemala, and Panama (10%).

Cooperation was provided for the training activities of INCAP and Zone III (150%) and in the organization and holding of the Sixth Seminar on Food and Drug Control for Central America and Panama (100%).

PAHO/RB

AMRO-4710, Food and Drug Administration (Zone III)

Purpose: Establishment within the health ministries of units for the registration and analysis of all foodstuffs and drugs; promotion of effective legislation; and training of personnel in this field.

Probable duration: 1964.

Assistance provided: 2 short-term consultants, and advisory services by staff of Headquarters and of projects AMRO-0703 and -4703.

Work done: The Sixth Seminar on Food and Drug Control for Central America and Panama was held, with representatives from all the countries of the area in attendance. A course on food microscopy and 1 on food and drug control were held in Panama. The food testing laboratories were inspected in Honduras; and a review of food control legislation was begun in Guatemala.

WHO/RB

AMRO-4711, Regional Seminar on Drug Control (Maracay, Venezuela, 15-20 November 1970) PAHO/RB

The purpose was to ascertain the immediate and long-term needs for providing the countries of the Americas with adequate services for the quality control of drugs. The Organization furnished 6 short-term consultants, 3 temporary advisers, technical advisory services through 7 staff members, and the necessary supplies. The Government of Venezuela provided the meeting place, simultaneous interpretation services, and local transportation.

The Seminar was attended by 29 senior drug control officials from 24 countries of the Americas. The participants heard presentations by outstanding experts, and drew up a series of recommendations for the improvement of drug control in the Region.

AMRO-4800, Medical Care Services (Interzone)

Purpose: Cooperation with the Governments in the improvement of medical care administration, with emphasis on the coordination of health services, hospital planning, and general problems of hospital administration.

Probable duration: 1961.

Assistance provided: Advisory services by Headquarters staff and 2 secretaries; supplies.

Work done: Advice was given to the Government of Brazil on the coordination and regionalization of the teaching of medical care between the Federal District Hospital and the Sobradinho Hospital, and on the possible utilization of the building under construction for the National Social Security Institute as a regional teaching hospital. Technical assistance was given to the Governments of Colombia, Costa Rica, and Panama in connection with the establishment of a national health service.

In Cuba, during the course on hospital administration held at Havana, staff members of the Organization discussed the basic principles of regionalization of medical care teaching and ways and means of incorporating it into the country's hospital system. In Honduras an agreement was signed between the Ministry of Public Health and Social Welfare and the University concerning the use of the University Hospital of Tegucigalpa, as a preliminary to obtaining a loan from the IDB for the construction of that hospital. In Nicaragua the regionalization of medical care teaching was formalized between the Ingeniero Somoza Hospital, the National Social Security Institute, and the El Retiro Hospital, Managua. In Uruguay a feasibility study on a national health insurance scheme was carried out.

The interchange and dissemination of information on medical care administration services and hospitals throughout the Hemisphere continued. An alphabetical list was drawn up, with 215 entries covering all the headings and subheadings of this subject.

PAHO/RB

AMRO-4801, Medical Care Services (Zone I)

Purpose: Assistance to the English-speaking countries and territories of Zone I in improving the administration of hospitals and other medical care facilities, in order to achieve the highest possible levels of operational efficiency and patient care.

Probable duration: 1970.

Assistance provided: 1 hospital administrator.

Work done: See projects Barbados-4801, West Indies-4800, and AMRO-3107.

WHO/RB

AMRO-4803, Medical Care Services (Zone III)

Purpose: Cooperation with the Governments of Central America and Panama in the planning of medical care services, with emphasis on the coordination of services, hospital administration, and the solution of general medical care problems.

Probable duration: 1962.

Assistance provided: 1 medical officer, and advisory services by Headquarters staff.

Work done: Costa Rica and Nicaragua took national censuses of health facilities and hospitals (100% of the target); and Nicaragua and Panama did initial studies with a view to the coordination of national medical care services with those of social security. Guatemala and Honduras

IX. PROJECT ACTIVITIES

began the establishment of demonstration areas for integrated health services.

The installed capacity in general hospital beds was increased by close to 700 for the entire Zone, with 350 beds placed in service.

Ambulatory care services increased in all the countries; 6 new units were established in the metropolitan area of Panama.

Construction of new units, mainly hospitals for mental patients, continued, with 1,200 beds added in Costa Rica and 700 in Honduras. In addition, 3 general hospitals were being built in El Salvador, 2 in Honduras, and 1 in Costa Rica.

The Central American Public Health Council, at its IV Regular Meeting (12-14 November), approved the establishment of a Permanent Committee on Medical Care and Hospital Administration.

See also the -3100 projects for Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

PAHO/RB

AMRO-4804, Medical Care Services (Zone IV)

Purpose: Cooperation with the Governments of Zone IV in the planning of medical care services, with emphasis on the coordination of services, hospital administration, and the solution of general medical care problems.

Probable duration: 1963-

Assistance provided: 1 medical officer and 1 secretary.

Work done: In the area of service coordination, Bolivia reorganized its compulsory rural service system. In Colombia a Health Sector Planning Committee was set up to coordinate the activities of all agencies in the sector in accordance with the National Health Plan. In Ecuador all the services of the city of Milagro (Guayas) were integrated. In Peru a study was made of draft regulations governing hospital areas and the establishments comprising them; this would involve setting up ad hoc bodies to implement and maintain coordination between the various institutions within each area. In seminars held at Trujillo and Arequipa, emphasis was placed on the search for ways of achieving effective cooperation between the universities and the Ministry of Health.

In service administration, Bolivia carried out an over-all diagnosis of the general situation in the country, including the health sector, as a preliminary to formulating an economic and social development plan. In Colombia, procedural manuals were published for the study of medical care institutions to be undertaken by the National Institute of Special Health Programs. In Ecuador, 100 health subcenters were equipped with material provided by UNICEF, and nursing auxiliaries were assigned to take charge of health posts, under adequate supervision. In Peru 12 health zones were created, with uniform structure and functions.

With regard to hospital planning, final details were worked out in Bolivia for equipping the Children's Hospital in La Paz. Colombia enacted a hospital planning law, covering three years and fixing the level of spending on hospital construction, with provisions relating to personnel training and transport and communications; and a study group on medical-architectural programs and designs for the construction of the buildings under the plan was created. In Ecuador, a contract was signed for the construction and equipment of

24 hospital-health centers. The functional program for the University Hospital of Guayaquil was modified, and the architectural design was reviewed. In Peru the Central Aeronautics Hospital was inaugurated; the outpatient wing was put into operation and arrangements were made to do the same with the inpatient wing in two stages. The remodeling of the intensive care unit in the San Juan de Dios Hospital, Callao, was completed.

The training program included the following activities: in Colombia a course was held at the San Juan de Dios Hospital, Bogotá, for administrative assistants of hospitals of Cundinamarca; in Ecuador 100 nursing auxiliaries were trained to take charge of health posts, and in addition 3 courses on statistical methodology and hospital records were held at Quito, Guayaquil, and Cuenca; in Peru the regular hospital administration course was given at the School of Public Health, a training course was held for nurses who will work in the intensive care unit at the San Juan de Dios Hospital, Callao, and was attended by staff from the units at the Central Aeronautics Hospital and the Workers Hospital; and 3 seminars were held at Trujillo, Arequipa, and Lima, on teaching hospitals, medical education, and medical and hospital care respectively.

See also the -3100 projects of Bolivia, Colombia, Ecuador, Peru-3100 and -4800, and AMRO-4813, -4815 and -4816.

PAHO/RB

AMRO-4806, Medical Care Services (Zone VI)

Purpose: Cooperation with the Governments of the countries of Zone VI in the planning of medical care services, with emphasis on the coordination of services, hospital administration, and the solution of general medical care problems.

Probable duration: 1970-

Assistance provided: 1 medical officer, and advisory services by project Argentina-4803 staff.

Work done: In Argentina, assistance was provided in the organization of an intensive care unit, which began operating in October with 8 beds at the José de San Martín Teaching Hospital, and in the academic activities of the School of Public Health, which conducted a course in hospital administration for 49 hospital directors in Buenos Aires and another in La Plata for 30. The School also held 5 seminars on administration of medical care services, with a total of 300 participants. The hospital administration course of the Program of Public Health Graduates was attended by 7 participants.

In Paraguay, assistance was given in the organization of a special unit for the rehabilitation of seriously-ill patients and accident victims.

In Uruguay, cooperation was furnished in the organization of an intensive care unit, and a 1-week seminar on the administration of such units was held.

PAHO/RB

AMRO-4810, Chronic Diseases

Purpose: Study and control of chronic diseases, in particular cardiovascular, pulmonary, metabolic, and rheumatic disorders.

Probable duration: 1967.

Assistance provided: 1 adviser specialized in chronic diseases (part of the year), 1 short-term consultant, 1 temporary adviser, and 1 secretary; contractual services; and a limited amount of supplies.

Work done: As part of the Fifth Pan American Congress on Rheumatology, the Organization sponsored a Round-Table on the Epidemiology and Socioeconomic Aspects of Rheumatic Diseases, which took place in December in Punta del Este, Uruguay. A special consultant was appointed for the purpose of conducting a study on the epidemiology of rheumatic diseases in 12 cities in Latin America, Canada, and the United States of America; a statistical analysis of 50 cases from each city was made with the cooperation of national collaborators; and a complete analysis and inter-correlation of the cases was prepared and discussed at the Round-Table.

PAHO/RB

AMRO-4813, Hospital Planning and Administration

Purpose: Improvement in the operation of existing hospitals; and suitable planning of new facilities to meet the increasing demand for services.

Probable duration: 1968.

Assistance provided: 1 maintenance engineer, 1 temporary adviser, and 1 secretary; supplies.

Work done: In Colombia, the project for construction of the teaching hospital of the School of Health Sciences of the National University in Bogotá was revised.

In Ecuador, the preliminary architectural plans for the University Hospital at Guayaquil were revised and assistance was provided in the final review of the architectural plans for the Naval Polyclinic and in equipping and organizing the hospital.

Further assistance was given to the Government of Honduras in the preparation of the project for the Teaching Hospital at Tegucigalpa.

The Government of Nicaragua received assistance in preparing the application for an IDB loan for construction and equipping of the teaching hospital in the city of León.

Advice was furnished to the Government of Paraguay in the organization of a special care unit to improve the quality of services at the Casualty Hospital in Asunción.

In Peru, advisory services were rendered to the Bureau of Health of the Air Force in the final phase of construction of the Central Air Force Hospital in Lima and in its equipping, organization, and maintenance engineering.

In Uruguay, cooperation was furnished in connection with the preliminary analysis of the complementary project for constructing and equipping the Norte Hospital and the Pediatric Ward of the Pereira Rossell Hospital in Montevideo.

In Venezuela, the educational and training programs of the Hospital Maintenance and Engineering Center in Caracas were reviewed.

Officials of the Organization submitted a paper on hospital engineering and maintenance to the Second Conference of Caribbean Health Ministers.

Advisory services in maintenance engineering were offered to the Governments of Barbados, Jamaica, and Venezuela and—particularly in connection with requirements for

the installation of intensive care units—to those of Argentina, Paraguay, Peru, and Uruguay.

Distribution of technical publications to the countries for their technical libraries continued on a regular basis.

PAHO/RB, WHO/RB

AMRO-4815, Training for Medical Care and Hospital Administration

Purpose: Development of training programs in the administration of medical and hospital care, and continuing education and applied research at schools of public health, schools of medicine, and other institutions in Latin America.

Probable duration: 1967.

Assistance provided: 1 instructor in hospital administration, 3 short-term consultants, 2 temporary advisers; costs of courses and supplies.

Work done: Advisory services were rendered in connection with the programs of the schools of public health of Rio de Janeiro, Brazil; Medellín, Colombia; Santiago, Chile; Havana, Cuba; Mexico City; Lima, Peru; and San Juan, Puerto Rico. A review was made of the objectives, organization, curriculum, teaching methods, administrative residence, faculty, and evaluation.

In Havana the first course in hospital administration was held, with 20 participants: 7 provincial assistant directors and 13 directors of national hospitals.

In Lima the second seminar on medical and hospital care administration was held for 25 professors of preventive and social medicine and heads of clinical departments and directors of university hospitals from 9 university medical centers in Bolivia, Colombia, Ecuador and Peru.

At Bogotá, the first seminar on medical and hospital care administration was held for 20 participants.

PAHO/RB, WHO/RB

AMRO-4816, Progressive Patient Care

Purpose: Cooperation in the establishment of 6 intensive care units in teaching hospitals of Latin America.

Probable duration: 1967.

Assistance provided: 4 short-term consultants, and advisory services by staff of Headquarters, Zone Offices I, IV, and V, and of country projects; equipment and supplies; publications.

Work done: The units at Belo Horizonte, Brazil; Bogotá, Colombia; Maracaibo, Venezuela; and Santiago, Chile, were evaluated. The equipping of the units at the San Juan de Dios Hospital in Callao, Peru, and the Clinical Hospital in Montevideo, Uruguay, was completed.

Programs of theoretical and practical training were conducted for a total of 60 nurses from the San Juan de Dios Hospital in Callao and the Workers' and Air Force Hospitals in Lima, the Clinical Hospital in Montevideo, and the José de San Martín Clinical Hospital in Buenos Aires.

Assistance was provided to the units at Lima, Montevideo, and Buenos Aires in the checking of their special installations.

PAHO/OF

KF

AMRO-4825, Survey on Smoking Patterns in Latin America

Purpose: Investigation of the smoking behavior and attitudes of the population of 8 Latin American cities where reliable mortality and demographic data are available; and collection of data on the prevalence of smoking and on the social, cultural, and demographic characteristics of non-smokers and former and current smokers, in order to assist the Governments in the formulation of national policies regarding the problem and to provide the baseline estimates needed for future evaluation of antismoking programs.

Probable duration: 1970-1971.

Assistance provided: Advisory services by Headquarters staff.

Work done: A tentative questionnaire form was prepared. Official support was obtained from the Governments concerned: Argentina, Brazil, Chile, Colombia, Guatemala, Mexico, Peru, and Venezuela. The selection was made of local investigators who will be responsible for carrying out the field work in the 8 cities. The objectives, general design, and methodology of the study were drawn up.

AMRO-4900, Health and Population Dynamics (Interzone)

Purpose: Development of activities in health and population dynamics.

Probable duration: 1968.

Assistance provided: 5 medical officers, 1 specialist in educational materials, 24 short-term consultants, 15 temporary advisers, and secretariat services; costs of conferences and other meetings; equipment and supplies; 4 long-term and 23 short-term fellowships: Barbados 1; Chile 1; Dominica 1; Grenada 1; Guyana 3; Jamaica 3; Montserrat 1; Panama 1; Peru 1; St. Kitts 4; St. Lucia 1; St. Vincent 1; Trinidad and Tobago 7; and Venezuela 1.

Work done: In many countries of the Region, especially Colombia, Costa Rica, El Salvador, Panama, and Trinidad and Tobago, notable progress was achieved in the integration of family planning and maternal and child health activities within the national health services. Also, maternity-centered (postpartum) programs were being developed.

PAHO provided technical assistance in 17 countries. Permanent advisers were assigned to Zone III, Zone VI, Ecuador, Guyana, and Haiti. Advisers also participated in the U.N. Mission's in-depth review of the family planning program in Costa Rica and in the World Bank Mission to study the feasibility of a loan to Trinidad and Tobago.

The First Advisory Committee on Health and Population Dynamics was convened in June.

A comprehensive regional program in education and training was developed; it included a family planning training course for nurses and midwives in the Caribbean area; a 6-week course in the biology of human reproduction for members of the medical faculties of Central America and Panama; a conference for teaching staff of the schools of public health of Latin America; and the First Central American Seminar on Maternal and Child Health and Family Welfare, for high-level officials of the ministries of health.

Plans for research projects on the health aspects of family planning were prepared.

See also projects Brazil-6700, Chile-6700, Colombia-4900, Haiti-4900, and AMRO-4901.

PAHO/RB, PAHO/OF

AID

AMRO-4901, Health and Population Dynamics (Zone I)

Purpose: Assistance to the Governments of the countries of Zone I in the development of national family planning programs as an integral part of basic health services, in particular those for maternal and child health.

Probable duration: 1968-

Assistance provided: 1 medical officer (December).

Work done: Assistance was given to Jamaica and Trinidad and Tobago in developing maternal and child health and family planning programs, and to St. Kitts in outlining plans for the formulation of a national program in family planning and sex education and in determining needs for immediate training both locally and abroad.

See also project Trinidad and Tobago-4900.

PAHO/OF, WHO/RB

AID

AMRO-4908, Health and Social Welfare

Purpose: Definition of the areas of social welfare which can contribute toward strengthening health services.

Probable duration: 1970-

Assistance provided: 1 short-term consultant, 1 temporary adviser, and 1 secretary.

Work done: An exploratory study was carried out in Chile, Costa Rica, Jamaica, and Venezuela, with the general objective of identifying the nature and extent of social welfare problems in relation to the health sector, the priorities given to these problems by the authorities, the qualifications and functions of the personnel in charge of programs, and the level of their training. The report on the study was prepared, which will be discussed by a multidisciplinary working group consisting of health administrators, social workers, sociologists, health educators, nurses, etc., at a meeting planned for the first half of 1971. This group will make recommendations to the Organization on areas in which the future participation of PAHO is desired.

PAHO/RB, PAHO/OF

University of Pittsburgh

AMRO-5000, Rehabilitation

Purpose: Advisory services in rehabilitation related to medical problems; training and refresher courses for instructors, technicians, and operators in orthotics and prosthetics for physically handicapped persons, and the dissemination of new techniques and materials.

Probable duration: 1962-

Assistance provided: 1 rehabilitation specialist and 1 prosthetics specialist.

Work done: The rehabilitation specialist continued to be stationed in Mexico City; the specialist in prosthetics was transferred to Bogotá in December.

In the field of rehabilitation, the main activities under the project were the organization of the Latin American Conference on Rehabilitation of the Disabled, held at Mexico City from 19 to 29 October.

The adviser visited Cuba in connection with the preparation of a course for occupational therapists, and also Colombia, where he took part, along with the prosthetics specialist, in the seminar on prosthetics held at Bogotá from 31 August to 6 September, as a preliminary to the development of a national prosthetic and orthotics program to be set up in the country. He advised the Government on the preparation of guidelines for directors of provincial hospitals on ways of using rehabilitation services, especially physiotherapy.

Peru reviewed the occupational therapy curriculum it proposes to introduce at Lima, and examined the projects to be undertaken in 1971.

An investigation was made of the training needs in Antigua, Barbados, Jamaica, and Trinidad and Tobago, and of the possibility of organizing a training course in physiotherapy for personnel from the English-speaking countries of the Caribbean.

In Costa Rica a study was made of the preliminary draft of a scheme for a National Center for Traumatology, Orthopedics, and Rehabilitation, and recommendations were made for the establishment of a National Rehabilitation Commission in which all the institutions participating in this field would take part.

The final report was drafted on the training course for Latin American physiotherapy teachers, held at Mexico City from 3 March to 28 November 1969.

In the field of orthotics and prosthetics, advisory services were rendered in Brazil to the National Social Welfare Institute of Guanabara on the organization of a factory for prosthetic appliances, and to the Santa Casa de Misericórdia of São Paulo for the establishment of a prosthetics laboratory. In addition, a short course was programmed for physicians and prosthetics technicians on the updating of techniques, which will be given in 1971. In Colombia assistance was given to the National Rehabilitation Council, Bogotá, in connection with the improvement of existing services and the modernization of techniques for orthopedic and prosthetic appliances used at the Military Hospital, the San Juan de Dios Hospital and the F.D. Roosevelt Institute for Children. It was recommended that a school for training medical officers, technicians, and other workers in this specialty be established at the Medical School of the National University of Colombia. In Cuba a course was held with a view to introducing the modern skeletal, total contact, technique of prosthetics for amputated limbs, and the use of plastic materials. In Venezuela studies were carried out with a view to extending the prosthetics and orthotics service to various regions.

See also the -5000 projects of Chile, Peru, and Venezuela, and AMRO-5008.

PAHO/RB, WHO/RB

AMRO-5008, Conference on Rehabilitation of the Disabled (Mexico, D.F., Mexico, 19-28 October 1970) WHO/RB

The purpose was to convene a meeting to discuss methods of providing and administering rehabilitation services; the role of social workers, physiotherapists, and sociologists in rehabilitation; and the preparation of appropriate personnel with reference to Latin America. The Organization provided

1 short-term consultant, and cost of the Conference; cost of attendance of 20 participants (under other projects), and advisory services by staff members. The Mexican Government subsidized 7 participants and the United Nations, 10.

The Conference was held in collaboration with the Government of Mexico and the Department of Social Welfare of the United Nations. It was attended by 17 medical officers, 6 physiotherapists, 3 occupational therapists, 5 social workers, 2 psychologists, and 4 administrators from 14 countries, and by observers from ILO, International Society for Rehabilitation of the Disabled, and the Latin American Medical Rehabilitation Association. The report of the meeting contained recommendations on the organization of rehabilitation services in Latin America and the training of suitable personnel.

AMRO-6000, Medical Education: Textbooks and Teaching Materials (Interzone)

Purpose: Raising the level of medical education by providing suitable low-cost textbooks to students; development of a cooperative arrangement with the medical schools in order to ensure the selection of texts of the highest scientific and pedagogical quality; and establishment of a revolving system for the funds that are collected, in order to ensure the continuity of the program.

Probable duration: 1967-

Assistance provided: 1 medical officer, 26 temporary advisers, and secretarial services; grants; books; and costs of printing of reports.

Work done: A total of 113 universities had adhered to the program by signing letter-agreements with the Organization. Local textbook-distribution units were operating in 110 medical schools. The committees of experts on microbiology and parasitology (composed of 24 professors in all) held their first meetings. From the beginning of the program until 1970 the Organization had distributed 54,997 copies of the first 4 textbooks (on pathology, biochemistry, physiology, and pharmacology). The medical schools had received 44,723 copies, of which 26,031, or approximately 60%, had been sold (80% on a cash basis and 20% on installments). Book rental transactions were not recorded. Sales in 1970 amounted to 15,623 copies, and collections were entirely satisfactory. The *Tratado de pediatría* was issued and 15,000 copies were being distributed.

The reports of the expert committees on teaching of internal medicine and on morphology (anatomy, histology, and embryology) were published as separate booklets and were being distributed to schools throughout Latin America.

The IDB approved a \$2,000,000 loan for the textbook program. The loan was made to the Pan American Health and Education Foundation, which is to execute the program jointly with PAHO.

See also the -6000 project of the respective country.

PAHO/SFHP, PAHO/OF

AMRO-6100, Schools of Public Health (Interzone)

Purpose: Strengthening of the schools of public health in the Region.

Probable duration: 1963-

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Assistance provided: 1 medical officer, 2 short-term consultants, 1 temporary adviser, and advisory services by Headquarters staff.

Work done: Courses in basic public health were planned and carried out in Guatemala and Panama. They were designed to train medical personnel of the ministries in techniques and procedures that would enable them to raise the level of their performance and develop activities for the national health plan. The possibility of holding similar courses in other countries was under study.

See also Chapter III.

PAHO/RB, WHO/RB

AMRO-6101, Human Resources Program in the Caribbean

Purpose: Improvement in the quality and quantity of educational and training programs for the health professions, and promotion of more effective utilization of existing health manpower in the countries and territories of the Caribbean area.

Probable duration: 1969-1973.

Assistance provided: 1 medical officer, 7 temporary advisers, and secretarial and clerical assistance; common services.

Work done: The project was in its initial stage. A Postgraduate Training Committee, comprising representatives of governmental agencies, the universities, and PAHO/WHO, was set up by the Health Ministers. Action was taken for the recruitment of an adviser in medical education and a medical librarian for Haiti.

PAHO/PAHEF, WHO/RB Milbank Memorial Fund

AMRO-6200, Medical Education (Interzone)

Purpose: Cooperation with the Governments in their efforts to improve the programs for the teaching of medicine, with special reference to preventive and social medicine, basic sciences, and medical pedagogy.

Probable duration: 1953-

Assistance provided: 1 medical officer, 2 short-term consultants, 6 temporary advisers, advisory services by Headquarters staff, and secretarial services; contractual services; supplies.

Work done: The II Meeting of the Health Sciences Education Information Center (HSEIC) was held at PAHO Headquarters from 10-11 December; it was attended by 48 representatives of 30 private, governmental, and international agencies that provide technical and financial support to medical education in Latin America.

The importance of coordinating the cooperative efforts in the medical education field in Latin America, particularly in the area of auxiliary personnel training, was a main topic of discussion, as was also the formation of multinational training centers. A "Summary of Activities of International Cooperation in Health Sciences Education in Latin America during 1969" and a "Directory of Schools of Dentistry, Medicine, Nursing, Nursing-Midwifery, Public Health, and Veterinary Medicine, 1970" were prepared for the meeting.

The quarterly journal *Educación médica y salud* continued to be published regularly, in an edition of 5,000 copies.

Advisory services were rendered to the health authorities in Honduras in relation to the teaching hospital and to human resources development projects; and to the Ministry of Public Health of Cuba in connection with the restructuring of teaching programs and the development of scientific research.

Assistance was given in the planning of integrated health sciences teaching programs in Chile, Mexico, Panama, Peru, and Venezuela. Advisory services were rendered to the University of Valdivia, Chile, in connection with a program for clinical teachers; to the University of El Salvador in evaluating the organizational structure of the School of Medicine; and to the Medical Center of León, Nicaragua, in regard to the utilization of teaching hospitals. Project staff participated in a meeting convened by Venezuelan Association of Medical Schools (AVEFAM) for the discussion of plans for the departmental restructuring of the schools of health sciences.

PAHO/RB, PAHO/OF Milbank Memorial Fund

AMRO-6204, Medical Education (Zone IV)

Purpose: Cooperation with the Governments of the countries of Zone IV in activities aimed at strengthening medical education at the undergraduate, postgraduate, and continuing education levels; promoting the integration of preventive and social medicine; and increasing the number and quality of teaching staff.

Probable duration: 1966-

Assistance provided: 1 medical officer, and advisory services by Headquarters staff; equipment and supplies.

Work done: See projects Bolivia-6200; Colombia-6200, -6201, and -6204; Ecuador-6200; and Peru-6200.

PAHO/RB

AMRO-6208, Teaching of Statistics in Medical Schools

Purpose: Promotion of the teaching of medical and health statistics in schools of medicine and public health in Latin America.

Probable duration: 1961-

Assistance provided: 1 short-term consultant, and advisory services by Headquarters and Zone Offices staff.

Work done: At the School of Medicine of the Federal University of Rio Grande do Sul, Brazil, a short-term consultant conducted a 2-week elementary course in statistics for 53 persons, mainly physicians in the clinical field, and a 2-week advanced course for 23 students with previous training in statistics. At the School of Medicine of Belo Horizonte a 2-week series of elementary lectures was given for 35 students, principally from the preclinical departments. Advisory services were rendered to both of those Schools, on problems related to the teaching program, and also to the staff of the Biostatistics and Demography Center (project Argentina-6202). A 1-week course was given at the School of Medicine in Asunción, Paraguay, for 34 members of the teaching staff.

PAHO/RB

AMRO-6210, Teaching Methods and Administrative Organization of Medical Schools (1964-1970) PAHO/RB

The purpose was to organize group discussions and seminars with a view to assisting medical schools in the Region to review and improve their teaching methods and administrative procedures. The Organization provided 2 medical officers, 3 specialists in medical pedagogy, 20 short-term consultants, 3 temporary advisers, supplies, a grant, and advisory services by staff members.

Laboratories in human relations and medical teaching were organized in 10 countries, for a total of 768 participants. Similar laboratories were sponsored by individual countries without PAHO assistance. The total number of faculty members participating in this activity since it was started through this project can be estimated at about 2,000.

Advisory services on medical teaching were rendered to medical schools in 13 countries.

The first Central American course on the administrative management of medical schools was held in Coatepeque, El Salvador, under the sponsorship of the Government, the University of El Salvador, the Central American Association of Medical Schools, and the Organization. The course was attended by 38 high-level administrative officers of medical schools.

Seminars on definition of educational objectives and curriculum design were held in Recife and Brasília, Brazil, and in Medellín, Colombia, for approximately 56 participants. A seminar on the administrative structure of schools of health sciences was held in Brasília with 18 participants.

AMRO-6216, Medical Education and the Teaching of Preventive and Social Medicine

Purpose: Assessment of the status of medical education and of the teaching of preventive and social medicine.

Probable duration: 1965-

Assistance provided: 1 medical officer, and advisory services by project AMRO-6200 staff; secretarial services; supplies.

Work done: Work was continued on the evaluation of teaching programs in the schools of medicine of Latin America.

PAHO/RB, PAHO/OF Milbank Memorial Fund

AMRO-6221 (Brazil-6221), Regional Library of Medicine

Purpose: Provision of library support for biomedical education, research, and practice in Latin America, using modern communications technology; and training of biomedical librarians at advanced levels.

Probable duration: 1967-1974.

Assistance provided: 1 scientific director, 1 chief of technical services, 1 chief of reference services, and 11 temporary advisers; equipment and supplies; subscriptions to scientific journals; local costs.

Work done: The library extended its services to Argentina, Bolivia, Colombia, Panama, Peru, Uruguay, and Venezuela.

Up to the end of the year 28,458 requests for interlibrary loan services were received; 57% of those requests were complied with by Library itself, 16% with the assistance of other libraries in São Paulo, while 27% were forwarded to the U.S. National Library of Medicine for attention. In addition, 5,345 photocopies were supplied to faculty members of the Paulista School of Medicine and the University Hospital of São Paulo. Either as gifts or through exchange arrangements with 803 biomedical libraries in Brazil and other South American countries, 18,246 copies of medical journals were sent to libraries in the Region. Through all these activities, the target for the year was exceeded.

A seminar was held at the library on 28 and 29 September to study the organization and operation of 7 subcenters and 2 subsystems for Brazil. The participants included 2 rectors, 11 directors of medical schools, and 10 biomedical librarians from various states of Brazil. The group discussed possible ways of meeting the growing requirements for information and current scientific communication among researchers, educators, and professionals in the health science field.

The Library met 198 requests for bibliographies and references, 164 of which it handled itself and 34 through the MEDLARS system of the U.S. National Library of Medicine (exceeding the target).

The work of the Library was publicized, and interlibrary cooperation, particularly in the preparation of joint catalogs of periodicals, was fostered through meetings with library and other professional groups in São Paulo, Rio de Janeiro, Brasília, Recife, Juiz de Fora, Itajubá, Pôrto Alegre, Florianópolis, Goiania, and Curitiba. Similar cooperative activities and the establishment of an international scientific communications network for Latin America were encouraged in Argentina, Chile, Colombia, Mexico, Peru, Uruguay, and Venezuela. Three seminars for librarians, professors, and directors of medical schools were held in Lima, Bogotá, and Caracas (100% of the target).

Three numbers of the Library's information bulletin (Vol. 2), including a total of 4,500 copies in Spanish and Portuguese, were published and distributed to libraries and research and education institutions in South America. The Library issued a list of Brazilian newspapers in its collections, a pamphlet on minimum requirements for a medical library, and another on suggestions for the organization of a medical school library (100%).

The Pan American Federation of Medical Schools and the Brazilian Association of Medical Schools furnished support to the project and helped to publicize its aims. The Paulista School of Medicine placed its entire library collection, 8 librarians, and 5 library assistants at the disposal of the Regional Library. The U.S. National Library of Medicine donated books, monographs, and funds from its U.S. Book Exchange loan to the Regional Library for the enlargement of its collection of scientific journals and also helped to take care of requests for scientific articles. AID provided funds to finance the seminar held in September.

PAHO/RB, PAHO/OF

Government of Brazil, The Commonwealth Fund, U.S. National Library of Medicine, USPHS

IX. PROJECT ACTIVITIES

AMRO-6223, Teaching of Behavioral Sciences

Purpose: Improvement of the methods of teaching the behavioral sciences, provision of research training in this field, and advisory services to schools of health sciences.

Probable duration: 1969-

Assistance provided: 2 short-term consultants, and advisory services by Headquarters staff; equipment and supplies.

Work done: Courses in methodology and research were held in Venezuela for 23 participants from the schools of medicine and dentistry; and in Campinas, Brazil, for approximately 35 participants. A seminar on behavioral sciences was conducted in El Salvador for 23 professionals, and another one in Ribeirão Preto, for 34 participants.

PAHO/RB

AMRO-6224, Faculty and Research Training Centers

Purpose: Advanced training of teachers and research workers in the medical schools of Latin America.

Probable duration: 1969-

Assistance provided: Advisory services by Headquarters staff.

Work done: Discussions were held with authorities of the University of San Luis de Potosí and the Institute of Cardiology in Mexico, concerning plans for the utilization of these institutions for international training in pharmacology.

AMRO-6225, Evaluation of Fellowship Program

Purpose: Evaluation of the fellowship program of the Organization in order to assess the results achieved and their effects on the health programs, and to guide the Governing Bodies in the determination of future policy in this field; and conduct of a study on the possible award of within-country fellowships as a means of promoting optimum utilization of the resources available for training personnel in their home countries.

Probable duration: 1969-

Assistance provided: 1 short-term consultant, and advisory services by Headquarters staff.

Work done: Interviews were held with 145 ex-fellows to request completion of questionnaires, as well as with the 25 supervisors in the field who collected the data. The surveys were conducted in Bolivia, Colombia, Ecuador, and Peru, and the results were partially analyzed.

WHO/RB

AMRO-6300, Nursing Education (Interzone)

Purpose: Improvement of nursing care through the establishment of a nursing education system suited to the countries' needs; and strengthening of nursing education institutions.

Probable duration: 1958-

Assistance provided: 1 short-term consultant, and advisory services by Headquarters staff.

Work done: The activities of the other nursing education projects of the Region were revised, and plans were drawn for a study of the university nursing schools, to be carried out

in 1971. Audiovisual and library materials were distributed to all the nursing education projects and the School of Nursing of the University of Panama.

See also Chapter III.

WHO/RB

AMRO-6301, Nursing Education (Zone II)

Purpose: Improvement of nursing care through improvement of nursing education.

Probable duration: 1963-

Assistance provided: 1 nurse.

Work done: Plans for a re-survey of schools of nursing in 12 territories of the eastern Caribbean were drawn up at a regional meeting attended by 12 senior nurses; they were approved in principle by all the Governments concerned. Visits were made to 10 of the territories to discuss the details of the planned activities.

See also projects Guyana-3200 and West Indies-3204.

PAHO/RB, PAHO/OF

AMRO-6319, Training of Nursing Auxiliaries

Purpose: Increasing the number and improving the efficiency of nursing auxiliaries through a reorientation of the curricula; training of teaching personnel; and establishment of continuing education and supervision programs.

Probable duration: 1970-

Assistance provided: 1 nurse and 1 secretary (6 months).

Work done: Observation visits were made to rural health centers in Ecuador, Peru, and Venezuela, as a basis for preparing a manual for auxiliaries in such services. The initial draft was prepared of a manual that will be tested prior to publication.

PAHO/RB

AMRO-6400, Sanitary Engineering Education (Interzone)

Purpose: Cooperation with the Governments in the strengthening of sanitary engineering and environmental sanitation schools; expansion and improvement of programs of study in these fields in the schools of engineering and public health of the Hemisphere; and promotion of training and research activities in the field of engineering and environmental sciences.

Probable duration: 1964-

Assistance provided: 1 sanitary engineer and 2 secretaries.

Work done: A total of 44 universities and other official institutions in 19 countries were participating in the program. Seventy short courses and 6 seminars and 1 regional symposium were held. The teaching staff included 473 national lecturers and 126 consultants provided by the Organization (70 short-term consultants and 56 staff members). More than 2,700 persons benefited from these educational activities.

A training program on administration and management of water supply companies was initiated, and courses were offered in Oruro, Bolivia; Belo Horizonte and São Paulo, Brazil; Santiago, Chile; Santo Domingo, Dominican Republic; Tegucigalpa, Honduras; and Caracas, Venezuela.

Seventeen research projects were in progress in Argentina, Brazil, Chile, Colombia, Guatemala, and Mexico.

PAHO/RB, PAHO/SFHP

AMRO-6500, Veterinary Medical Education (Interzone)

Purpose: Strengthening of the teaching of veterinary medicine, with special reference to preventive medicine and public health.

Probable duration: 1966-

Assistance provided: Advisory services by Headquarters staff; supplies.

Work done: The Advisory Committee on Veterinary Medical Education (Executive Committee of the Association of Teachers of Veterinary Public Health and Preventive Medicine of the U.S. and Canada) held its first meeting at the University of Missouri in January. The Committee made recommendations to the Organization on the preparation, exchange, and distribution of teaching materials, and on the implementation of the recommendations of the Symposium Education in Veterinary Public Health and Preventive Medicine (Minnesota, March 1968) concerning the development of objective criteria and performance testing by the schools teaching this specialty.

The School of Veterinary Medicine in Belo Horizonte, Brazil, held a course on avian diseases transmitted to man, for 16 professors from various parts of the country.

Current literature, textbooks, and teaching aids were distributed to schools throughout the Americas.

WHO/RB

AMRO-6600, Dental Education (Interzone)

Purpose: Improvement of the teaching in schools of dentistry.

Probable duration: 1963-

Assistance provided: Advisory services by Headquarters staff and 1 secretary; supplies.

Work done: The survey on dental education in the Americas and on the impact of the 3 Latin American dentistry seminars was continued.

The collection of data on dental education in Colombia and Venezuela was completed. Work was continued on the design of a new dental curriculum at the University of Zulia in Maracaibo.

Courses on new concepts in dentistry and dental education were conducted for dental health workers in Chile, Ecuador, Puerto Rico, and Venezuela.

The publication *Guidelines for the Development of Dental Curricula* (Document HP/DH/1) was issued in English and in Spanish; 1,000 copies were distributed in each language.

PAHO/RB

AMRO-6608, Training of Auxiliary Dental Personnel

Purpose: Training and utilization of dental auxiliaries, in order to increase the coverage and reduce the cost of dental care services.

Probable duration: 1965-

Assistance provided: 1 short-term consultant, 1 temporary adviser, and advisory services by Headquarters staff; supplies.

Work done: Three courses on the utilization of dental auxiliaries and of modern equipment were provided to members of the dental profession in Argentina, Brazil, and Chile. A course given in Maracaibo, Venezuela, outlined a methodology for training dental auxiliaries in limited functions. The School for Dental Auxiliaries in Jamaica opened in May with 25 students. This program, developed with UNICEF assistance, will train auxiliaries to provide dental services for children.

The survey on "Dental Auxiliary Utilization and Education in Latin America" was published and distributed. Data from this study were presented at the meeting of the Health Sciences Education Information Center held in Washington in December. An article on the training of dental auxiliaries for restorative functions, as carried out at the School of Dentistry of the University of Antioquia, in Medellín, Colombia, was prepared and published.

Audiovisual materials and manuals for the training of auxiliaries were distributed to dental schools in Pôrto Alegre, Brazil; Bogotá, Colombia; Lima, Peru; Maracaibo, Venezuela; and to the School for Dental Auxiliaries, Jamaica.

PAHO/RB

AMRO-6609, Latin American Association of Dental Schools

Purpose: Development of an administrative structure to coordinate the activities of the Latin American Association of Dental Schools (ALAFD) and promote dental education in Latin America.

Probable duration: 1965-

Assistance provided: Advisory services by Headquarters staff; 1 grant.

Work done: A complete review of the activities of ALAFD was conducted and projections made for the further development of the Association. In addition to the office established in Rio de Janeiro, assistant executive directors were appointed in Chile and Venezuela. Headquarters staff and 2 consultants attended the biannual meeting of the Association in Maracaibo, Venezuela, and advised dental educators on the organization of training programs. The Journal of the Association and other literature on dental education were distributed to the countries as a result of the grant provided by the American Dental Association to the Organization for this project.

PAHO/OF

American Dental Association

AMRO-6700, Biostatistics Education (Interzone)

Purpose: Improvement of biostatistics in the countries of the Hemisphere through the training of professional health statisticians for teaching positions, for research, and for service with the ministries of health.

Probable duration: 1952-

Assistance provided: 5 short-term consultants; 2 grants; 3 long-term fellowships: Argentina (2) and Costa Rica (1).

Work done: A 2-year international course in biostatistics was initiated in March at the School of Public Health in

IX. PROJECT ACTIVITIES

Chile, with 12 students. Designed to teach more advanced statistical methodology than did courses in previous years, this course is directed to professors of statistics in medical and public health schools, research workers, and directors of health statistics departments in ministries of health. Three short-term consultants participated in the teaching and in activities related to sampling, operations research, multivariate analysis, and nonparametric statistics. A 12-week course (48 hours) to orient health personnel on the use of the computer in the medical field was begun in September.

The Biostatistics and Demography Center of the School of Medicine, National University of Buenos Aires, collaborated closely with the Secretariat of State for Public Health, providing training and advisory services. Fourteen short courses in biostatistics were given for 300 physicians, and 9 courses in demography for 320. Advisory services were given on the design and analysis of medical and demographic research, and studies were in progress on perinatal and infant mortality, fertility, internal migration, and underregistration of births and deaths.

Three statisticians were awarded fellowships for graduate-level training in biostatistics in the United States of America.

WHO/UNDP

AMRO-6707, Latin American Center for Classification of Diseases

Purpose: Study of problems related to medical certification of causes of death; instruction in the use of the *International Classification of Diseases*; and collaboration in the preparation of the decennial revisions of the *Classification*.

Probable duration: 1955-

Assistance provided: 1 statistician and 9 temporary advisers; 1 grant; equipment and supplies.

Work done: The Center continued its program of preparing training material and teaching aids in Spanish to be used throughout the Region in courses on the use of the *International Classification of Diseases*. Courses were given by staff of the Center for 40 persons in Venezuela, 30 in Colombia, and 25 in Bolivia, and by a short-term consultant for 50 in Argentina. In other countries instruction was provided by national professors.

The Center published in Spanish a manual of programmed instruction for coding with the *International Classification* and prepared a manual of instructions for coding hospital diagnoses, using the *Classification*.

The new Director of the Center attended the meeting of the directors of 4 centers for classification (London, Paris, Moscow, and Caracas) held in Moscow in October.

Regional activities in preparation for the Ninth Revision of the *Classification* were formally initiated with a meeting of a study group held at the Center from 7-11 December. Participants came from 8 Latin American countries.

WHO/RB

AMRO-6708, Training Program in Hospital Statistics

Purpose: Training in medical records and hospital statistics in order to effect improvements that will result in better patient care and planning of health services.

Probable duration: 1961-

Assistance provided: 3 medical records librarians, 1 secretary, and advisory services by 3 short-term consultants assigned to projects Argentina-6200, Brazil-4800, and British Honduras-3100; supplies.

Work done: Intermediate-level courses were given in 6 countries, for 189 persons (Argentina 90, Brazil 12, Colombia 25, Costa Rica 20, Peru 17, and Venezuela 25); the participants came from 15 Latin American countries. Three of the courses provided training in both health statistics and medical records and 3 were on medical records only. Advisory services and teaching assistance were provided in all 6 courses.

The course at the Federal University of Bahia, Brazil, was given for the first time; the students came from 5 states and the Federal District. During 1970 the School of Medicine of the University of Costa Rica decided to accept the transfer of the course that had been given in the Ministry of Public Health, and in 1971 the course will be under the auspices of both groups. The course in Venezuela, given for many years in the Ministry of Health and Social Welfare, was reviewed and its curriculum redesigned in order to plan for its future inclusion in a university program.

In Argentina progress was made in planning a professional-level course in medical records in 3 stages, the first consisting of the present intermediate-level course; on completion of the stages (3 years), graduates will receive a university degree. A short-term consultant participated in the planning for the advanced stages, which will begin in 1971.

Auxiliary-level training in medical records is summarized below:

Country	No. of courses	Duration	No. of personnel trained
Argentina	15	6-12 weeks	358
Bolivia	1	4½ months	18
Colombia	1	2½ months	13
Costa Rica	1	2 months	22
Cuba	1	2 weeks	39
Ecuador	3	1 month	114
El Salvador	1	3 months	22
Haiti	1	3 months	50
Jamaica	1	1 week	5
Mexico	1	6 weeks	22
Peru	3	6 weeks	83
Venezuela	1	6 months	17
Total	30		763

PAHO/RB, PAHO/SFHP

INTER-REGIONAL-0113.2, International Course on Tuberculosis Epidemiology and Control, Rome

Four short-term fellowships were awarded (Argentina, Chile, Cuba, and Peru).

WHO/UNDP

INTER-REGIONAL-0163, Study on the Nature and Extent of Health Problems of Seafarers and on the Health Services Available to Them

One long-term fellowship was awarded (Peru).

WHO/UNDP

INTER-REGIONAL-0439, Course on Health and Manpower Planning, New Delhi

Two short-term fellowships were awarded (Brazil and Colombia).

WHO/UNDP

INTER-REGIONAL-0455, Course for Teachers of Immunology in Medical Schools, Holte, Denmark

Two short-term fellowships were awarded (Jamaica and Peru).

WHO/UNDP

INTER-REGIONAL-0474, Travelling Seminar on Plague Control, Union of Soviet Socialist Republics, and Iran

One short-term fellowship was awarded (Venezuela).

WHO/UNDP

INTER-REGIONAL-0493, Seminar on Organization of Psychiatric Services, Union of Soviet Socialist Republics

Two short-term fellowships were awarded (Mexico).

WHO/UNDP

INTER-REGIONAL-0495, Course on the Quality Control of Drugs, Copenhagen

Five short-term fellowships were awarded (Argentina, Chile, Jamaica, Mexico, and Trinidad and Tobago).

WHO/UNDP

INTER-REGIONAL-0496, Travelling Seminar on the Organization of Refresher Courses for Medical Staff, Union of Soviet Socialist Republics

Two short-term fellowships were awarded (Chile and Uruguay).

WHO/UNDP

INTER-REGIONAL-0537, Seminar on Epidemiological Surveillance Methods for Communicable Diseases, Prague

Three short-term fellowships were awarded (Chile, Mexico, and Venezuela).

WHO/RB

INTER-REGIONAL-0567, Immunology: Courses at International Reference Centers

Two short-term fellowships were awarded (Brazil and Mexico).

WHO/RB

INTER-REGIONAL-0581, Course on Communicable Disease Epidemiology and Control, Moscow and Alexandria

Two long-term fellowships were awarded (Chile and Mexico).

WHO/UNDP

INTER-REGIONAL-0619, Course on Inservice Education for Nursing Personnel, Gentofte, Denmark

One short-term fellowship was awarded (Argentina).

WHO/UNDP

INTER-REGIONAL-0634, Travelling Seminar on Nursing, Union of Soviet Socialist Republics

Two short-term fellowships were awarded (Mexico and Uruguay).

WHO/UNDP

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AIDIS	Inter-American Association of Sanitary Engineering	KF	W. K. Kellogg Foundation
CDC	Center for Disease Control (USA)	NIH	National Institutes of Health (USA)
CIAP	Inter-American Committee on the Alliance for Progress	OAS	Organization of American States
CINVA	Inter-American Housing and Planning Center	ODECA	Organization of Central American States
CREFAL	Regional Center for Functional Literacy in Rural Areas for Latin America	OIRSA	International Regional Organization for Health in Agriculture and Livestock
ECLA	Economic Commission for Latin America (UN)	PAHO	Pan American Health Organization
EXIMBANK	Export-Import Bank (USA)	PASB	Pan American Sanitary Bureau
FAO	Food and Agriculture Organization (UN)	RF	Rockefeller Foundation
HSEIC	Health Sciences Education Information Center	UN	United Nations
IA-ECOSOC	Inter-American Economic and Social Council (OAS)	UNDP-SF	United Nations Development Program, Special Fund
IBRD	International Bank for Reconstruction and Development (World Bank)	UNESCO	United Nations Educational, Scientific, and Cultural Organization
IDB	Inter-American Development Bank	UNICEF	United Nations Children's Fund
ILO	International Labour Organisation	USPHS	United States Public Health Service
		WFP	World Food Program
		WHO	World Health Organization

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