

# **Q**UADRENNIAL REPORT OF THE DIRECTOR 1966-1969



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

INDEXED

# QUADRENNIAL REPORT OF THE DIRECTOR

of the  
PAN AMERICAN SANITARY BUREAU  
REGIONAL OFFICE FOR THE AMERICAS  
of the  
WORLD HEALTH ORGANIZATION

**1966-1969**

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PAN AMERICAN HEALTH ORGANIZATION  
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To the  
States Members  
of the  
Pan American Health Organization

I have the honor to transmit herewith the Quadrennial Report on the work of the Pan American Sanitary Bureau, Regional Office for the Americas of the World Health Organization, for the years 1966-1969. This Report summarizes the activities at Headquarters and in the countries; greater detail is presented in the Annual Report for 1969, which is submitted separately, and in the Annual Reports for the first three years of the quadrennium.

Respectfully,

A handwritten signature in cursive script, appearing to read 'A. Horwitz', with a horizontal line underneath.

Abraham Horwitz  
Director

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## ACRONYMS AND CORRESPONDING AGENCIES

AID	Agency for International Development (USA)
AIDIS	Inter-American Association of Sanitary Engineering
CARE	Cooperative for American Relief to Everywhere
CEPIS	Pan American Sanitary Engineering and Environmental Sciences Center
CFNI	Caribbean Food and Nutrition Institute
CIAP	Inter-American Committee on the Alliance for Progress
CINVA	Inter-American Housing and Planning Center
CLAM	Latin American Center for Medical Administration
CREFAL	Regional Center for Functional Literacy in Rural Areas for Latin America
ECLA	Economic Commission for Latin America (UN)
EXIMBANK	Export-Import Bank (USA)
FAO	Food and Agriculture Organization (UN)
IAEA	International Atomic Energy Agency
IACC	Inter-American Cultural Council
IA-ECOSOC	Inter-American Economic and Social Council (OAS)
IDB	Inter-American Development Bank
ILO	International Labour Organisation
INCAP	Institute of Nutrition of Central America and Panama
NCDC	National Communicable Disease Center (USA)
OAS	Organization of American States
PAHO	Pan American Health Organization
PASB	Pan American Sanitary Bureau
UN	United Nations
UNDP	United Nations Development Program
UNDP-SF	United Nations Development Program, Special Fund
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund
WHO	World Health Organization

## EXCERPT FROM THE REPORT OF THE MEETING OF AMERICAN CHIEFS OF STATE

### C. Health

Improvement of health conditions is fundamental to the economic and social development of Latin America.

Available scientific knowledge makes it possible to obtain specific results, which, in accordance with the needs of each country and the provisions of the Charter of Punta del Este, should be utilized to attain the following objectives:

- a. Control of communicable diseases and eradication of those for which methods for total elimination exist. Pertinent programs shall receive international coordination when necessary.
- b. Acceleration of programs for providing drinking-water supplies, sewerage, and other services essential to environmental sanitation in rural and urban areas, giving preference to lower-income groups. On the basis of studies carried out and with the cooperation of international financing agencies, national revolving fund systems shall be used to assure the continuity of such programs.
- c. Greater and more rapid progress in improving nutrition of the neediest groups of the population, taking advantage of all possibilities offered by national effort and international cooperation.
- d. Promotion of intensive mother and child welfare programs and of educational programs on overall family guidance methods.
- e. Priority for basic and advanced training of professional, technical, administrative, and auxiliary personnel, and support of operational and administrative research in the field of health.
- f. Incorporation, as early as the preinvestment phase, of national and regional health programs into general development plans.

The Presidents of the member states of the OAS, therefore, decide:

1. To expand, within the framework of general planning, the preparation and implementation of national plans that will strengthen infrastructure in the field of health.
2. To mobilize internal and external resources to meet the needs for financing these plans. In this connection, to call upon CIAP, when analyzing the health sector in national development programs, to take into account the objectives and needs indicated.
3. To call upon the Pan American Health Organization to cooperate with the governments in the preparation of specific programs relating to these objectives.

*April 1967*

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## INTRODUCTION

The political decisions directly affecting the health of the inhabitants of the Americas during the four-year period 1966-1969 are part of a sequence of historical events which have taken place during the decade 1960-1969. The Declaration of the Presidents of America in April 1967 reaffirmed and widened in scope the pronouncements and objectives of the Charter of Punta del Este. The first Special Meeting of Ministers of Health of the Americas, in April 1963, which gave a frame of reference and a functional content to the Charter, was followed by a second, held in Buenos Aires in October 1968, at which the statements of the Chiefs of State were translated into practical measures.

What has been achieved during the four-year period 1966-1969 in regard to health cannot be dissociated from these outstanding events of the decade. The profound changes which have taken place during this period in ideas, behavior and customs, and in the aspirations of both men and Governments, have been particularly marked in the health field.

The most noteworthy change—which has given rise to a whole body of doctrine—is the acceptance of the notion of **health as a component of economic and social development**. The strength of the conviction held in regard to the relationship involved here still has to be demonstrated further. However much it ought to be so, the fact is that moral arguments are not sufficient, even though they do point to the obligation on any society to prevent and cure the ills of its inhabitants. Concrete cases show that it is possible to demonstrate the vital importance of a healthy population for the growth of the economy and the improvement of well-being. It is essential to investigate such cases in increasing numbers, to the point where we can formulate a theory of the interdependence of health and development. This is another way of saying that the complex process of health protection, promotion, and restoration does not depend exclusively on medical technology; this is of course essential, but it must be supplemented by all the factors which make for individual and collective well-being.

This way of thinking has had a series of consequences of the utmost importance, which have been taking place

throughout the decade of the 1960's. We see them in the various methods of adjusting needs to available resources; in the structuring and administration of health services; in the development of manpower resources; and the investigation of problems, with emphasis on the relatively more frequent ones. In other words, the doctrine referred to has been followed by policies, principles, norms, and procedures designed to give it form and put it into practice. Thus an image has taken shape of the purposes that guide the Governments of the Americas in regard to health, and a series of concrete measures have been taken to achieve them; all this with due regard to the way of life, the customs, and the traditions which give societies their distinctive characteristics that differentiate them from others in their reaction to a given situation.

The decade under discussion, and particularly the last four years of the decade, witnessed the acceptance and crystallization of the idea of **planning** as a system of investment in accordance with priorities. Thus we find the allocation of funds reflected in the methods adopted for the formulation of health plans. The basis of allocation may be the amount of damage caused, for example, the level of the mortality figures; or the choice may be between various techniques; between services and instruments, including education, research, and capital investment; between levels of health as expressed in life expectancy at birth or other indicators; or again between sectors, e.g., public versus private. The delimitation of spheres of action is after all the essence of political decision, without which planning is devoid of purpose. Without continuity here, the process is lacking which leads from formulation to implementation, evaluation, and periodic readjustment of the objectives of individual programs and projects. Planning helps to rationalize the series of decisions leading to stages worked out in advance, since there is a constant reinfusion of the experience acquired through successive activities as each is carried out.

During the previous decade, positive achievements took place in the Hemisphere in the identification of priority problems (the diagnosis phase); in the formulation of national plans or specific programs and the im-

plementation of both; and in the training of planners. No less important was the recognition of the limiting factors, the real obstacles to the process, and the urgency of coping with them. But all in all, we must agree that all this took place at the subsectoral level, as regards both the institutions involved and the functions included. In other words, not all health services administered by Governments today form part of their plans; nor do the many functions carried out at present by the various public and private bodies. If we seek an explanation for this state of affairs, it comes down to a dispersal of efforts, which is the same as saying failure to achieve coordination of resources. Time and time again, statements by the Governing Bodies of the Organization have brought out this point and have recommended concrete measures for correcting it and so improving the output and productivity of services, in other words, increasing the number of beneficiaries and adding to their well-being.

It has been felt indispensable to enlist the participation of the universities, on the grounds that they are wanted as a factor in development. Teaching of the health sciences is basic to the achievement of the goals of each and every plan and program, which throw light on changes projected and enabling those actually made to be evaluated. Science and technology constantly introduce new interpretations of vital phenomena and of the health problems of societies, and different ways of coping with them. This alone would justify joint action by Governments and universities in an area so vital for social progress.

The topic for the Technical Discussions at the XIX Meeting of the Directing Council of the Pan American Health Organization, XXI Meeting of the Regional Committee of the World Health Organization, was "Financing of the Health Sector."<sup>1</sup> The discussion of this topic brought out the need for a study in depth of the nature of the situation in each country in the face of the relative shortage of funds, the multiplicity of budget sources not properly coordinated, and the urgent need to increase the productivity of the various services. On the basis of the findings of the study, it will be possible to determine what are the major investments needed by the health sector to extend the coverage and include population groups not enjoying permanent care services so far. External financing was considered to be a supplement—at times indispensable—to domestic resources for specific projects, but not a regular and ordinary source for capital equipment.

This brief sketch of the situation is prompted by the statement made above that health planning as carried hitherto has been subsectoral in scope. Plans have

tended to concentrate on activities designed to attain goals which vary in nature according to the method selected. They do not ordinarily include investment programs, programs for the training of professionals and auxiliaries, for the improvement of the administrative infrastructure, and for research, among others. We should bear in mind that even in the countries with a relatively high per-capita income there is an evident imbalance between what is needed and what is feasible, immediately or over the long term. Statesmen are constantly called upon to decide matters of priority and alternative procedures or solutions.

In the last few years, a series of missions organized by the Inter-American System or the United Nations have studied the trend of the economy of the Latin American countries and the Caribbean area, with special reference to external capital needs. Inclusion of health in these missions has been exceptional. Other social sectors too have been neglected, at a time when we are preaching development for well-being. The urgency of systematic programming of investment has become manifest. In other words, while investments have played a highly important role in speeding up the solution of certain outstanding problems, they have not always been part of national health plans. They have tended rather to reflect the credit policy of certain Governments or lending institutions. If investments are programmed—and there is a well-defined and well-tried technique for this—I feel sure that the inflow of external capital can be increased; and the prospects are even better if this is done through joint action by the international credit and health bodies, working together with the State.

The same procedure should be followed in regard to the other components I have mentioned, namely, the training of manpower, the expansion and modernization of the technical and administrative infrastructure, and research.

The task of consolidating over-all health planning in the Americas and making it viable must be an item of the agenda for the decade beginning in 1970. Great as is its complexity, its prospective effect on individual and collective well-being is even greater.

The action which must be taken to bring about certain improvements in the economy and social progress, as set forth in the political pronouncements of the decade, has triggered off a reaction against the status quo and emphasis on change as a way of life. This has been reflected in the reorganization of health ministries and institutions, in the revision of current legislation, in the adaptation of structures to the requirements of technology, and in the situation of the universities.

Time and time again during this period, Govern-

<sup>1</sup> *Scientific Publication PAHO 208*, 1970.

ments and international bodies, public and private, have recognized that the two essential constants for progress in the health sector are the existence in every country of services having the widest possible coverage, and the training of professionals and auxiliaries to carry out the aims of individual programs and of the plan as a whole. In other words, there has been a consensus to the effect that no health project is feasible unless there is a stable infrastructure.

Linked with the foregoing is the **rural question** and what has been called the **ruralization of the urban environment** in the Americas. This embraces the areas where the inhabitants have little or no access to even minimum health services. There are no precise estimates on this point, but there must be at least 30 million persons in the countries of Central America, South America, and the Caribbean area in that situation. To put it another way, 57 per cent of communities with under 10,000 inhabitants have virtually no medical care, either for prevention or for cure. It may well be that this calls for heavier investment and greater ingenuity than any other problem on the part of those responsible for health in the Americas. Yet it cannot be solved on traditional lines within a period acceptable from the human point of view. Nor is it conceivable that health can be left to the professionals, since these will not be forthcoming in adequate numbers, even by the end of this century, to meet the present needs and future needs as they arise constantly from the population increase. No success has been achieved with systems deriving from other cultures and grafted onto customs and ways of life which in the long run reject them. New formulas must be sought for the solution of each problem as it arises, based on the best information available.

This is another basic agenda item for the 1970's and succeeding decades. It is a matter for Governments and their various institutions in the health field, for universities and all their branches which teach subjects and functions relating to health, and for international bodies set up to promote over-all and sectoral development. If they continue to go their separate ways, the results they achieve will be only partial and limited in scope. If they coordinate among themselves and within themselves, the prospects increase enormously and the consequences reach out into the future. This is corroborated by experience.

The Technical Discussions<sup>2</sup> at the XVII Meeting of the Directing Council, held in Port-of-Spain, Trinidad

<sup>2</sup> Final Report of the Technical Discussions: "Methods for Increasing Health Service Coverage in Rural Areas." Published in the English edition of the *Boletín de la Oficina Sanitaria Panamericana—Selections from 1968*.

and Tobago, referred to this rural problem and to the ways and means of coping with it over a period. Mention was made of various approaches for different ecological situations, designed to increase coverage and at the same time to achieve nation-wide solutions. The movement has continued, but not at the speed that Governments would like to see. Two factors tend to slow down the process: shortage of funds and lack of technical manpower. External capital is indispensable if the entire population is to be provided with minimum services, at any rate in regard to the commonest diseases. It must be pointed out that as far as water supply is concerned, not less than 20 million rural inhabitants now have installations, either community facilities or house connections, and this has happened within the last ten years.

Whatever the system applied, in all the countries the proportion of the national revenue earmarked for health is insufficient for the present population. If even the simplest installations have to be constructed, as is the case in the rural areas, the magnitude of the investment increases enormously. To put into practice what we have proclaimed, namely, that health is a right and not a privilege, we must create the necessary conditions to make it come true. This is the essential humanitarian background of our entire operation. If the present policy of international credit bodies does not give or intend to give priority to investment for rural health services, other machinery will have to be established for this purpose; it is inescapable, because it involves human beings.

In order to convince the decision-making authorities of the need for increasing health budgets, both the spending and duplication or lack of coordination of national resources must be reduced to a minimum, with the help of a rational planning process.

It is not surprising that in the course of the decade it was not found possible to make use of all the knowledge resulting from the new contributions of science and technology in the countries of the Americas. Whether it is because there were no services, or properly trained technicians, or essential equipment, the plain fact is that only some of the inhabitants, and those mostly in the larger cities, enjoyed the benefit of up-to-date medical care, preventive or curative.

The Governments agreed as to the urgency of improving the **organization and administration of institutions** to attain the general and specific targets of individual programs and of national plans. Of the initiatives promoted by the Pan American Health Organization over the last ten years, few are as important as that designed to give administration the status it deserves, to modernize administrative techniques prop-

erly, and to give administrators the prestige their work merits. Administration comprises a series of disciplines which until fairly recently were either ignored or underestimated by health specialists, who failed to realize that without them the goals of their programs could not be attained. As has often been said, no less important than deciding what to do is deciding how to do it. The planning process has revealed the weaknesses on the administrative side. The science and art of administration have not been static; on the contrary, administrative techniques have taken advantage of the latest scientific developments as embodied in systems analysis, and today use is made of computers. The volume of health investments in the Americas, the complexities of the procedures used, and the number of officials devoted to the task, are reason enough for this. For the developing countries of the Region, perhaps the main problem is that of deciding what computers should really be used for, which means balancing the cost against the benefits to be derived. There is no denying the importance of information which is provided at the right time and is as accurate and complete as possible. But it does not follow that it must always be compiled, analyzed, and distributed, unless the data are indispensable to the recipients in the exercise of their duties. In other words, we must pay attention to what science has to offer, but we must adapt it to the actual capacity of institutions to solve the problems that occur most frequently.

It would appear that in the decade now beginning, and in those that will follow, greater and greater use will be made of the technique we call systems analysis, in the investigation of the phenomena underlying health and sickness, in the application of methods of reducing morbidity and mortality, and in the administration of the services involved. The Computer Center in Health, officially inaugurated in April 1970 in Buenos Aires, under the auspices of the Government of Argentina and this Organization, will help in the training of professionals and the study of problems, and over the long term it will cooperate with Governments in determining the areas in which the use of computers is justified.

This practical reform will be given impetus by modernization of the traditional health administration methods. Progress here has been substantial in a number of countries over the last ten years. It can be seen in program budgeting, in accounting and finance procedures, in the structuring of personnel and supply departments, and elsewhere. There is still much to be done to reach a level of efficiency where expenditure will be reduced to a minimum and unnecessary operations and costly, inefficient duplication avoided. This is

directly bound up with the training of professionals and technicians in administration, and the investigation of problems where the solution will help in the formulation and execution of alternatives. Even in the event of a decision to use computers, the basic data must be of first-rate quality if they are to reflect the real state of affairs.

The Organization has promoted and itself provided active collaboration in this field and will continue to do so in the light of its significance for better health.

\* \* \*

A feature of the 1960's was the marked interest in university teaching in the field of **medical education**. The growing imbalance between the palpable needs of society and the lack of manpower—especially professionals—to meet them is at the root of this situation, one that has been experienced throughout the world. The concentration of physicians and other health professionals in the large urban centers to the detriment of the rural environment is common. At the same time, there has been haphazard migration from the country to the cities, and shantytowns lacking even minimum services have sprung up on the periphery of the cities, thus aggravating the general problem in all the countries. Where the problem has been studied in some depth—a noteworthy example being the study of human resources in Colombia<sup>3</sup>—it is found that the teaching and learning process must be looked at closely, since it has shortcomings which need to be remedied. Nor can we fail to mention that the students themselves have voiced the urgency of university reform, sometimes in no half-hearted way. There are those who believe that this problem cannot be dissociated from political structures, while others feel that strictly educational components are involved which it would be well to analyze and to reform where necessary.

The present *Report* describes how the Organization over the last four years has sponsored a study of 130 medical schools in Central and South America, a real sociological investigation of the process of training physicians. A preliminary analysis indicates that there is a clear dissociation between secondary education and medical education, between medical education and university education, and between the university and the government bodies—in this instance the ministries of health—and public and private institutions concerned

<sup>3</sup> *Study on Health Manpower and Medical Education in Colombia*, Parts I, II, and III. Sponsored by the Ministry of Public Health of Colombia, the Colombian Association of Medical Schools, and the Pan American Health Organization, 1967.

with the prevention and cure of disease. What is perhaps most serious is that the teaching process is not in keeping with the actual situation the students will have to live with when they have graduated. They are taught in more or less great detail the make-up of a human being, from the cells to the various organs and systems, and they are required to build these up into the synthesis represented by the individual as a biological unit and a social entity. Curricula and technical and administrative structures are closely interdependent, and hence rigid. The transmission of knowledge is thus done piecemeal. On the same principle, there is a tendency to compartmentalize communities and not to relate problems as they exist and evolve to the human and material resources available to solve them. The various types of health professionals are trained separately, and they therefore tend to go their separate ways and the greater the specialization, the worse the isolation.

The idea has emerged of creating faculties of health sciences, where the teaching would be multidisciplinary and cover the various professions simultaneously, subject of course to such variations as derive from the specific responsibilities of each in the social environment and the knowledge needed to fulfill those responsibilities. A scheme on these lines is being developed at the University of Brasília. Other universities in the Americas have likewise expressed an interest in introducing such schemes. Here, I think, is another basic item for the agenda of the decade now beginning and for later decades. Needless to say, the training in medical studies and kindred disciplines must be intensified; it seems likely that other methods will be devised for making the teaching more effective than it is today. In any event, between teachers and students, for whom the goal is after all the same, there must be an atmosphere of mutual understanding, a constructive dialogue accompanied by a steady improvement of the methods of achieving real knowledge. This is the principle underlying the "laboratories of human relations and medical teaching" sponsored by the Organization in the last eight years and held in 15 countries of the Region with the participation of about 2,000 teachers.

Over the last decade the need has become manifest to apply the educational sciences to the teaching of the health sciences. It implies a knowledge of a series of disciplines which must be acquired by those interested in specializing exclusively in this field. They must of course be teachers with a considerable amount of experience. Their presence is essential today to catalyze and shape the new ideas on the university in relation to development as referred to above. The World

Health Organization and the Pan American Health Organization have an important contribution to make here.

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Whatever appears most ill-timed in our societies is invariably explained by its background. The word **ecology** has come into fashion in the last few years, and rightly so. It emphasizes the subtle process of adaptation of living beings to the surrounding **environment** of which they are part. The environment changes, either through the designs of nature or the intervention of men, as a consequence of economic development. It is possible to differentiate in the environment components of a chemical, physical, biological, psychological, and social character. All of these, alone or in combination, give rise to health problems—either by direct action (as in the case of microorganisms); because they reach concentrations which have harmful effects (as in the case of water, air and soil pollutants); because they upset the balance of species (as for example insecticides); or because they are factors causing psychological disturbance and interfering with social harmony.

The Director-General of WHO, speaking at the 45th Session of the Executive Board, said that "The phrase 'environmental factors affecting man' had come to mean all things to all men, since it concerned both the qualitative and the quantitative aspects of man's social and physical environment and ranged from a relatively narrow concern with pollutants to all aspects of ecology and the biosphere. Neither of those opposing lines of approach were fitting from the point of view of WHO's operations: the first because pollutants, although admittedly of great importance, represented only one of the major external factors affecting man's health and the second because it was too comprehensive."<sup>4</sup>

Discussions are going on at the present time, with unusual vehemence in the technologically advanced countries, concerning the urgency of environmental control, especially in regard to factors whose actual and potential effect is calculated to interfere seriously with the lives of more and more people. A strong public awareness has developed on this question, and it has aroused the concern of Governments and universities. The solution of the manifest problems and the avoidance or reduction of their impact alike constitute a vast field of research, since the number of variables is enormous.

In virtually all the developing societies in the

<sup>4</sup> *Official Records of the World Health Organization* 182 (Part II), p. 40 1970.



Americas, although in differing degrees, situations are emerging which will inevitably lead to that found at present in the developed countries. Hence we must forestall the state of affairs described above.

Meanwhile the deficiency in basic sanitation—installation of water supply services, solid waste disposal, food protection, and occupational medicine—persists. So long as there are families and communities without these basic elements of well-being, this and nothing else should be the priority of Governments, as reflected in the level of investment of domestic resources and external capital. The progress made in the Americas in the last decade is undoubtedly considerable as far as water supply is concerned, but a great deal has still to be done, especially in the rural areas, and its importance is vital.

As I have said, Governments cannot afford to be indifferent to the visible consequences of industrialization, urbanization, and internal migration. Many of the large cities in Latin America and the Caribbean area have concentrations of air pollutants injurious to health and living conditions; and the same is occurring in regard to other components of the environment. It would appear to be vital to devise a policy to be reflected in urgent direct action, identification of new problems, and education. This is yet another item for the health agenda of the 1970's and subsequent decades, and it can help to determine the functions of WHO and PAHO as laid down by their Governing Bodies.

As has been aptly said, there is a need not only for new methods and programs to prevent or control pollution, but for ideas and values designed to make the future world safe to live in, a world where life will be measured rather in terms of improved human relations than of increased gross national product. The restoration of the natural environment of the earth and the discovery of how to live peacefully on it will become the national goal.

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Because health is a right, the population increasing, and social demand growing, all matters relating to **timely medical care of the sick** continue to be vital issues. In accordance with the traditional approach, we must try to prevent disease; and if this cannot be done, we must try to reduce its scope and to prolong life. This has led to the creation of a complex process, involving huge investments in all the countries, in the form of medical services. Since over 80 per cent of the national health budgets are earmarked for curative medicine, and since also we still cannot meet the needs

of all those requiring such medicine, the urgent necessity has been felt for other systems calculated to produce higher output from the installed capacity. It is well to bear in mind that no society has so far attained the ideal of providing the best possible medical care to all the inhabitants all the time.

We find in the Americas the paradoxical situation where hospitals of high quality, with the latest equipment, have empty beds while at the same time there are sick persons without access to these or other institutions. This basic problem of an imbalance between needs and resources is aggravated by a variety of factors, including not only a shortage of beds, but their deficient geographic distribution and the poor state of repair of the establishments. Some are antiquated, over 50 years old, yet here is where physicians are being trained.

Other deficiencies are the poor level of utilization and low output of the establishments available. The former is seen in the use of extremely costly equipment for only a few hours a day; the latter in the fact that for various reasons, many professionals, technicians, and auxiliaries do not furnish, either in quality or in quantity, the medical care which in principle could be expected of them. In addition to this, there are factors which are not always easy to cope with, such as economics, average income, relationship between private practice and State medical care.

Apart from the fact that coverage is limited and the facilities concentrated largely in the main urban centers, there is a shortage of both professionals and health auxiliaries. As is well known, the deficit is much greater in the case of nurses than of doctors, but there is also a shortage of maintenance engineers, technicians, and other specialists.

Finally, there is the rising cost of the entire operation. Wages are increasing, equipment is more complex and more indispensable, construction costs are rising at a parallel rate, so that all in all the investment mounts up, as I have said, to represent over 80 per cent of the health budgets of the individual countries. It is no wonder that Governments are anxious to get the best possible output from the installed capacity and to keep construction of new establishments down to the absolutely essential minimum. This is precisely what operational research tries to do, and hospital care provides it with a wide field of application which needs to be developed.

Nevertheless, there are other possibilities to be achieved by better organization of the whole process. Under the heading of national health systems, a functional structure would be built up in an attempt to concentrate all the available resources on the existing problems, so as to reach fixed targets which would be

evaluated periodically. According to the legislation in force, the system could take the form of a single service or represent a combination of various institutions. In any case it calls for the formulation and implementation of a policy, the delivery of services, financing, and development of manpower resources. I need hardly repeat that the system, whatever its structure, must operate in terms of the health plan.

This is the background underlying the activities of WHO and PAHO in regard to medical care. These activities are concentrated in areas where they have a catalyzing effect, e.g., direct advisory services, education, and research. But the problem as a whole is another important item for the agenda of Governments and international organizations over the present and succeeding decades. Not all the experience of the past is useful today; it must be brought up to date in the light of experiments which stray from the beaten track in search of ways and means of serving patients promptly and efficiently.

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Notable advances have been made in the control of **communicable diseases**, acute and chronic; but these still warrant priority in the Americas. Between 1956 and 1967 the mortality rate in children under 5 years of age from infectious diseases dropped by some 52 per cent, from diseases of the respiratory system by 35 per cent, from those of the digestive apparatus (largely gastroenteritis) by 48 per cent, and from ill-defined causes by 42 per cent. This progress, which we have reason to believe has continued, is the consequence of the application of preventive measures, in particular immunization, installation of water supply services and basic sanitation, and health education. But in spite of the knowledge we have today, there is still too high a level of mortality which could be avoided.

"A careful study of the reasons for this situation has shown that one of the main causes lies in shortcomings in the administration of vaccination programs, principally in the form of ill-defined objectives, activities that are not conducted at useful levels, inadequate organization, and lack of continuity of the programs. Another factor is the use of vaccines which are of poor quality as a result of defective production methods or loss of potency due to poor preservation."<sup>5</sup>

This opinion was given in the Final Report of the Seminar on Administrative Methods for Vaccination Programs held in Montevideo, Uruguay, in November 1968. A complete system was sketched out, to be

supplemented by evaluation of targets and epidemiological surveillance, the responsibility in this last instance being all the greater where the incidence of the particular disease is reduced.

There should be no smallpox or poliomyelitis by the end of the 1970's. The incidence of the communicable diseases frequent in early childhood should decline even more rapidly. This will, of course, depend largely on the extent to which malnutrition is reduced. If the targets of the Charter of Punta del Este are to be attained, the present figures for deaths from tuberculosis should be cut by one half. In regard to malaria, an endeavor must be made to bring 99 per cent of the area exposed to risk today into the maintenance phase; this will mean the introduction of techniques to solve the problem of resistance of the anopheles mosquito to chlorinated insecticides and the regularity of financing and political decisions.

It is likewise to be hoped that the countries and territories which today are free of *Aedes aegypti* will take due steps to avoid all reinfestation; that where this has taken place, they will succeed in once again eliminating the vector; and that where infestation exists today, a systematic program will be undertaken to eradicate it.

The entire group of communicable diseases for which control or eradication methods exist should, and I think will, lose the unenviable primacy they have today in the Hemisphere.

Here is another item of the agenda for the 1970's and succeeding decades.

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"What happens to children in their first five years marks them for the rest of their lives . . . people are prisoners of their nutritional past."<sup>6</sup>

This single statement should be enough to reveal the seriousness of the **malnutrition** problem in the Americas; but the situation is even worse. A mere glance at the mortality rate in infants and children under 5 years showing malnutrition as the underlying cause, bears tragic witness to what is occurring in virtually all the countries to a greater or lesser degree. Underregistration, as we well know, at times applies to a considerable proportion of both deaths and malnutrition cases. This can be seen clearly in the Inter-American Investigation of Mortality in Childhood, sponsored by the Organization. A preliminary analysis of 6,519 deaths<sup>7</sup> cover-

<sup>5</sup> "René Dubos," by Anthony Bailey. *Horizon*, Vol. XII (3), p. 58 (Summer, 1970).

<sup>6</sup> Document SMAPV/18, 16 November 1968, p. 1.

ing 13 areas in eight countries provides sound arguments to corroborate this.

If it is true that health is a right, every human being should have a biologically balanced diet. This is not a mere national goal but one which transcends frontiers and embraces the whole of mankind. We cannot remain unmoved in the face of death by inanition or accept arguments which merely help to perpetuate a state of affairs repugnant to our conscience. We cannot go on being divided into two groups, those who eat properly—the privileged ones—and those who hardly eat enough to subsist. We must not wait for research to confirm the fact that malnutrition is a condition contributing to mental retardation, or at least inhibits the learning process in children. We must act, making use of the resources available in each country, and supplementing them with imported resources. This was appreciated and accepted by the Governments when they decided to formulate a food and nutrition policy primarily to meet the biological needs of the population and as far as possible those of the economy as well. The ministries of health and agriculture have taken a decision to this effect,<sup>7</sup> and a Group of Experts set up by FAO and our Organization<sup>8</sup> has defined bases and practices to this end. We are aware that this is an extremely complex task. The interests, ingrained habits, traditions, and customs to be taken into consideration are many. The problem involves Governments as a whole; hence the absolute necessity for coordination to achieve goals which, we repeat, must be principally concerned with feeding the population. The statistics are incomplete; the technology is anything but modern; practices are in many instances antiquated; land is unproductive; and there is an enormous shortage of professionals and auxiliaries. Although it may seem paradoxical, at the present time there is a great waste of food. I should like to stress here, since it is a matter of direct interest to us, the loss of proteins through the zoonoses and foot-and-mouth disease, which also gravely affects the economy. The cost-benefit relationship between immunization and its effects is measurable in monetary indicators; but what-

<sup>7</sup> See "Progress Report on the Inter-American Investigation of Mortality in Childhood," submitted to the Ninth Meeting of the Advisory Committee on Medical Research, Document PAHO/ACMR 9/18, 15 June 1970, p. 2.

<sup>8</sup> Resolution IX, "Nutrition Program in the Americas," IX Meeting of the Directing Council of PAHO, Final Report, *Official Document PAHO 99*, p. 59. Resolution IV, "National Food and Nutrition Policies," III Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control. Final Report, Document RICAZ3/26, p. 13.

<sup>9</sup> *Elements of a Food and Nutrition Policy in Latin America. Scientific Publication PAHO 194* (English edition in preparation).

ever the magnitude of these indicators, they do not properly reflect what the loss of life signifies. Rodents, insects, and other species likewise destroy vast quantities of foodstuffs.

The formulation and steady implementation of the food and nutrition policy is an urgent item on the agenda for the decade now beginning and those which will follow. Governments and international organizations, public and private, must join forces to respond to this ineluctable challenge to our consciences, to reduce malnutrition in children, pregnant women, and adults, and to help to ensure that each of these tasks is fulfilled. As I have said, nothing would appear to be impossible in the Americas today, however great the undertaking.

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The debate on the relationship between **population and development** has been one of the outstanding events of the decade. It has gone on the world over, and it has been crystallized in declarations by Governments and in the resolutions of international bodies. The Churches have interpreted it in terms of the basic tenets of their particular faith. For many it is the most important of all questions for the future of mankind. Clearly, the very discussion of "family planning" is affecting customs and shaking deep-rooted convictions—and even more so, the application of any system for the spacing of children.

In the Americas, the Governments have established their policies and the terms under which advisory services can be obtained on request from WHO and PAHO. They have told us that we must concentrate on achieving health objectives and not demographic objectives. Our task is not the size and structure of the population, but the reduction of the impact of disease and death, and assistance to ensure that every household is properly informed and can make its own decision as to the number of children it wants. To this end family planning activities must be an integral part of health services, especially those aimed at maternal and child protection.

The experience gained up to now in the countries carrying out this type of activities shows that there are still great gaps in the knowledge of the physiology of human reproduction, and that the contraceptive methods in use are deficient and in some cases harmful. Hence the importance of intensifying basic and applied research. The teaching of these matters is limited in the universities, which makes it difficult, where there is a definite population policy, to put it into practice.

There is likewise a lack of knowledge of the relationship between the various sectors of the economy and

the size and structure of communities. Programming of the manpower resources required by a given country for its economic and social development is complicated by the fact that there are no bases for forecasting how many people are in need of training and how they should be trained in each undertaking, whether government or private. There is not sufficient information available as yet to justify an objective assessment of what the number of children means for a family in terms of income and the prospects of ensuring them a normal growth and giving them the opportunity for becoming what they want to become.

Here is another field of action for the 1970's and later decades. International cooperation, given in accordance with the views of Governments which consider it necessary, can play a very important role in education, in research, and in providing advisory services for the formulation and execution of programs.

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"The development of science and the use of science to aid man depends more on an understanding society than on an affluent society. The most fundamental problem confronting the development of science—including biomedical science—in Latin America relates not to any specific deficiency but to a complex of social attitudes that result in a nonscientific or an antiscientific attitude on the part of the population generally and often on the part of political leaders. Leaders of science in Latin America bear a heavy responsibility to change these attitudes."<sup>10</sup>

While this argument can still be substantiated, definite progress has been made in the Latin American countries and the Caribbean area in the last decade. The United States of America continues to be the world center for **scientific research** and, in our own field, particularly for research in molecular biology.

During the past decade, the Pan American Health Organization endeavored to coordinate and systematize studies relating to priority health problems. It set up a Department for the purpose, and it had the valuable experience of the Advisory Committee on Medical Research. The work done can be seen from the Advisory Committee's reports,<sup>11</sup> the publications of PAHO, and the analysis of projects.

An over-all view indicates that valuable contributions have been made to the knowledge and understand-

ing of certain phenomena which occur in human beings and societies, in both normal and pathological states. Among the more important are those in nutrition in its various aspects; the dynamics of child and adult mortality and its many causes; certain zoonoses and their prevention; malaria, in regard both to vectors and to plasmodia; and education with a view to the measurement of manpower resources.

This applies both to problems which require research for their solution and also to budgetary sources. A considerable proportion of our funds do not derive from the regular budget, that is to say, from government contributions, as laid down in our Constitution; they represent voluntary grants made by public or private institutions but earmarked for specific purposes. Hence it has been stated that "Latin American countries might well set as a goal the investment in research of .5 to 1 per cent of the gross national product, depending on the relative wealth of the nation. Biomedical research is essential to the intellectual and cultural advancement of nations and to the attainment of both humanitarian and economic goals."<sup>12</sup>

This is a goal we should like to see attained in the course of the decade, at any rate insofar as it relates to the health sciences.

It would be useful to evaluate what has been done; to identify other areas which have emerged as a consequence of the progress made; to determine what machinery should be put into motion to institutionalize research in the individual countries and throughout the Hemisphere; and to link all this effort closely with the universities with a view to the training of professionals and the further training of graduates; in short, to formulate and introduce a new plan of study in the biomedical sciences as a contribution to the knowledge of the normal processes of human life, and to the treatment and prevention of pathological conditions. Here is yet another item for our agenda which, by its nature and purposes, extends its present horizons to the end of the century.

The spiraling growth of the technology and industrialization of health equipment, materials, and drugs makes the prospect for the 1970's somewhat disquieting. The difficulty will be not so much to formulate possible alternatives as to select those best calculated to attain the targets set. At the same time, the 1970's will be a decade of opportunity if we are able to make proper use of the lessons of the last decade, to benefit from past mistakes, and to put our faith in the innate ability, the good intentions, and the heartfelt and legitimate aspirations of the people. Hence the responsi-

<sup>10</sup> *Science Policy in Latin America. Scientific Publication PAHO 119*, p. 5, 1966.

<sup>11</sup> *Research in Progress, 1970. Publication RD/49/5(9)-R*, June 1970.

<sup>12</sup> *Science Policy in Latin America. Op. cit.*, p. 5.

bilities of those with the decision-making power to reduce the impact of mortality and morbidity are great and will be still greater.

In the preceding pages I have identified some of the basic health problems whose solution should form part of an agenda for the coming decade. They are related both to the situation in the health sector in respect of the dynamics of disease and to the resources employed—human, financial, or material. The account does not claim to be complete, but it does include what is revealed by the progress made over the last few years, what is identified in social demand, and what technology tells us it is vital to apply. The Governments decide, and the international bodies that advise them, including PAHO and WHO, must amend or mold their policy accordingly. The more clearly defined the plan, and its programs and projects, the more coordinated and efficient the work of these bodies will be. If we

seek complementarity, the pivot must be the human beings; the means, national investments of every kind; and international coordination and external capital must be complementary.

“Man and the earth are two complementary components of an indivisible system. Each shapes the other in a wonderfully creative symbiotic and cybernetic complex. The theology of the earth has a scientific basis in the simple fact that man emerged from the earth and then acquired the ability to modify it and shape it, thus determining the evolution of his own future social life through a continuous act of creation.”<sup>18</sup>

This is the continuing theme of our agenda, as so profoundly expressed by René Dubos: the protection of health and the prolongation of life.

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<sup>18</sup> Dubos, René. *A Theology of the Earth* (Lecture delivered on 2 October 1969 at the Smithsonian Institution, Washington, D. C.). U. S. Government Printing Office, 1969, p. 16.

# I. HIGHLIGHTS OF THE PERIOD 1966-1969

## HISTORIC EVENTS

Cooperation in the field of public health in the Hemisphere during the quadrennium 1966-1969 was marked by the signature of three important documents: the Protocol of Buenos Aires of 1967, which contains the amendments to the Charter of the Organization of American States, signed in Bogotá in 1948; the Declaration of the Presidents of America, signed at Punta del Este on 14 April 1967; and the Final Report of the Special Meeting of Ministers of Health of the Americas, approved in Buenos Aires on 18 October 1968.

### NEW CHARTER OF THE OAS

The Act of Rio de Janeiro, adopted in November 1965, laid down general guidelines to be followed in the preparation of amendments to the Charter of the OAS and recognized the imperative need to make the Inter-American System more dynamic. The Economic and Social Act of Rio de Janeiro, also approved at the Second Special Inter-American Conference, reaffirmed the principles of the Declaration and the Charter of Punta del Este of 1961 as a fundamental policy of the OAS and of the Governments of the Member States. The Organization took part in that meeting, in the ensuing meetings in Panama and Washington, D. C., in 1966, and in the Third Special Inter-American Conference of Buenos Aires in 1967, which approved the Protocol of Amendments to the Charter of Bogotá. The original purposes of the Charter were institutional, legal, and political and the amendments were an attempt to bring the Inter-American System closer to the problems of the present, among which economic and social development, economic integration, and political security are uppermost in importance.

The health objectives of the new Charter of the OAS are essentially the same as those already recognized in the Charter of Bogotá, although they are proclaimed more broadly and couched in more comprehensive terms. The provisions on specialized inter-American organizations, which include the Pan American Health Organization as the agency responsible for advising the

OAS in matters of public health and medical care, were also left virtually unchanged.

The relations between the OAS and our Organization have undergone no change: they continue to be governed by the Agreement signed in 1950 and by a spirit of full cooperation which has been evident whenever the two institutions came together to attend to matters of common interest.

### DECLARATION OF THE PRESIDENTS OF AMERICA

The Meeting of American Chiefs of State in 1967 was preceded by careful planning, and the Organization participated in its preliminary stages to ensure that the agenda would include those problems of health which, by reason of their nature and scope, required solutions at the highest level, as recommended by the XVII Pan American Sanitary Conference in October 1966. The results achieved were such as to lead the Directing Council in 1967 to "express its satisfaction with the full recognition given the health sector in the Declaration of the Presidents of America and in the Action Program approved by them at Punta del Este on 14 April 1967, and to incorporate into the policy of the Organization the proposals in that document that are directly or indirectly related to health."

In the Declaration of the Presidents we should like to emphasize a general principle, a major objective, and a method of action. The principle is the recognition of the fundamental role of health in the economic and social development of Latin America. The objective is found in the reaffirmation of the goals set forth in 1961 in the Charter of Punta del Este. And the method of action is the cooperation of the Organization with the Governments in the preparation of programs relating to the specific problems pointed out by the Chiefs of State. The latter point is deserving of special attention because it sets forth in clear and unequivocal terms the responsibility of our Organization to cooperate with and assist the Governments of the Americas in matters of health, thereby designating PAHO as the agency charged



Special Meeting of Ministers of Health of the Americas, Buenos Aires, Argentina, 14-18 October 1968.

with helping the Governments to prepare specific programs for attaining the health objectives laid down by the Presidents of America.

Health, as a social function and service, satisfies vital needs of society. It influences production and productivity and the improvement of the physical environment. This socioeconomic value of health in no way detracts from its moral significance as a factor of well-being for individuals and of harmonious relations and development for the community. This is the lesson to be learned from the Declaration of the Presidents, which has been made an integral part of the policy of the Organization and has, in effect, governed our activities during the four-year period under review.

The specific health problems mentioned in the Declaration will be discussed in the relevant portions of this *Report*.

#### FINAL REPORT OF THE SPECIAL MEETING OF MINISTERS OF HEALTH

The Special Meeting of Ministers of Health of the Americas, held in Buenos Aires in October 1968, was the second gathering of the highest national health authorities held in the Hemisphere. The Ministers of Health of the Signatory Governments of the Charter of Punta del Este had met in April 1963 and had declared, after a careful analysis, that the Ten-Year

Public Health Program of the Alliance for Progress was feasible provided that its objectives were integrated with the national goals in the field of health. The principles and recommendations set forth by the Ministers in 1963 were incorporated into our program by virtue of Resolution XXXII of the XIV Meeting of the Directing Council and into our general policy in 1968, by Resolution XXVI, in which the Council resolved to "incorporate into the general policy of the Pan American Health Organization all the recommendations emanating from the Special Meeting of Ministers of Health of the Americas."

As a result of the trend which has been gaining strength in the last 20 years, and particularly in the last decade, health has come to be considered an integral part of development. Public health has acquired a new dimension transcending the narrow limits which confined its action to dealing with major epidemics; it has become a basic instrument of economic growth and social development and an integral part, from the preinvestment phase, of every undertaking required by the people in the interest of an equitable distribution of national income. Such are the conclusions at which we arrive in examining the Ten-Year Public Health Program of 1961, the Report of the Ministers of Health in 1963, the Declaration and Action Program of the Presidents in 1967, and the recommendations of the Ministers of Health in

1968. A continuing line of thought is observable through all these documents. And a continuous line of action is also followed because they are all based on the

same fundamental principles and pursue the same ends: health as the immediate goal, and development and social well-being as the longer-range objective.

## PREVAILING CURRENT PROBLEMS

Latin America has certain general problems which remained essentially unchanged during 1966-1969. This explains the parallel line followed in the four documents mentioned above.

These are the same problems which are today of vital concern to nations throughout the world. While there are certain features which are common to all the Americas and others peculiar to each political society in the Hemisphere, the problems are essentially the same. In spite of the profound differences between industrialized countries and nations in process of industrialization, the same concerns, although in different degrees, have been imposed on both groups of countries by the demands of modern times.

Some of these matters are not confined to the field of health and their solution must be sought beyond its limits, although the health sector is an essential factor that must be taken into consideration both in defining the problems and in determining how to resolve them.

Prior to discussing certain prevailing current problems within the context of the four-year period under review, we shall examine a number of questions directly related to our activities in the field of health.

### SALIENT HEALTH MATTERS

During the four-year period, certain communicable diseases for which effective control methods are now available occurred in epidemic form in countries of Latin America and the Caribbean area, in contrast to the situation in the more developed countries, especially the United States of America, where only sporadic cases occurred. This indicates a failure to transfer to our countries the benefits of advances made available by modern science and technology.

It is true that some of the great pestilential diseases appear to be on the road to extinction. No cases of cholera have been reported in the Americas during the present century except two laboratory-acquired infections in the United States of America in 1965. Urban yellow fever is also effectively under control, the most recent cases having been reported in Trinidad in 1954. In contrast, jungle yellow fever, firmly based in the Amazon, Orinoco, and Magdalena River Basins, has appeared further south since the epizootic outbreak of

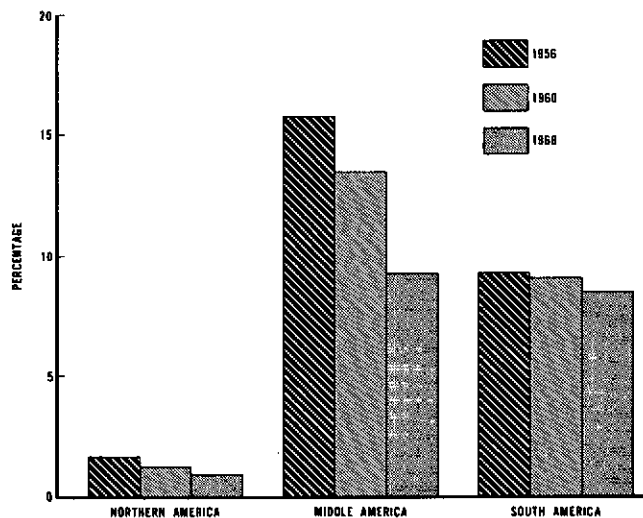
1964 and 1965 and extended as far as the 30th parallel south in 1966.

In the case of plague, the high incidence in Ecuador and Peru in 1965 and 1966 was significantly reduced in 1967 and 1968, but dormant foci continue to pose a threat to the populations concerned. Louse-borne typhus is circumscribed at the present time to the mountainous parts of Mexico and the Andean highlands in Bolivia and Peru.

In 1966 the World Health Organization launched a world-wide smallpox eradication campaign which has led to the gradual elimination of the disease from the Hemisphere except in Brazil, where a massive immunization effort justifies a confident outlook.

Poliomyelitis, for which a vaccine of proven effectiveness is available, emerged in epidemic form during the last four years in Argentina, Brazil, Colombia, Ecuador, Guatemala, Mexico, Nicaragua, Peru, and Venezuela.

Measles, which can also be controlled through an effective vaccine, has shown high mortality and morbidity rates in many of our countries, particularly among



NOTE: Excludes Bolivia, Brazil, Haiti and all territories.  
Excludes diarrheal diseases

Fig. 1. Percentage of deaths from infectious and parasitic diseases in the three regions of the Americas, 1956, 1960, and 1968.



the lowest income sectors in which malnutrition is a frequent problem.

In 1965, 1966, and 1968 there were epidemic outbreaks of dengue fever, a disease transmitted by *Aedes aegypti*, throughout the Caribbean area, particularly in Puerto Rico, Jamaica, Venezuela, and Curaçao. Trinidad and Tobago had eradicated the vector and was therefore free of disease. During the same period there were outbreaks of Venezuelan equine encephalitis in the northern part of South America, particularly Colombia and Venezuela, and in certain countries of Central America, indicating a need to conduct more intensive research into possible means of controlling this disease in the future.

Tuberculosis mortality has declined, but the disease continues to afflict the population in many parts of the Hemisphere. Leprosy, parasitic diseases, and Chagas' disease, the incidence of which is not precisely known, are taking a heavy toll in our countries.

Venereal diseases have shown a marked increase in the Americas, particularly among the young, which makes them a serious social problem.

Nutritional deficiencies, which are becoming increasingly widespread because of population growth and the loss of protein brought about by the zoonotic diseases, especially foot-and-mouth disease, are an added complication in the health conditions of the Americas.

Also, a better knowledge of the prevalence of certain zoonoses, such as rabies, brucellosis, and hydatidosis, has confirmed the serious effect these have on man's health.

These conditions are reflected in something which in our opinion is even more serious: the phenomenon we have referred to as "excess deaths," that is to say, deaths which could have been avoided by timely application of safe and effective means that science affords for their prevention or control. This is particularly significant in the case of children under 5 years of age, whose death, apart from weighing heavily on the conscience, represents an incalculable economic and social loss.

The Pan American Health Organization/World Health Organization, in cooperation with the Governments, has given its attention to all these problems, but the need remains to intensify in all the countries the use of effective vaccines and other available preventive methods so as to prevent the appearance of further outbreaks and the consequent suffering of our population.

## ECONOMIC INTEGRATION

### Latin American Common Market

The American Presidents assumed a number of solemn commitments regarding this matter, the impor-

tance of which is increasing with the passage of time. The Latin American Free Trade Association (LAFTA) and the Central American Common Market (CACM) are to evolve and converge by gradual stages, beginning in 1970, toward a Latin American Common Market, which should be substantially in operation within a period of no more than 15 years. The idea of a common market had been put forth in the Economic and Social Act of Rio de Janeiro and included in the Protocol of Buenos Aires, so that today it is one of the fundamental objectives of the Inter-American System.

"This great task," said the Presidents, "will reinforce historic bonds, will promote industrial development and the strengthening of Latin American industrial enterprises, as well as more efficient production and new opportunities for employment, and will permit the region to play its deservedly significant role in world affairs. The ties of friendship among the peoples of the Continent will thus be strengthened."

Economic integration demands a vigorous and sustained effort to facilitate the movement of persons and goods throughout the Hemisphere; to increase foreign trade, a matter of vital importance to the economy and prosperity of the Latin American countries; to modernize rural life so as to offer the majority of the people the social well-being they demand and are entitled to; and to foster industrialization as an essential element of economic development. But the basic role of health must be taken into account in all these efforts.

The Ministers of Health noted certain specific problems inherent in the establishment of a common market: problems arising from trade in food and drugs; from population movements and the increasing demands for health services; from the role and use of medical and paramedical personnel; and from the lack of a harmonious and uniform body of inter-American health legislation. All these problems will be discussed in the relevant sections of this *Report*.

## GEOGRAPHY AND HEALTH

The world has witnessed a vertiginous growth of air transportation, to a point where the farthest regions of the Hemisphere are today in continuous communication one with the other and with the rest of the world, primarily through the movement of persons and mail, but also through freight traffic, which includes an increasingly large variety of goods. At the same time, highly important changes in overland transportation have brought or are bringing into contact regions of the Hemisphere between which there was formerly no continuing interchange. These substantial communication links are posing serious health problems because of the proximity of the jungle, the emergence of new or

enlarged communities, and the movement of people and goods. During the period 1966-1969, the Organization followed with interest the work on the construction of the Bolivarian Highway and its junction with the Trans-Chaco Highway, and the entire network of roads being built in the Continent with the assistance of foreign capital. This new highway structure will radically change human and ecological relationships in the regions traversed and will give rise to health problems to which we must be consistently alert.

#### River Basins

The river basins in which a number of countries or regions are joining efforts to further the economic development of an area served by a major waterway are of key importance to public health.

It was in recognition of this that the Organization, in the early part of the period, sponsored the First Regional Symposium on River Basin Development, to which it invited representatives of the basic development sectors and of the principal economic and financial institutions of the Region. Through this and subsequent seminars, agreement was reached on the concepts and techniques for the analysis and, as appropriate, development of the great potential wealth of the river basins. As an outcome of these activities the Organization received a large number of requests for information and technical assistance in this field.

The Organization participated in various projects during 1966-1969, notably: the project for the development of the River Plate Basin, encompassing five countries; the study of the Santa Lucía River Basin in Uruguay; the study of the Guayas River Basin in Ecuador; the project for the development of the Bogotá River Basin in Colombia; the project for the development of the Huallaga, Chiriyacu, and Nieva River Basins in Peru; and the project to control pollution of the Lerma River in Mexico.

#### *Project for the Development of the River Plate Basin*

In 1968 an agreement was signed by Argentina, Bolivia, Brazil, Paraguay, and Uruguay, under the sponsorship of the Inter-American Development Bank (IDB), the OAS, and the Economic Commission for Latin America (ECLA), for integrated development of the River Plate Basin.

The signatory countries established an international commission to examine the problems and projects relating to this Basin, and each has appointed a national commission composed of representatives of agencies of the national Government. The Ministers of Health of the River Plate countries have met from time to time

during the past few years to consider health problems of mutual interest. During their sixth meeting, held in August 1968, in the arrangements for which the Zone VI Office played a very active part, they examined the health aspects of the integrated program for the development of the River Plate region. The Organization receives guidance from the Ministers of Health, conducts activities recommended by them, and proposes matters which the Ministers may individually or collectively submit to the national commissions for consideration or for presentation to the Coordinating Commission. By following this procedure, the Organization conducts its activities through the channels established by the countries themselves.

A meeting of laboratory directors was held in São Paulo, Brazil, to agree on standard procedures to assure that the data collected by the five countries will be similar and comparable, and studies have begun on the quality of water in the Basin. Basic data on water quality are being gathered through a network of laboratories organized at the beginning of the four-year period. Uniform analytical methods, established by mutual agreement, are used to assess the quality of the water and determine its acceptability in terms of criteria laid down by the countries.

#### *Study of the Santa Lucía River Basin*

This study was planned under an agreement signed in May 1968 between the Government of Uruguay, the Organization of American States, and our Organization. Its principal aim is to foster optimum use of water resources in the Basin, as determined in accordance with relevant criteria and guidelines supplied by the country. At the same time, a detailed work program was prepared, professional personnel were recruited, an administrative organization was developed, and project operations were initiated within a few months. The study is expected to be completed around the end of 1970. The Organization's responsibilities include engineering studies on future water needs for municipal and industrial use, treatment of waste materials, water pollution, and quality requirements for each of the principal uses to which water is put. The health studies assigned to the Organization refer primarily to the public health implications and cost-benefit ratios of proposed changes in the water resources of the Basin. These changes may have secondary effects such as colonization and resettlement of population groups, which can create health problems.

The Santa Lucía agreement is the first of such tripartite arrangements in which the Organization has taken part. It sets an important precedent for agreements on cooperation and development of methodology, one that



Signing of an agreement for a study of hydraulic resources in the Santa Lucía River Basin in Uruguay. Those signing, from left to right: Mrs. Pura Sasco de Sundblad, Acting Representative of Uruguay to the Council of the OAS; Mr. Galo Plaza, Secretary General of the OAS; and the Director of the Pan American Sanitary Bureau.

can be highly useful in similar projects in the Region. The first stage of the project has been completed on or ahead of schedule.

#### *Development of the Guayas River Basin*

The Organization is cooperating in the health and water quality aspects of this study at the request of the Ecuadorean health authorities and the Director of the Executive Commission for Study of the Development of the Guayas River Basin. It has provided four short-term consultants, in addition to making available the services of the engineering consultant assigned to the River Plate project. A plan of operations for subsequent activity has been developed.

#### *Huallaga, Chiriyacu, and Nieva River Basins*

The FAO, as executing agency for the projects of the United Nations Development Program (UNDP) relating to agricultural development in these three river basins, has requested our cooperation. The Organization's technical assistance will deal primarily with the sanitation and health services necessary for the colonization and establishment of rural communities and with physical planning and rural housing.

#### *Pollution Problems in the Lerma River*

The Director of the water supply program of the Mexican Ministry of Hydraulic Resources has requested

our assistance in the planning and implementation of a program to control water pollution in this Basin. Preliminary advisory services have been rendered and plans prepared for initial activities.

#### *Development of the Amazon Basin*

In July 1968 a meeting of representatives of the Amazon countries, called by the Government of Brazil, met in Manaus and examined a program for the development of the Amazon Basin. This program includes the health sector and affords us an opportunity to cooperate in the health aspects as such and in regard to their integration into the plans for economic and social development of the Basin.

#### *Coordination of Border Activities*

Coordination of border activities poses a number of special problems and is of great importance from the standpoint of health. A frontier region, where two countries come together geographically, is also often a region in which two cultures and civilizations blend into distinct social patterns in which elements of the two neighboring countries are present side by side.

The sheer length of the border between Mexico and the United States of America—more than 1,800 miles—and the intensive flow of people and goods across the boundary, led to the establishment of the United States-Mexico Border Public Health Association, which

organizes annual meetings of the health authorities and officials of both countries.

The XXIV, XXV, XXVI, and XXVII Meetings of the Association were held in Saltillo, Coahuila (1966), El Paso, Texas (1967), Tampico, Tamaulipas (1968), and Santa Fe, New Mexico (1969). The Organization played its traditionally active part in these meetings, for which the El Paso Office serves as secretariat and also does the follow-up for the recommendations adopted. The principal health problems of concern to the border authorities include tuberculosis, rabies, venereal diseases, and related problems. The health authorities of the two countries conduct a continuing exchange of information on the presence of *Aedes aegypti* and meet periodically to discuss the matter. The El Paso Office furnishes advisory services and cooperation in agreement with the appropriate national services.

One of the most active programs along this border is the rabies control program in the border cities of both countries. This project, developed by the health services of Mexico and the United States of America with the collaboration of the Organization, has obtained significant results in its three years of operation. Without a doubt it can be asserted that the rabies problem in man has been brought under control and that the decrease in rabies cases in animals is the best indication of control of this disease through close coordination of the programs in this area.

An epidemiological surveillance program set up in June 1967 under an agreement between the Minister of Health and Welfare of Mexico and the Surgeon General of the U.S. Public Health Service is an example of international cooperation in the control of communicable diseases. Operations under this program were instrumental in controlling the spread of a measles epidemic in Ciudad Juárez in April 1968.

The Colombian-Venezuelan border area also poses a number of problems of coordination and cooperation, including, notably, those in the field of health. The integration of activities in this border region is well under way. During the four-year period, Colombia and Ecuador entered into agreements concerning their common border.

As far back as 1948, Argentina, Brazil, Paraguay, and Uruguay signed a health agreement, sponsored by the Organization, in which they undertook to adopt preventive measures to resolve the epidemiological problems in their border areas in relation to malaria, smallpox, yellow fever, plague, trachoma, venereal diseases, hydatidosis, rabies, and leprosy.

There are also border agreements between Argentina, Bolivia, and Paraguay, and a working and coordination

agreement of 29 April 1968, between the health authorities of Argentina and Bolivia.

Changes in the physical environment give rise to questions concerning the reciprocal relationships between different development sectors. They make it necessary to determine to what extent agriculture benefits health, health benefits education, education promotes industrialization, and both of the latter influence health. To arrive at this determination we require a special methodology applicable to the analysis of the over-all development of a given region. We must incorporate the techniques of preventive and curative medicine into the major economic and social development undertakings of the Americas which are destined to change the physical aspects of our Hemisphere. The Organization turned its attention to this problem in 1966-1969 and initiated its study with the cooperation of the interested Governments. While it is not a simple matter, we are confident that useful and effective solutions will begin to come into view in the near future.

## RURAL CONDITIONS

The rural areas of Latin America have a population of about 120 million persons. This portion of the popula-

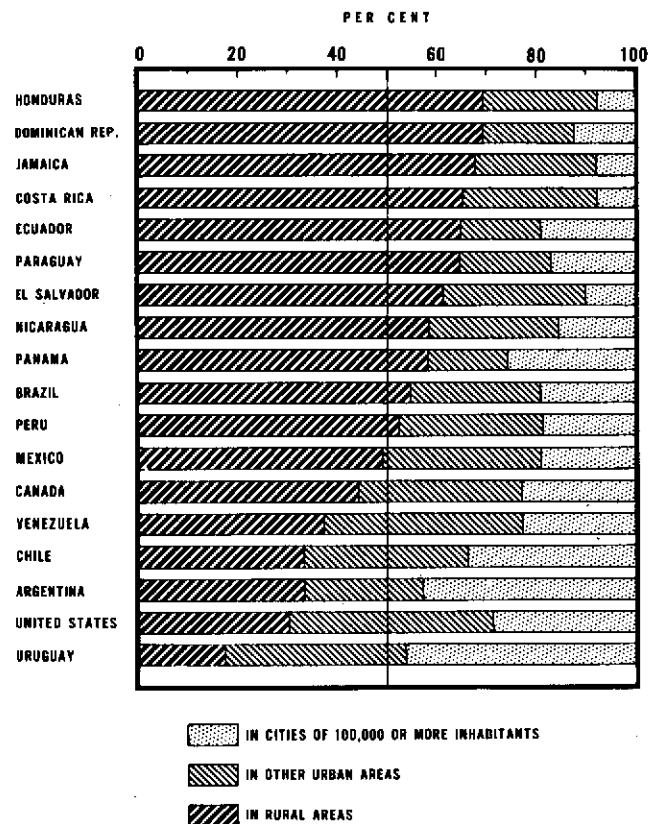


Fig. 2. Percentage of the population living in urban and rural areas, according to censuses around 1960, in 18 countries of the Americas.

tion is denied the benefits of modern living conditions, which are concentrated in the urban environment. A clear indication of the neglect in which they live is the fact that mortality rates in the rural areas are three and a half times as high as in urban centers.

This is perhaps the basic problem in Latin America. It is a problem of giant proportions, and one against which progress is slow. We have not even managed to agree on a precise definition of what constitutes rural population. Moreover, the matter is rendered extremely complex in the rural areas by the combination of a series of social and cultural factors. Living conditions in the rural environment are shaped by the prevailing systems of land tenure and exploitation, human resources and communications, crop and livestock production, work methods, electrification, credit facilities, and social and cultural characteristics.

The health infrastructure in rural areas is often inadequate to provide minimum health care or preventive services, which places the local inhabitants at a disadvantage. Rural life, which borders in certain cases on the primitive, is no longer lived out in isolation, given the development of communications and the penetration of the outside world by means of radio.

#### Migration from the Rural Areas

All these conditions combine to spur the movement of rural dwellers to the cities at a rate which in certain countries has reached 5 per cent of the population per year and brought about the establishment of crowded settlements around the major cities, with their attendant social and health problems. This is the phenomenon which has been graphically described as the "ruralization" of the urban environment.

The fact that this phenomenon is basically related to industrialization does not reduce our responsibility for endeavoring to find the solution, for it would seem to be undeniable that if the rural dweller were able to satisfy his needs and find an adequate level of social well-being in his own environment he would not be forced by circumstances to emigrate to the cities. In order to alleviate this problem we proposed some years ago the establishment of a rural welfare fund, a proposal which unfortunately failed to find sufficient response, but the need for which is being made increasingly evident by circumstances.

#### Motivation of the Community

Two aspects of the rural problem have particularly held our attention: motivation of the rural dweller and the establishment of revolving funds. We have always believed that the charges of apathy and indifference



Village dwellers collaborate in the installation of polyethylene pipes for a community water supply system.

levelled against the rural population were simply pretexts to justify its neglect. The facts have shown that we were right. The rural communities have contributed their own labor and materials for the construction of facilities to provide them with water or sewage disposal services. This contribution has been enthusiastically given by the rural population when proper motivation was provided in advance.

#### Revolving Funds

In regard to revolving funds, the initial reaction, which was to question their economic feasibility, has radically changed. A number of Governments have welcomed the idea and received technical advisory services for the establishment of such funds. The Presidents of America supported the concept through their Declaration that "national revolving fund systems shall be used to assure the continuity" of programs for providing drinking-water supplies, sewerage, and other services essential to environmental sanitation in rural and urban areas. The Ministers of Health, for their part, recommended at their meeting in Buenos Aires that PAHO/WHO expand its assistance to the Governments in the establishment and utilization of revolving fund systems. The Department of Engineering and Environmental Sciences has devoted special attention to this activity and has also continued its examination of revolving fund systems that will operate more simply and effectively. A certain satisfaction can be taken in

the results obtained during 1966-1969, a period during which the attitude toward revolving funds has radically changed and the system has been put into limited but practical use. This change was furthered by the organization of the Pan American Sanitary Engineering and Environmental Sciences Center, which provides technical, scientific, and research assistance to the Governments.

## HEALTH AND POPULATION DYNAMICS

The rates of population growth in most of the Latin American republics are among the highest in the world, exceeding the rate of economic development. The population in these countries is increasing by 3 to 3.5 per cent a year, largely nullifying the increase in gross national product. Moreover, 60 per cent of the population is less than 24 years of age and requires more health services, more schools and housing, and more employment opportunities than the economy can provide. This is an essentially political problem in that it is up to the public authorities to determine its scope and find the solutions, but it also has moral, religious, economic, and health implications. In the latter regard it is related to maternal and child care, family planning, and nutrition.

Population policy is a matter affecting the most intimate feelings of individuals, as well as the future of society and the nation as a whole, and its effects will be felt by the generations to come. The XVII Pan American Sanitary Conference (1966) approved, among other proposals, the Director's plan to establish a health and population dynamics office.

The position of PAHO/WHO was clearly defined at the Second Meeting on Coordination of Activities in the Field of Population Dynamics in the Americas, held at Headquarters early in January 1966, and at the Third

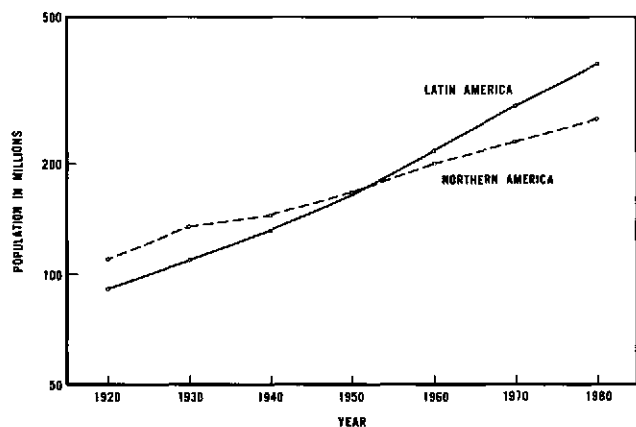


Fig. 3. Growth of population in Northern America and Latin America.

Meeting held in 1967. During the 1966 meeting, commenting on Resolution WHA18.49, which declares that "it is not within the responsibility of WHO to endorse or promote any particular population policy," we maintained that "it is incumbent upon the Governments to decide whether they should allow population growth to take its normal course and therefore evolve spontaneously or whether they should influence the nature of these numerical and structural variations at the time they arise by whatever procedure the Governments select. The basic problem does not lie in the method employed to regulate fertility but in the consequences that the prolonged application of the method can have on the health of the population, the growth of the economy, and the development of society."

Both of these meetings emphasized the need to expand the research programs, increase the number of training centers, enlarge the health services to include family planning activities, and finally, to provide sufficient funds for these programs.

In 1967 a Meeting on Population Policies in Relation to Development in Latin America was held in Caracas under the auspices of the Organization, the OAS, the Venezuelan Government, and the Aspen Institute for Humanistic Studies. The population policy defined at that meeting was later reaffirmed during the Technical Discussions at the XIX Meeting of the Directing Council. This policy, together with the resolutions adopted by the World Health Assembly and the PAHO Directing Council, are the basis for the Organization's work in this field.

The first of a proposed series of technical group meetings on health problems related to family planning was held in 1969. At this meeting, an international group of experts discussed the topic of "Maternal Nutrition and Family Planning in the Americas."

The Organization has kept in contact with interna-

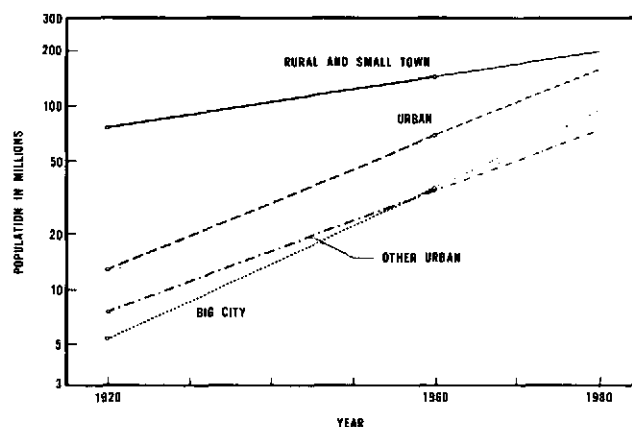


Fig. 4. Growth of urban and rural populations in Latin America.

tional organizations such as UNDP and with private institutions and foundations having an interest in this field.

The Presidents of America made reference to the "promotion of intensive mother and child welfare programs and of educational programs on over-all family guidance methods." This has been the criterion underlying the work of the Organization, which regards the structure of the family from the standpoint of maternal and child care and views the task as an educational process in which it is recognized that each family is entitled to determine its own composition and to select whatever planning method, if any, is consistent with its ideas, beliefs, and feelings, but that the family is also entitled to information enabling it to make its determination.

The Ministers of Health, after noting that there were opinions both for and against "responsible parenthood" and referring to those who eclectically see no contradiction between population growth and development, expressed their support of the same principles that their Governments had accepted at the World Health Assembly (Resolutions WHA18.49, 1965; WHA19.43, 1966; WHA20.41, 1967; and WHA21.43, 1968), at the XVII Pan American Sanitary Conference (Resolution XXII, 1966) and the XVI Meeting of the Directing Council (Resolution IX, 1965).

#### Technical Discussions in 1968

The Organization, for its part, wishing to further the study of this problem, devoted the Technical Discussions in 1968 to the "Participation of the Health Sector in Population Policy."

Since no consensus was reached on the interpretation of this topic, the XVIII Meeting of the Directing Council (1968) recommended in Resolution XXIX that the Director study the possibility of having the Organization appoint a working group of a multidisciplinary nature (health professionals, demographers, economists, sociologists, anthropologists, and others) to analyze the interrelationship of health and population policies. This resolution considers health in its broadest sense as a component of development affecting a number of variables of the development process. The study proposed is far from simple, requiring as it does the use of a complex network of methodologies, the application of techniques of a wide variety of disciplines, substantial investments, and sufficient time for revealing significant relationships. The Organization devoted its attention to all of these aspects during the last year of the quadrennium under review and is hopeful that the preliminary action will bear fruit in the coming years.

#### Cooperation with the Governments

The Directing Council, in the same Resolution XXIX adopted at its XVIII Meeting, also reaffirms the advisory role of the Organization in matters relating to the health aspects of population dynamics.

Advisory services have been rendered to 16 countries and territories: Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Peru, St. Kitts, St. Lucia, St. Vincent, and Trinidad and Tobago. Moreover, detailed programs have been prepared for Colombia, Costa Rica, Ecuador, El Salvador, Haiti, Honduras, Nicaragua, and Trinidad and Tobago.

In Colombia the Organization is collaborating with the Government in a national program for expansion of maternal and child health and family welfare services. Following the necessary negotiations, the phases of this program were planned, the first of which is well under way. Similar programs established in Haiti and Peru are now in the preliminary phases.

Special assistance was provided to the national family planning program of Trinidad and Tobago in the form of audiovisual aids, clinical equipment, educational material, short-term consultant services, training courses, and fellowships.

The Organization also collaborated with international organizations, including the World Bank, for which it studied the family planning program for Jamaica, and the United Nations, with which it established a joint mission to determine training requirements in the family planning field in Central America and the Caribbean area.

The Organization has provided assistance in research and training courses in health and population dynamics in the Schools of Public Health in Chile and São Paulo, Brazil. Emphasis is placed on the relationship of the subject to public health and medical care.

PAHO/WHO collaborated in the formation of the Biostatistics and Demography Center in Buenos Aires in 1968. The Center was established to perform functions of teaching, technical assistance, and research in population matters.

Experience over the last few years shows a pressing need to devise new and effective methods of family planning, to train professionals and determine the role of auxiliary personnel, and to introduce the principles, norms, and techniques relating to this problem into the health science curriculum. Briefly put, what is mainly required are better systems of service to the community and more effective methods for family planning and control of sterility.

The population growth alarmingly described as a "population explosion" was a matter of major concern

during 1966-1969 and one to which the Organization devoted continuous attention within the framework established by the World Health Assembly and the PAHO Governing Bodies. We have followed the course of action prescribed by the Member Governments and have provided them with advisory services whenever they have requested them.

## FOOD AND NUTRITION POLICY

In 1967 a study on the nutrition program in the Americas was placed before the Directing Council. This study noted that "an analysis of the work done by PAHO in the field of nutrition in the last 10 years shows that it has followed a logical pattern, satisfying the most urgent needs, and following the guidelines proposed in the Charter of Punta del Este, the recommendation of the Task Force on Health, and the resolution of the XVI Pan American Sanitary Conference." Referring to the emerging awareness of nutrition problems among the population and the public authorities, the study recalled that the Declaration of the Presidents of America had pointed to nutrition as one of the three principal health problems having the highest priority, the others being the eradication of infectious diseases and the provision of water to rural communities. This study led to the proposal of a new program in which PAHO/WHO would take the leading role within a coordinated system for approaching national nutrition problems from a high policy level.

The Directing Council adopted a resolution instructing the Director to "continue to develop all aspects of the nutrition program in progressive steps consonant

with the development of the over-all program of PASB" and calling for closer collaboration with FAO and other international and bilateral organizations. The resolution also emphasized "the importance, for nutrition program planning, of the close collaboration of all national institutions in the agriculture, industry, education, and health fields."

The Ministers of Health, at their Special Meeting in Buenos Aires, examined the many aspects of the problem of food production. They noted that progress had clearly been made in the diagnosis and treatment of nutritional diseases but not in their prevention, and that this was due to a lack of information concerning the supply of protective and energy-yielding food for meeting the vital needs of each population group. They stated that in all countries of the Americas there is an urgent need to define a national policy for systematic action against the problems of food and nutrition to make it possible to assure an adequate nutritional level to the population while also meeting the needs of economic development.

### Infant Mortality

Nutrition is an important contributing factor in the high rates of mortality among infants and children under 5 years of age in the less developed areas of all the countries in the Hemisphere. Protein and calorie deficiencies go hand in hand with infectious diseases, ignorance, overcrowding, unhealthful living conditions, and the shortage of medical services. The result is that 44 per cent of all those who die in Latin America are children under 5 years of age and that, on the basis of a com-



An effort is made to provide adequate food for school groups as part of a food and nutrition policy.



parison of the average rates of infant mortality in the United States of America and Canada with those for Latin America and the Caribbean, it is found that some 741,000 of these children could be saved if they were properly nourished and in a condition to withstand the onslaught of the environment and of disease. This is an extremely serious moral problem which imposes an obligation on all of us to contribute to its solution. It is also a source of concern and shame and is perhaps the salient index of underdevelopment in the field of health. An essential step toward the solution of this problem was taken during the period under review with the commencement on 1 July 1968 of the Inter-American Investigation of Mortality in Childhood, which will be discussed further on.

#### Loss of Essential Proteins

In a society suffering from malnutrition and where undernutrition is chronic among the low-income sectors, the loss of essential proteins is a health problem, an economic problem, and a problem of development in general. This problem is made even worse by certain animal diseases such as foot-and-mouth disease, bovine tuberculosis, rabies, brucellosis, and parasitosis, for the solution of which significant amounts of national resources and the assistance of foreign capital are required. It should be noted in this regard that both the IDB and the World Bank have a policy of extending financial assistance, under certain conditions, for programs directed to the control of various zoonoses.

These programs, because of the biological nature of the problem with which they deal, require constant research and the training of personnel. The Pan-American Foot-and-Mouth Disease Center and the Pan American Zoonoses Center are engaged in such research and training activities, in addition to providing advisory services to Governments.

#### Future Action

The XIX Meeting of the Directing Council (1969) recommended to the PASB that it continue to give high priority to the nutrition program and that it assign corresponding resources to provide the services required for effective action, especially in the formulation of national food and nutrition policies. It further recommended to the Governments that "national food and nutrition policies be formulated according to suggested guidelines as soon as possible with the objective of controlling the problem of malnutrition, thus reducing the costs of health care and allowing reassignment and more efficient use of resources."

This course of action, followed by the Governments

and the Organization, will result in a concerted multi-disciplinary effort.

#### MODERN SCIENCE AND TECHNOLOGY

It has been truthfully said that humanity has progressed more in the last 50 years than in all the preceding centuries. The advances of science and modern technology have provided us with effective weapons for the eternal battle against disease. These advances are but forerunners of even greater progress that offers the prospect of a stunning development of science and technology by the year 2000.

The Presidents of America recognized in 1967 that "science and technology offer genuine instruments for Latin American progress and must be given an unprecedented impetus at this time. This effort calls for inter-American cooperation, in view of the magnitude of the investments required and the level attained in such knowledge. In the same way, their organization and implementation in each country cannot be effected without a properly planned scientific and technological policy within the general framework of development."

#### Research

These ideas were the basis upon which the Ministers of Health defined the national and international health research policy. The Ministers conceived of research as an essential factor for the development of the Americas, which requires the modernization of institutions and systems.

The health sciences, which operate within a spectrum ranging from molecular biology to social biology, including economics, must be placed at the service of all. They are the property of humanity. Every country and every person must contribute to the extent of his ability, vocation, and means to their development and application.

Science and technology and their discoveries and inventions are universal. Ideas have no particular country, and eminent scientists are citizens of the world. But each environment imposes its laws and makes it necessary to take the cultural characteristics, history, way of life, public opinion, and traditions, as well as beliefs and superstitions of each society, into account, lest scientific and technological progress fail to find a response and its benefits be lost.

#### *The Scientific and Cultural Community*

Along with their distinct characteristics, the Americas have certain basic features that make it possible and even imperative to carry out a Hemisphere-wide program of scientific and technological research. This was

said by the Presidents of America in their Declaration and recognized by the Ministers of Health at their Special Meeting in 1968.

Moreover, as far as we are concerned, any effective economic community in Latin America must be based on a scientific and cultural community. It is this conviction which has guided the research policy of the Organization to an ever-increasing extent in the last 10 years, a policy to which an average of 33 per cent of the total budget was devoted in 1966-1969, or about US\$3,000,000 in 1969.

### *Research Policy*

The XVI Pan American Sanitary Conference (1962) noted the need to increase our research activities. This was done, with the assistance of the Advisory Committee on Medical Research, with the result that the XVII Pan American Sanitary Conference (1966) was able to examine a report summarizing 90 projects in progress or completed.

The research program had been directed principally into those areas of biomedical investigation and training for research that were related to the objectives of the Organization. This explains why there were a number of research projects in certain fields: 17 on nutrition, 6 on malaria eradication, 13 on foot-and-mouth disease, and 11 on environmental sanitation.

The XVII Conference authorized the Director to establish a Special Fund for Research in order to expand this program. Contributions to this Fund were pledged by Argentina, Brazil, and Uruguay.

The Organization's research activities during 1966-1969 closely followed the guidelines established by the Conference. In order to make these activities more cohesive, the Research Unit was raised in 1968 to the rank of a Department, while its services were increased and its technical personnel enlarged. The program of PAHO/WHO has played an important part in the development and consolidation of biomedical research resources and possibilities in the Americas.

### *Multinational Centers*

The Conference also called for a study on means for expanding and augmenting the number of multinational centers for training and research in the life sciences and medicine. A few months later the Presidents of America proposed "that multinational technological and scientific training and research institutions at the postgraduate level be established, and that institutions of this nature already existing in Latin America be strengthened" as part of the Regional Scientific and Technological Development Program. The XVII Meeting of the Directing Council, convinced that the development of cooperative programs to strengthen multinational activities in the field of higher education and research in the health sciences in Latin America was identical in purpose and methods with the original program, confirmed that "PAHO is the logical international organization in the Western Hemisphere to sponsor and coordinate cooperative multinational programs for research and graduate education in the health sciences" and requested the Director "to continue to take this position." Resolution XXIV, in which this paragraph appears, also established the future guidelines, particularly as regards financing, which together with the recommendations of the Ministers of Health have been the basis for subsequent action by the Organization.

The XIX Meeting of the Directing Council, following a recommendation of the 61st Meeting of the Executive Committee, declared that multinational centers are needed and useful and requested the appointment of a study group to draw up a set of general guidelines for the establishment and operation of such centers. The Council further recommended that the Governments study the possibility of assuming a progressively larger share of the operating budget of centers located in their countries and of extending the services of those centers to the countries of the Hemisphere, in the first place to other countries in the Zone to which they belong. Finally, the Council recommended to the Director that the funds made available be primarily used, subject to

Fifth Meeting of the PAHO Advisory Committee on Medical Research held at Headquarters in Washington, D.C., 13-17 June 1966.



certain conditions, for aiding the countries that request more assistance.

### *Migration of Professionals*

A discussion of research and of university education will generally bring up the problem of the exodus of health personnel, scientists, and engineers from Latin America. The XVII Pan American Sanitary Conference examined a report which proposed the strengthening of existing research centers and recognized the need for continued United States support of scientific work in Latin America, together with an Organization-sponsored program of visiting professorships directed to the formation of a cadre of Latin American researchers who would later continue their activities. The report also recommended that PAHO/WHO conduct a study on the status of research in Latin America and establish a center to provide information on the migration of scientific personnel.

In Resolution XVII the Conference requested the Governments to take appropriate measures to strengthen national policies leading to research and training programs in health and the sciences which would provide incentives for nationals to remain at home. This would expand the capacity of countries to develop economically and culturally, strengthen universities, and facilitate the provision of more adequate health services in the countries concerned. The Special Meeting of Ministers also recommended the establishment of conditions to encourage a greater number of physicians and health scientists to remain in their countries.

Migration is a biological process occurring in every living species. Not all of its causes are economic, although in certain cases the latter play a predominant role, as exemplified by the migratory movements of workers who leave their country in search of employment and better living conditions. In the case of scientists, professionals, and technicians, the lack of encouragement and opportunities is often the decisive factor that prompts them to move to a place where they can find the means of advancing in their work.

The Organization has carefully followed this problem, a precise assessment of which has not been possible because of the lack of complete information. A research policy such as that which is sought by the Governing Bodies of the Organization would undoubtedly reduce the migration of health professionals to a substantial degree.

## HUMAN RESOURCES

In 1966 we stated: "There has been a renewal of effort in the Americas, in all fields of science and tech-

nology, aimed at training professional and auxiliary health workers. It is realized that they are essential factors in development and that its slow pace is in large measure due to the shortage of manpower at the managerial, intermediate, and operational levels. This shortage is clearly evident in the health field, where the great diversity of functions calls for a great diversity of technicians. In addition to knowledge and experience, they must possess a spirit of understanding and tolerance which is rooted in a feeling of empathy with, and devotion to, all other human beings." This assessment, which reflects the actual situation during the period 1966-1969, has guided the work of the Organization.

Specifically, the policies and activities of the Organization have focused on both the qualitative and quantitative aspects of the problem, for along with more personnel there is a need for improved instruction and a broader curriculum. During the last 25 years the number of medical schools has more than doubled, but the ratio of physicians to total population has remained constant at about 6.5 per 10,000 inhabitants, most of the physicians being concentrated in the city and many lacking an awareness of their social function.

In Latin America the schools of medicine, which for historic and economic reasons are financially dependent upon the State, are not providing uniform instruction and in many cases the curriculum they offer has internal inconsistencies and is unresponsive to the present-day concept of education for development, a concept stemming from the major political, economic, and social decisions of the last 10 years and recognized in the Charter of Punta del Este, which recommended that education be planned to conform to the trends of economic and social development. The university cannot afford to remain aloof from the problems affecting man and society, particularly in matters dealing with individual human life and social well-being. Instruction must be in line with the social realities. It was in recognition of this that the Presidents of America declared: "We will vigorously promote education for development." In so declaring they imbued the process of education with a well-defined purpose and emphasized the importance of a search for new patterns and schemes of instruction in the universities of the Hemisphere. Medical education is no exception. We have a clear awareness today that the medical profession has important responsibilities in the process of satisfying the essential aspirations of man.

### *The Crisis in the Universities*

The period 1966-1969 witnessed a growth of the movement arising in recent times to free the universities from the attitude of indifference and "business as usual" and place them at the service of vital ideas circulating

throughout the world. It becomes necessary to break the grip of rigid structures, remove barriers of isolation between disciplines, develop internal interdependence, reduce the number of "part-time" professors, establish "full-time" programs for the students, coordinate studies with related matters, strengthen and simplify administration, and increase resources, if education is to become a dynamic process in which instructor and student play an active part in a dispassionate analysis of the situation and an objective search for well-founded solutions free of the influence of temporary considerations that have little or nothing to do with the essence of the educational process.

The crisis in the universities is a widespread and well-known problem which is due, at least in part, to the failure of universities to keep in step with the social evolution of the countries. It is a political and philosophical as well as an educational problem. The instruction was designed in accordance with schemes and in imitation of forms developed by other societies and is frequently bogged down in traditional patterns. The accepted solution is, of course, to modernize the universities, since no one is likely to doubt that their continued existence is desirable.

The Organization has continued to give careful attention to the situation of the universities, particularly through its programs of cooperation with particular universities and through its fellowship programs. For obvious reasons, PAHO/WHO fellows should not participate in protest movements against the national authorities, but it is only logical for them to take part in any analysis of the system of education and learning, an area in which their opinions can be extremely valuable, since they are graduate students, some of them with many years of experience to their credit. The Organization assumes full financial responsibility for its fellowship holders, to the point where it has even borne substantial costs of medical care although the fellowship regulations do not require it to do so. A fellow faced with a problem can always turn to our Country Representative and receive whatever assistance he can give him. By the same token, it would not be proper for him to create problems for the Organization in its relations with the national authorities.

We are confident that a climate of harmonious relations within the context of modern institutions will ultimately come about and that calm discussion and open dialogue will replace violence and occupation by force, for this is what the great majority of the students desire. It is obvious, however, that we cannot remain aloof from the process of university improvement as such.

We have turned our attention to the university crisis

because the modernization of the universities and the training of professors are two essential factors in the development of human resources which will depend on the outcome of this crisis.

### Cooperation with Universities

The Organization has continued and expanded its cooperation with the Latin American universities, particularly schools of medicine and public health and related institutions. Its advisory services have been focused on the curricula and on the inclusion therein of public health with the dual aim of creating an awareness of health in the student and extending the influence of health to all other courses of study. We have also emphasized the need to design a more cohesive plan of study, one in which the different subjects will be constantly brought into contact, and to foster a more profound and direct relationship, that is, a more human relationship, between professors and students. A more active dialogue has generally been established among the schools of the university and between them and the public authorities. We have helped to introduce in the medical education a new humanism which is considered imperative in these times.

The XIX Meeting of the Directing Council, in discussing the programs of medical education undertaken by the Organization in collaboration with the various countries, examined a report on the general characteristics of medical education in Latin America, which notes that the system of preuniversity education, the system of medical care, and the training of the rest of the personnel composing the medical team must be taken into account if satisfactory solutions to the problems of medical education are to be found. In Resolution XXXV the Council requested the Director to continue the close cooperation of PASB with universities and institutions of higher education in general. This has been and will continue to be our policy.

### Shortage of Personnel

Our countries do not today have sufficient professional and auxiliary personnel to meet the needs for the prevention and cure of disease. The Ministers of Health, in examining this problem, noted a number of reasons for this shortage: the increased demand for services, limited geographic coverage, complex biological factors, the increasing cost of activities and education, and insufficient investment. There is also a problem of distribution, with physicians and other health professionals concentrated in the major cities and very few taking up practice in the rural areas. How can this problem be solved? The basic solution lies in following the criterion established in the Charter of Punta del Este of

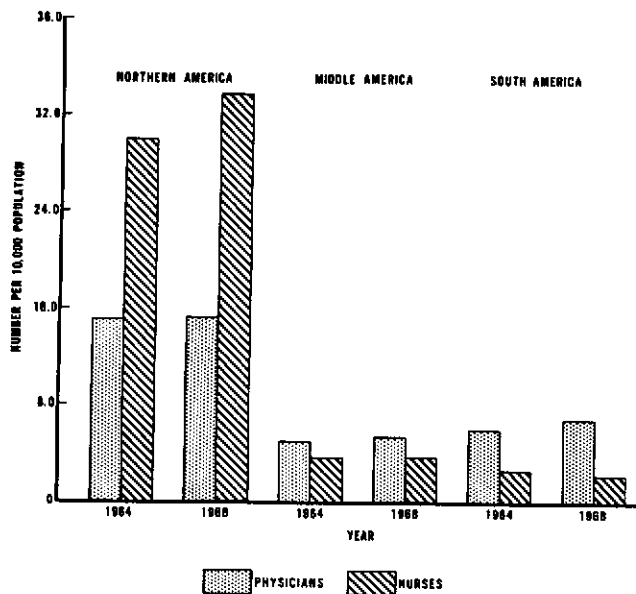


Fig. 5. Ratio of physicians and nurses per 10,000 population in the three regions of the Americas, 1964 and 1968.

planning education in keeping with the trends of economic and social development. This would enable the authorities to provide better care to the indigent and uninsured and to those who cannot afford private medical care.

It should be borne in mind that recent years have seen a substantial increase in health manpower and the establishment of many new universities and technical institutions devoted to professional training. In the last 10 years, 41 medical schools have been established and the number of graduates rose from 6,800 in 1963 to more than 9,200 in 1967, while the number of physicians per 10,000 inhabitants appears to have risen by 17 per cent from 1960 to 1968.

#### Medical Education Methods

The problem of education is qualitative as well as quantitative, for along with more professionals there is a need for better-trained professionals. This will often require a change in the quality of the instructional and learning process, a change frequently requiring substantial amounts of investment in the introduction of modern technology.

The initiative taken by the Organization some years ago to introduce the benefits of pedagogical advances into medical education (for it seemed absurd to us then, as it does now, that a professor of medicine should be uninstructed in these techniques) has yielded results. During 1966-1969 a number of Latin American universities introduced the new pedagogical techniques into their medical education programs with the aim of converting the instruction into an active process in which

instructors and students maintain a continuing harmonious relationship and experience a steady exchange of ideas. The results achieved are such as to promise a widespread dissemination of this new methodology.

#### Textbooks

The Organization has given particular attention to another means of improving the quality of medical education: the provision of selected textbooks to students at prices they can readily afford. The XVII Pan American Sanitary Conference stressed the importance of this program as a contribution to better professional training of physicians and other health personnel in the Americas. The 99 schools of medicine visited by Organization consultants, including the deans and professors consulted, recognized the value, importance, and urgency of the program, as the 56th Meeting of the Executive Committee and the XVII Meeting of the Directing Council had done.

The first stage of the program consisted in the publication and distribution of four textbooks on pathology, biochemistry, pharmacology, and physiology. Basic agreements were signed with 17 of the 18 scheduled countries, and letter-agreements were concluded with practically all of the universities in the countries included in the program. The Organization's agreement with the Brazilian Association of Medical Schools provides for coordinated implementation of the program in the 72 medical schools of Brazil.

The following textbook selection committees met during the four-year period: in 1967, pathology and biochemistry; in 1968, pharmacology, physiology, pediatrics, and preventive and social medicine; and in 1969, internal medicine and morphology, which covers anatomy, histology and embryology. Distribution of the first two textbooks, on pathology and biochemistry, was begun in 1968, and of those on pharmacology and physiology in 1969.

In order to facilitate the distribution of textbooks, a manual of administrative procedures was prepared. This manual, which is placed at the disposal of each school, enables it to maintain appropriate accounts and records of the entire program.

The program has been started successfully. Demand has far exceeded expectations, as the textbooks selected have been purchased not only by the students of the subject they deal with, but also by other students who have recognized the scientific value of these publications, offered at cost. In the first two years, approximately 45,000 copies of the textbooks in the four initial subjects were distributed, and 60 per cent of the textbooks received by the schools of medicine were sold. The sales on cash terms amounted to 80 per cent, and

collections have been very satisfactory on the credit sales. As instructed by the Directing Council, the Organization has persisted in its efforts to obtain extra-budgetary funds for intensifying and expanding its program of education and training. Although no financial assistance arrangements were actually concluded during the four-year period, the highly favorable reception accorded the textbook program in its initial stages warrants the expectation that financial support will be received from institutions concerned with the improvement of professional and medical education in the Americas, enabling the Organization to achieve one of the basic objectives of the textbook program, namely, establishment within four years of a self-sustaining fund permitting the program to be financed indefinitely with income derived from the sale of textbooks.

### EXTERNAL FINANCIAL RESOURCES

The demand for health services is increasing day by day as a result of public demands to share in the benefits of scientific and technological advance now beyond the reach of low-income and even moderate-income groups. Modern preventive and curative medicine, including rehabilitation, offers valuable and highly effective therapeutic methods, techniques, and equipment which often require substantial amounts of investment beyond the financial possibilities of the great majority of persons who need them. The Governments themselves are finding it impossible to meet the requirements of economic development and social progress out of their budgetary resources. This raises the problem of how to strengthen the sources of national income with the help of external financing to expand the financial capacity of the public sector and enable it to meet just and imperative social demands. Only with the cooperation of foreign capital is it possible to speed the solution of certain health problems affecting a large number of persons or a particular region of basic interest for social development.

Recent years, particularly those since the meeting of the Task Force on Health in 1963, have been marked by renewed interest of the Governments in gaining access to new sources of international financing, particularly for the health sector. During 1966-1969 this trend became even more pronounced and our Organization attempted to provide advisory services to countries requesting them for this purpose.

#### International Financial Institutions

The institutions providing loans for the health sector in the Americas are the Inter-American Development Bank, the World Bank, the Agency for International

Development, and EXIMBANK. Each of these has its own criteria to govern its loans, which are not restricted to national Governments but are extended also to political subdivisions, autonomous agencies, and under certain conditions to private concerns.

In addition to these institutions, the Governments of certain countries, including Canada, the German Federal Republic, and the United States of America, have shown an interest in programs of hospital construction and equipment, water supply, malaria eradication, sanitation services, and rural health units, among others.

The Inter-American Development Bank holds a leading position in this field. In 1968 it defined the type of health programs that were eligible for loans from its Fund for Special Operations. With the consent of the President of the Bank, the document setting forth its credit policy was distributed to the Ministers of Health as a means of familiarizing them with the procedure for drawing up and for submitting loan applications meeting the Bank's requirements.

The Ministers of Health in Buenos Aires, commenting on the document, noted that it reflected "the experience of the Bank, which envisions the development of the Americas as a harmonious process of economic growth and social welfare."

Among the social investments of the IDB are those for water supply and sewage disposal programs. These services, essential to individual health and economic and social well-being, were given priority in the Charter of Punta del Este and were emphasized by the Presidents of America and the Ministers of Health in 1963 and 1968. The IDB loans in this field have served as a catalyst to local investment. By June 1968 \$1.4 billion had been devoted to water supply and sewerage services in Latin America. Of this amount, \$800 million represented national funds and \$550 million, of which 75 per cent was provided by the IDB, was derived from loans of international organizations. The technical services of the Organization have worked in close relationship with the relevant national services and those of the IDB in implementing these programs.

In addition to the programs indicated above, the Fund for Special Operations has extended credit assistance to medical and health education, the construction of university hospitals, and the control of foot-and-mouth disease.

An important program in which the IDB collaborates through loans is the control and prevention of foot-and-mouth disease in the countries of South America, which to date amount to US\$30,000,000. Likewise, the Organization has cooperated closely with the IDB as the technical advisory body in the evaluation of loan requests and at present participates in the development

and execution of these programs. The IDB has broadened its policy in animal health through the granting of loans for the control of other animal diseases, especially the zoonoses.

Loans from the World Bank require extensive preparatory arrangements often lasting several months and including exploratory studies and preliminary assessments of the borrower and the project. In recent years the Bank has extended its operations into two health areas: foot-and-mouth disease control and population growth. The Organization has furnished advisory services whenever the Governments or the Bank have so requested it.

The AID has not established a standard procedure for the processing and granting of loans. The projects are generally selected by its Mission in the applicant country. In their many years of cooperation, the Organization and AID have established a mutually beneficial technical relationship.

EXIMBANK follows conventional banking procedures and gives special importance to the management aspects of a project. The Organization has not been directly involved in any loan operation of EXIMBANK.

#### Technical Discussions in 1969

These Discussions, held during the XIX Meeting of the Directing Council, dealt with the topic "Financing of the Health Sector." The Final Report of the Discussions, in referring to external financing, states that it "should be used solely for developing the health infra-

structure, in its broadest sense; that is, not only for financing the construction of water supply and sewerage systems and health establishments, but also for manpower training, operations research, and promoting modern administration. In this way productivity and operating capacity can be increased. However, external financing must be used as a 'takeoff' resource, not as a regular and continuous source of funds."

The Report further suggests "that external funds should preferably be channeled through multilateral agencies because they are true instruments of international solidarity."

Finally, the Report states that "the financial resources at present available to the health sector cannot satisfy the growing demand for services; at the same time, any increase in external or internal financing should be used to deal with problems in a rational manner; that is, with due attention to priorities and by means of technically sound projects that reflect a well-defined health policy, thereby enabling optimum use to be made not only of funds but also of manpower and physical resources in all health sector institutions."

In regard to this aspect of the Technical Discussions, the XIX Meeting of the Directing Council recommended to the Director, in Resolution XXXIX, that he study the possibility of the Organization's organizing a regional study for the purpose of improving the machinery, conditions, and terms for external funds for developing the health infrastructure, in the broadest sense.

This activity was begun during the final quarter of 1969.

## II. THE EXTERNAL RELATIONS OF THE ORGANIZATION

### THE ORGANIZATION WITHIN THE INTER-AMERICAN SYSTEM

#### THE GENERAL SECRETARIAT OF THE OAS

A continuing and cordial relationship has existed for many years between the OAS and our Organization, extending into the period following the election of Mr. Galo Plaza, in 1968, to the post of Secretary General.

Speaking at the inaugural session of the XIX Meeting of the Directing Council in 1969, Mr. Plaza remarked: "It is heartening to examine the coordination arrangements established between the OAS and the Pan American Health Organization and to discover that the two bodies maintain the desired coordination at both the directing and the technical level, without duplication." This coordination has extended to a number of fields, as will be seen below.

#### Operation Relief

On 24 April 1965, a political movement, subsequently leading to armed strife between opposing political forces, began in the Dominican Republic. The social disruption stemming from the violent confrontation of political parties prompted the Tenth Meeting of Consultation, upon the proposal of the Special Committee it had designated to deal with the parties at conflict, to establish a relief operation known as "Operación Socorro." The participation of the American countries in this operation placed in evidence, once again, the spirit of brotherly solidarity that has traditionally united their people in critical times.

The Organization placed at the disposal of Operation Socorro its entire complement of available medical staff. Referring to this assistance, the Secretary General of the OAS later said that "the cooperation of PAHO was highly effective, particularly in the supervision of hospital services and the adoption of measures to avoid possible epidemics."

#### Emergency Situation in El Salvador and Honduras

In July 1969 a border incident led to a confrontation between the armed forces of El Salvador and Honduras,

causing profound concern in the inter-American community and leading the OAS to offer its peaceful mediation through the Eleventh Meeting of Consultation of Ministers of Foreign Affairs.

The machinery of the Inter-American Emergency Aid Fund, administered by a committee consisting of the Secretary General of the OAS, the Chairman of the Inter-American Committee on the Alliance for Progress (CIAP), and the Director of PASB, was called into play. Our Organization was given the task of coordinating all health aspects, including contributions by the Governments, international organizations, and the Fund itself. PAHO/WHO consultants stationed in the two countries or assigned to Zone III cooperated with the Ministers of Health and the agencies created by the two Governments concerned in efforts to ease the tragic situation.

The Secretary General of the OAS, speaking at the XIX Meeting of the Council, referred in the following terms to our cooperation: "I should nevertheless like to make very special mention of the splendid help given by PAHO, through the Inter-American Emergency Aid Fund, in the recent conflict between the two sister Republics of El Salvador and Honduras. Dr. Horwitz was in constant contact with me during the emergency, and his presence on the actual scene of the conflict at critical times helped to speed up the dispatch of the medicines needed to relieve human suffering. Now that the military stage of the conflict is fortunately over, we are working together to assist the affected Governments in their rehabilitation efforts."

The meeting of the Council, in Resolution XI, took note of the establishment of the Fund, thanked the Secretary General of the OAS for promptly making available the necessary resources, and the Governments for their effective assistance in the form of manpower or material resources for improving health conditions in the areas affected by the emergency, expressed its satisfaction for the action taken by the Director, and authorized him to make an advance of up to \$100,000 from the Working Capital Fund for the purpose of providing



Honduras and El Salvador with assistance if the emergency situation so required.

#### IA-ECOSOC

Relations between the Organization and the Inter-American Economic and Social Council became closer than ever in 1960, when health was recognized as an integral part of development by the Act of Bogotá. In 1966, the Organization intensified its contacts with the Secretariat of IA-ECOSOC in an effort to secure the inclusion of certain health topics in the agenda of its Fourth Annual Meetings at the Expert and the Ministerial Levels. *Facts on Health Progress*, a booklet showing the degree of progress made in the Continent toward the health goals of the Charter of Punta del Este and issued for distribution at the IA-ECOSOC meeting, was so well received that a second edition had to be printed three months later. The Fourth Meeting at the Ministerial Level adopted important resolutions on health and the planning of development; improving the statistics of the Latin American countries; social security within the framework of the Alliance for Progress; and a study on future financing of the Pan American Foot-and-Mouth Disease Center.

The XVII Pan American Sanitary Conference examined the relationship with IA-ECOSOC in detail and instructed the Director to continue to develop and strengthen it and to endeavor to obtain the inclusion of items directly connected with the health of the people of the Hemisphere in the agenda of future meetings of IA-ECOSOC.

#### CIAP

We have maintained a close relationship with the Inter-American Committee on the Alliance for Progress since it was established in 1963, attending the yearly presentations of the Governments before the Committee and offering advisory assistance to the ministers of health, to whom we have pointed out how important it is to include the major national health problems in those presentations if funds for health activities are to be obtained abroad.

This advisory work, carried on principally through our Country Representatives and Zone Chiefs, was continued throughout 1966-1969 as a contribution to the progress of national health programs. Our purpose is to provide whatever assistance is requested by the Governments of the Organization.

#### IACC

The Inter-American Cultural Council, composed of ministers of education or their representatives, operates

in a number of fields in which the Organization is increasingly interested, since we can never dissociate education in the widest sense of the work from health. We have maintained a continuous relationship with the Cultural Council and have offered it our assistance in any project connected with health.

By virtue of the Protocol of Buenos Aires, the Inter-American Cultural Council was converted into a Council for Education, Science, and Culture (CECIC), with an Executive Committee whose Secretariat is headed by the Assistant Secretary of the OAS for Education, Science, and Culture. We hope to establish a broad cooperative relationship with CECIC in the field of biomedical sciences and health, for we understand that PAHO, as the inter-American specialized agency for public health and medical care, is called upon to extend its activities into health education and research.

#### Program of Technical Cooperation

Our relationship with this Program has a twofold aspect. On the one hand, it contributes financially to some of our projects; and on the other, representatives of the Organization cooperate with the Program in the fellowship field.

From the time the Pan American Foot-and-Mouth Disease Center was established with the assistance of the Government of Brazil, until 1968, when full financial responsibility for its operation was transferred to PAHO/WHO, the Program devoted an important part of its budget to the maintenance of the Center. This transfer, and its importance for the future of foot-and-mouth disease control, will be discussed in another part of this *Report*.

On other occasions the Program has provided financial assistance for sanitary engineering projects. Thus, in 1967 it helped to fund the study on problems of solid waste collection and disposal in Panama City, in which the Organization provided technical advisory services.

Conversely, PAHO/WHO has collaborated with the Program of Technical Cooperation by assigning members of its staff to serve as members of the Program's Advisory Committee on Fellowships ever since the Committee was established. In addition, the Organization reviews all applications for fellowships involving health activities. This cooperation has been continuous, and the resulting relationship extremely useful and cordial.

#### Other OAS Organizations

During 1966-1969, our Office of Coordination with International Organizations substantially broadened our

Signing of the agreement for the transfer of responsibility for the Pan American Foot-and-Mouth Disease Center, formerly under the Program of Technical Cooperation of the OAS, to the Pan American Health Organization. Signing are Mr. Galo Plaza, Secretary General of the OAS, and the Director of the Pan American Sanitary Bureau.



contacts with the various organs and specialized organizations of the OAS, particularly with the Council and its Committees during the period of negotiation of the amendments to the Charter. With the special purpose of assuring the continuing presence of the health sector in these deliberations, the Organization was represented in many meetings and also presented its points of view to the General Secretariat, which invariably received them sympathetically.

The Organization also cooperated actively with the Permanent Secretariat of the Inter-American Travel Congress on standards for the international transportation of human remains; with the Permanent Inter-American Social Security Committee in matters relating to the coordination of medical services; with the Inter-American Housing and Planning Center (CINVA) in housing programs; and with the Inter-American Children's Institute on programs of maternal and child health. Our cooperation with these and other agencies will be dealt with in other sections reviewing the activities of PAHO/WHO.

## MEETINGS OF MINISTERS OF HEALTH OF CENTRAL AMERICA AND PANAMA

The Organization has maintained a very active and productive relationship with the Ministers of Public Health of Central America and Panama, whose annual meetings during the four-year period were attended by the Director of the Bureau, accompanied by the Chief of Zone III and advisers. Of particular importance was the XII Meeting in this series (San Salvador, 23-25 August 1967), which was also the first regular meeting of the Central American Public Health Council.

The Organization has a long record of cooperation with the Ministers of Public Health of Central America and Panama, which began their annual meetings in 1945 as the Superior Public Health Council to examine public health problems of mutual interest. In addition, the Organization, through its Zone III Office, Country Representatives, and consultants, has advised the meetings of Ministers whenever requested to do so and has cooperated in the preparation and implementation of the resolutions adopted. This tradition of cooperation in the improvement of Central American health conditions was continued in 1966-1969.

## RELATIONS WITH THE UNITED NATIONS SYSTEM

### THE DEVELOPMENT DECADE

The period reviewed in this report marked the end of the Development Decade instituted in 1961 by the XVI United Nations Assembly. Development, understood to mean economic growth and also social progress, was the subject of continuing discussion during the last decade. The impetus given to this concept by the international community has undoubtedly helped to mobilize public opinion and has induced national authorities to

give increasing importance to measures designed to foster economic and social progress.

The prevailing opinion at first was that economic progress was first and foremost in importance and that social, cultural, and health advances would naturally follow in its wake. Under this criterion it was only logical that industrial development was considered paramount. But the need for balanced development came to be recognized more and more as it became apparent that people were interested in other things besides increasing

their income. As we have said on other occasions, just as health progress is impossible in an economic vacuum, economic growth cannot be expected in countries with excessively high rates of mortality and morbidity, particularly from diseases for which effective methods of prevention and treatment are available.

Our relationship with the United Nations family stems from the fact that the Organization, through the Pan American Sanitary Conference and the Directing Council, acts as Regional Committee of the World Health Organization for the Americas. The World Health Organization's policies are determined by WHO and the Director-General and carried out with our fullest cooperation in matters of interest to the health of the Continent.

### UNDP

In the latter part of 1965 the United Nations Assembly, by Resolution 2029 (XX) combined the Expanded Program of Technical Assistance with the Special Fund to establish what is now the United Nations Development Program. This program has Resident Country Representatives with which our own Representatives maintain close working relations while, of course, also maintaining direct communication with the ministers of health, in keeping with our responsibility for advising them, upon request, in connection with their efforts to include health activities within the general development plans and stimulating increasing contributions from national sources and also from international programs such as UNDP.

In the period following the merging of the Technical Assistance Program with the Special Fund, we endeavored to interest the Resident Representatives of UNDP in our own activities and to encourage the Governments to prepare projects that could be financed by the Special Fund. There were then four programs that were considered of possible interest to UNDP. Two of them (the program for coordination of sanitary engineering instruction offered by the four Venezuelan universities, and a similar program at the University of Guanabara) were strictly national in scope; the third was the Latin American Center for Occupational Medicine; and the fourth was the Pan American Zoonosis Center, a five-year program involving a total of \$1.5 million. In addition, there were the Pan American Health Planning Program, then in its early stages, and the Hospital Maintenance and Engineering Center in Venezuela.

In 1967 the system for the formulation of projects for financing by the Technical Assistance component of UNDP was changed to a system of continuous programming in which a ceiling figure is set for each country and

any funds not used by the beneficiary government are returned and reallocated. The new system was put into effect in 1969.

In March of that same year the Resident Representatives met in Santiago, Chile, and devoted the first half of their meeting to an over-all review of the development programs, with the second half given over to a country-by-country examination of programs under way. Among the salient aspects of the meeting were its characterization of the Organization's cooperation with the Latin American Institute for Economic and Social Planning (ILPES) in the planning of health courses as an outstanding example of international collaboration; the mention made of the success achieved in sanitary engineering programs, particularly at the University of Guanabara; and the suggestion that it might be advisable to eliminate regional programs entirely, retaining only national programs.

Since 1966, the Organization has been attempting to arouse the interest of the Governments in securing the financing of programs by UNDP. By the beginning of 1969 the Special Fund had spent more than \$900 million throughout the world, of which only \$23 million had been devoted to health. In the Americas the UNDP has allocated a total of \$7,062,717 to country, regional, and intercountry programs.

This level of contribution can be substantially improved, particularly if we find the means of including the health component in all development programs, including agriculture programs, approved by the UNDP.

### UNICEF

The United Nations Children's Fund, established for the protection of children, has been concerned with problems of health since the commencement of its activity and has participated in many programs of our Organization. In 1966, UNICEF moved its Regional Office for the Americas to Santiago, Chile.

In December of the same year the Organization participated in the Meeting of Area Representatives of UNICEF held in Guatemala. During that meeting we had occasion to examine the traditional programs, particularly the malaria program, in which UNICEF had participated. We also presented some new programs, including the following: water supply systems for communities of less than 5,000 inhabitants; textbooks on nursing; public health laboratories; applied nutrition; and training of auxiliary personnel, all of which we believed of possible interest to UNICEF. During 1968 and 1969 we endeavored to interest UNICEF in the programs of infrastructure and the training of auxiliary personnel as possible means of furthering its policy for the economic and social development of Latin America.

UNICEF continued to provide assistance during 1966-1969, especially for programs related to malaria eradication, nutrition, and health services.

## ECLA

The work of the Economic Commission for Latin America has been a source of continuing interest to the Organization. ECLA's annual reports on the Latin American economy provide information and point up trends and directions that are very useful to us in gaining a complete understanding of economic development programs in Latin America.

As we have frequently said, economics and health are indissolubly combined in their influence on the way of life of individuals and nations. No economy can prosper in an unhealthy environment, for a man who is ill does not produce; conversely, health cannot be expected to flourish in a poor environment, for health programs cost money. It is this which leads us to continue paying attention to the work of ECLA as a source of sound information for our own studies.

For our own part, we have cooperated with ECLA in the health aspects of its activities dealing with housing, natural resources and power, planning, and industrial development. These are programs in which other international organizations have also participated.

## FAO

PAHO/WHO has extensive areas of cooperation with the Food and Agriculture Organization of the United Nations. Many problems of agriculture and nutrition are so closely related to health that the two aspects are all but inseparable. The community of interests is made evident by the many joint FAO/WHO committees or working parties that have been formed.

The Organization continued to cooperate with FAO in applied nutrition programs, in which the aim is to incorporate present knowledge in this field to community activities. UNICEF also takes part in these programs. But the most noteworthy support is provided by the Caribbean Food and Nutrition Institute, which began operations on 1 January 1967. Further reference to the Institute will be made in a subsequent section.

## WORLD FOOD PROGRAM

This is a multilateral program whose food resources derive especially from surpluses of the participating countries, from which it also receives financial assistance for its operations. It was established by the United Nations and FAO in late 1962; it began operations in

1963 with an experimental project, and was firmly established in 1965. Its aim is to utilize the distribution of food as an incentive to development and welfare programs.

From the very beginning we have studied the possibilities of appealing to the WFP as a means of supporting programs of supplementary feeding of vulnerable groups, particularly mothers and children, improving hospital diets; supporting administration of antimalaria drugs and in leprosy work; and as a stimulus in programs for the utilization of local manpower in projects of community interest. Among the latter, rural water supply programs deserve special mention.

In 1969 we studied in more detail the utilization of the World Food Program in the health sector and collaborated with its member countries in the formulation of projects that finalized with the approval of six requests for projects in Colombia, Dominican Republic, Ecuador, El Salvador, and Peru. Another 19 projects in various countries were in different stages of preparation in December 1969.

Preliminary reports on these activities were presented to the 61st Meeting of the Executive Committee and the XIX Meeting of the Directing Council (1969) and the Governments expressed an interest that the use of these resources continue to be promoted and that the Organization cooperate with them in the study and preparation of plans for their utilization.

## UNESCO

The programs for the economic and social development of aboriginal population groups have given rise to coordination of the activities of a number of international organizations. An attempt has been made to establish a method that will avoid duplication of efforts and ensure harmonious development of programs requiring multidisciplinary action for the accomplishment of their purposes.

In 1966-1969, WHO continued its cooperation with UNESCO in the Regional Center for Functional Literacy in Rural Areas for Latin America (CREFAL) by organizing a regular yearly course on health as a component of community development as part of the Center's 14th to 17th programs of short courses on nutrition, courses for the training of specialized personnel, and seminars. FAO, the United Nations, the OAS, and the ILO also cooperated in the work of the Center.

The textbook *La salud en el proceso de desarrollo de la comunidad*, prepared for use in the regular yearly courses of CREFAL, was published by the Organization.

The book entitled *Planeamiento de la educación sani-*

*taria en las escuelas*, widely distributed to the countries of the Continent, was published jointly by WHO and UNESCO.

## ILO

The Organization was in frequent contact during 1966-1969 with the International Labour Organisation's liaison office in Washington, D. C., for Latin American activities.

In September 1966 we participated in the 8th Conference of American States Members of ILO and followed with interest the professional training programs and occupational surveys conducted in various Latin American countries by that Organization. In the early

part of 1967 we attended a meeting on coordination of social security activities conducted by various international organizations in the Americas. The meeting was held in Geneva at ILO headquarters. During the same year, PAHO/WHO, together with the United Nations and ILO, extended advisory services at the request of the Government of Venezuela to the committee established to organize a unified health service in that country.

The ILO cooperated in some of our programs and it is reasonable to assume that with the advance of industrialization in the Americas new fields of activity will emerge in which the two organizations can usefully cooperate.

## RELATIONS WITH NATIONAL AND INTERNATIONAL INSTITUTIONS

The Organization frequently conducts activities with financial assistance from private or public institutions. Conversely, it also provides subsidies and assistance of various kinds to associations or societies active in the field of health. In certain cases, such as those of the Pan American Medical Confederation and the Pan American Federation of Associations of Medical Schools, relations have been established by the Governing Bodies of the Organization. In other cases it is the WHO which has entered into consultative and cooperative arrangements with the international nongovernmental organizations concerned. A large number of such nongovernmental organizations attend the meetings of the Regional Committee; for example, at the XVII Pan American Sanitary Conference, XVIII Meeting of the Regional Committee, 16 nongovernmental organizations were represented.

### THE FOUNDATIONS

An important role in the life of PAHO/WHO is played by foundations, which provide support for the health program by furnishing grants for specific purposes. Mention should be made first of three United States foundations because of their very important relationships with the Organization. The W. K. Kellogg Foundation was primarily interested in the training of personnel in hospital statistics, progressive patient care, and nutrition. The Williams-Waterman Fund of the Research Corporation contributed to the establishment of the Caribbean Food and Nutrition Institute and to research on nutritional anemias and endemic goiter. The Milbank Memorial Fund participated in programs

on manpower and medical education and the teaching of preventive and social medicine.

A number of other private groups became interested in the Organization's program during the same period. The Anna Fuller Fund participated in a study in 1967 of patients with certain forms of malignant neoplasms hospitalized in Buenos Aires. The Josiah Macy, Jr., Foundation aided various programs to strengthen pediatric education in Latin America. The Nutrition Foundation cooperated in the nutrition program, the Wellcome Foundation in the joint research program of the Pan American Zoonoses Center, and the Rockefeller Foundation also expressed an interest in the aforementioned Caribbean Institute.

Of interest for special reasons was the collaboration of the Brother's Brothers Foundation in a program of vaccination against smallpox, tuberculosis, and poliomyelitis in Nicaragua in 1966, and that provided by the Special Public Health Service Foundation of Brazil, through the Evandro Chagas Institute, in a study to assess the effectiveness of poliomyelitis vaccine in tropical zones.

### ASSOCIATIONS AND UNIVERSITIES

In Latin America there are many groups—variously called associations, societies, leagues, unions, etc.—whose purpose is to bring together persons who for professional reasons or because of shared convictions wish to unite their efforts behind a common cause. Examples are the medical, hospital, and nursing associations and the leagues against tuberculosis, alcoholism, and venereal diseases. All of these groups perform an

important social function by helping to enlist the support of public opinion, without which a public health activity is difficult to carry out or loses its effect. We know—and experience has repeatedly borne this out—that a highly motivated community participating with full awareness and volition is a prerequisite to the successful accomplishment of the objectives of any health program.

There is thus continuing contact between the Organization and associations having objectives in the health sector. It is only natural that a community of purposes will lead to related activities. The period from 1966-1969 was no exception in this regard, and there were many associations with which we entered into contact. Salient among these was the American Public Health Association, at whose annual meetings it has become traditional for PAHO/WHO to present exhibits which in these past years have dealt with water supply programs, medical care in the Americas, PAHO/WHO publications, and the use of health statistics in national health programs. We also collaborated with the World Health Foundation of the United States of America and with the United States Association for the United Nations, as well as mounting an exhibit on "Health and Peace" in the Headquarters building in observance of United Nations Day and Week in 1967.

The Organization expanded its relations with the universities of the Hemisphere, particularly with the schools of public health. This was a natural outgrowth of the increased emphasis on training and research. We have already mentioned both of these matters in a general way and will do so in greater detail when discussing the relevant activities of the Organization.

PAHO/WHO's relations with universities are of various kinds and generally involve one of the five following types of activities: (1) grants to a university to enable it to expand its facilities or improve its instruction or activities; (2) the supply of equipment for the installation or modernization of technical services; (3) the provision of technical assistance, usually through a specialized consultant who serves as adviser in the performance of specific research projects or coordinates work of this kind; (4) assistance in the organization of advanced training and short-term courses; and (5) direct provision of advisory services and fellowships. All of these contributions to the process of university education are centered on the field of health and are carried forward within the general framework of the fundamental purposes defined by the Constitution and by resolutions of the Governing Bodies. We must never forget that if the fundamental purpose of our Organization is "to promote and coordinate efforts of the countries of the Western Hemisphere to combat disease,

lengthen life, and promote the physical and mental health of the people," the university education and research in the health sciences have a vital place in our Organization.

Particular emphasis was placed during 1966-1969 on the establishment of useful contacts between universities and ministries of health, which have often operated separately as if there were no connection between the educational process and public action in the field of health. We have endeavored to correct this tendency by taking advantage of every opportunity to establish links between the two kinds of institutions. The participation of a university or group of universities in certain projects has brought them into joint activities with the ministries of health. While bringing about the establishment of adequate relations between educational institutions and health authorities is a slow and difficult task, involving as it does the altering of traditional administrative patterns, it is one that will result in better service to people and the community and which our experience shows we can accomplish if we persevere.

#### OTHER INSTITUTIONS

PAHO/WHO's relations in 1966-1969 included those with a number of other public and private institutions. Some of these were public national agencies whose over-all sphere of activity includes the health sector. A case in point is the United States Agency for International Development (AID), from which we continued receiving financial support for various programs, including two that were started in 1966: the Inter-American Investigation of Mortality in Childhood and the Program of Training for Research in Health and Population Dynamics.

The group of public and national institutions also includes agencies directly concerned with health and therefore interested in our activities. First and foremost in this group were the National Institutes of Health of the U. S. Public Health Service, which continued to provide assistance to virological research and other programs. Two of the programs assisted by these Institutes (salt fluoridation and mental health) concluded in 1967, and others, involving epidemiological studies, concluded in 1968. The U. S. Public Health Service participated in other programs, as did the National Communicable Disease Center and the International Influenza Center in Atlanta, Georgia (USA).

The Organization, for its part, furnished advisory services, grants, and fellowships to health institutions of various kinds. In Brazil, for example, it cooperated with the Adolfo Lutz Institute by assisting in the organ-

A modern building housing part of the yellow fever vaccine laboratory at the Oswaldo Cruz Institute in Rio de Janeiro, Brazil.



ization of courses dealing with the laboratory diagnosis of smallpox; with the Oswaldo Cruz Institute, by providing equipment, materials, and advisory services for the production of dried smallpox vaccine; and with the Evandro Chagas Institute, by helping to carry out a study to assess the effectiveness of poliomyelitis vaccine

in tropical areas. The Organization also rendered assistance to the Nutrition Institute of Recife, the Butantan Institute, the Institute of Sanitary Engineering, the National Institute of Rural Endemic Diseases, and the Institute of Rehabilitation of the University of São Paulo.

## SCIENTIFIC AND PUBLIC COMMUNICATIONS

Rapid development of the modern science of communication is a distinctive feature of our times, born of the need to provide persons, institutions, and communities with information enabling them to reach agreements or adopt decisions on a logical and suitable foundation.

PAHO/WHO has continuously expanded its services for communication to and among other organizations and persons interested in matters of health. This expansion is plainly evident, a fact which merits particular emphasis as it reflects the performance of one of the principal functions of the Organization. It should be essentially a forum for matters of health. Indeed, its Constitution, in specifically listing the functions of the Pan American Sanitary Conference provides that it shall "serve as a forum for the interchange of information and ideas relating to the prevention of disease, the preservation, promotion and restoration of mental and physical health, and the advancement of sociomedical measures and facilities for the prevention and treatment of physical and mental diseases in the Western Hemisphere."

### SCIENTIFIC INFORMATION

Scientific information is a multifaceted concept. The term "scientific," as used here, refers to a wide variety of activities, professional and technical as well as scientific. Thus, "scientific information" is conceived of as embracing information on the health sciences, the medical profession, and health methods alike.

The Organization performs its information function by various means, principally those described below. In the field of science, PAHO/WHO prepared and organized the First International Conference on Viral and Rickettsial Diseases of Man (Washington, D. C., 7-11 November 1966), which was attended by 280 scientists from 27 countries and whose proceedings, published in English in 1967, provide an over-view of present knowledge in this field. In sanitary engineering, the Organization participates in the annual congresses of the Inter-American Association of Sanitary Engineering (AIDIS), with which it has maintained a close relationship since its establishment. The Organization also attends international meetings with the aim of

informing them of its activities. A case in point was the International Conference on Water for Peace, held in 1967 and attended by more than 5,000 persons from some 100 countries, to which the Organization presented reports on the present status of the water supply program in Latin America, the financing of water supply systems, and the hemisphere-wide program of personnel training, as well as submitting a proposed program for providing impetus to water supply programs in the Americas. Documents of this Conference of potential interest to members of the PAHO/WHO professional staff in connection with their duties were distributed to them.

The scientific information activities described above can be considered of a general nature. In addition to them there are also other, more intensive activities, of more limited scope, to which the Organization devotes its attention. We refer to the seminars on various health problems which are held annually for the purpose of providing a group of professionals or technicians with up-to-date information and the opportunity of exchanging ideas on these problems and solutions so that they can later apply them to the performance of their work. Three examples of such activities are:

(1) The Seminar on Nursing Education, held in

the University of the Western Indies (Jamaica) in 1966 and attended by 19 instructors from the area who examined the needs for personnel and for training and formulated the general outlines of a program for the training of professional nurses in comprehensive nursing care; (2) the Seminar on the Teaching of Psychiatry and Mental Health in Latin American Schools of Medicine, held in Lima late in 1967 and attended by 44 professionals from 19 American republics, who examined the teaching of these subjects as part of the basic medical course in the schools of medicine; and (3) the Seminar on Administrative Methods for Leprosy Control Programs, held in Guadalajara (Mexico) in mid-1968, and attended by persons from 46 American countries who examined specific aspects and programs of leprosy control in Latin America.

The work in the field of scientific communications includes the issuance of publications designed to guide the activities of health workers in the broadest sense of the term. Examples of such publications are *A Guide for the Identification of the Snail Intermediate Hosts of Schistosomiasis in the Americas*, published in 1967 and intended for use by personnel engaged in control activities, either in the laboratory or in the field; and a Spanish translation of the American Dental Associa-





tion's dental materials guide prepared in 1967 with the assistance of the University of Mérida (Venezuela) and distributed throughout Latin America. Also part of this group of publications are a number of manuals of work procedures, of which the following were issued in 1966: an updated Spanish version of a training manual issued in English by the U.S. Public Health Service on basic protection procedures against ionizing radiations; a Spanish translation of the manual on the use of X rays in medicine and dentistry and the control of radiation hazards, issued in English by the American College of Radiology—the Spanish version was widely distributed by PAHO/WHO in Latin America, and copies in English were sent to Jamaica and Trinidad and Tobago; (a Spanish translation of the book published in 1964 by the Venereal Disease Research Laboratory of the U. S. National Communicable Disease Center) on Serologic Tests for Syphilis, which was distributed only to health services for use as a reference document in testing and control programs; and a Spanish translation of a U. S. Public Health Service publication *Clinical Handbook on Economic Poisons*. Also included in the same group is a Spanish translation of a book by Dr. D. B. Jelliffe on *Child Health in the Tropics*, written to serve as a practical manual for medical and paramedical personnel and covering the principal aspects of child health in tropical regions in general. In preparing the translation, the text was adapted to reflect specific health conditions in the Americas.

In 1967 the Organization published Spanish and Portuguese versions of a handbook on the operation, maintenance, and minor repair guide of jet injectors issued in English by the National Communicable Disease Center (U. S. Public Health Service). These versions were made available to the field personnel of smallpox eradication programs in Latin America. Also published in 1967 was a second Spanish edition of *Procedure for the Investigation of Foodborne Disease Outbreaks*, an adaptation of a handbook issued by the International Association of Milk, Food, and Environmental Sanitarians and intended for public health workers who have no special training or experience in epidemiological research.

In 1968 a single volume edition was published containing the Spanish versions of a U. S. Public Health Service handbook on the guide for laboratory animal facilities and care and of a guide for shipments of small laboratory animals issued by the National Academy of Sciences, U. S. National Research Council. The same year saw the publication of the third edition of the *Manual for the Microscopic Diagnosis of Malaria*, by Dr. A. J. Walker, and the publication of *Profilaxia das doenças transmissíveis*, a Portuguese version of the

APHA publication *Control of Communicable Diseases in Man*.

This section would not be complete without a brief general reference to the Technical Discussions held each year during the meeting of the Directing Council or the Conference. These Discussions serve as a means for providing information on a pre-selected health topic, of interest to the Americas, to a group of professionals composed mainly of public health officials.

Although some of the topics discussed have been mentioned above and all will be touched upon in the sections dealing with the relevant activities of the Organization, it is believed appropriate to list here the topics dealt with during the four years covered by this report. The XVII Pan American Sanitary Conference examined the "Means for Promoting and Making Effective the Coordination between the Services and Programs of Ministries of Health, Social Security Institutes, and Other Institutions that Conduct Activities Related to Health"; and the Directing Council discussed "Methods for Increasing Health Service Coverage in Rural Areas" at its XVII Meeting, "Participation of the Health Sector in Population Policy" at its XVIII Meeting, and "Financing of the Health Sector" at its XIX Meeting. The Final Report of each year's Technical Discussions and the papers submitted to them are published in the *Boletín* and serve as a valuable source of technical information.

## PUBLIC INFORMATION

As an international organization, PAHO/WHO is duty-bound to keep the public informed of its basic purposes, goals, activities, and available resources. This is accomplished in part by means of the Annual Reports submitted to the Council or the Conference, as the case may be, and the Quadrennial Report, which covers in broader detail the progress of the Organization between one Pan American Sanitary Conference and the next.

But public information, as understood today, is information transmitted through the media of the press, radio, and television. The Organization uses the mass media as frequently as its budget permits, preparing a large number of articles or reports on matters of interest to the general public for publication or broadcast. During 1966-1969, the Organization issued 664 press releases, organized press conferences and interviews during meetings or other special events sponsored by PAHO/WHO, and lent films to civic and voluntary groups.

Contacts with Latin American radio stations were considerably enlarged. In 1968 the Organization in-

augurated a new series of filmed news broadcasts in Spanish entitled "Salud para las Américas." Each film has four 5½ minute broadcasts, so that the stations can schedule an entire sequence in advance. Five complete programs were put on film and distributed to 300 stations in Spanish-speaking countries.

Television and motion picture production, requiring, as they do, specially-trained staff and substantial resources, have not been within the reach of the Organization.

An illustrated newsletter entitled *Gazette*, printed in Spanish and English, first appeared in 1969, with an initial pressrun of 10,000 copies. Its purpose is to make the work of the Organization and its Governments better known to public officials outside the field of health and to the general public. Each number contains various bulletins and news items about projects, meetings, and other matters considered to be of interest.

The Public Information Service aims to provide information in nontechnical language on the programs, activities, and objectives of the Organization, a service to which considerable importance is attached, since in the last analysis the prestige of an institution is founded on public opinion.

## WORLD HEALTH DAY

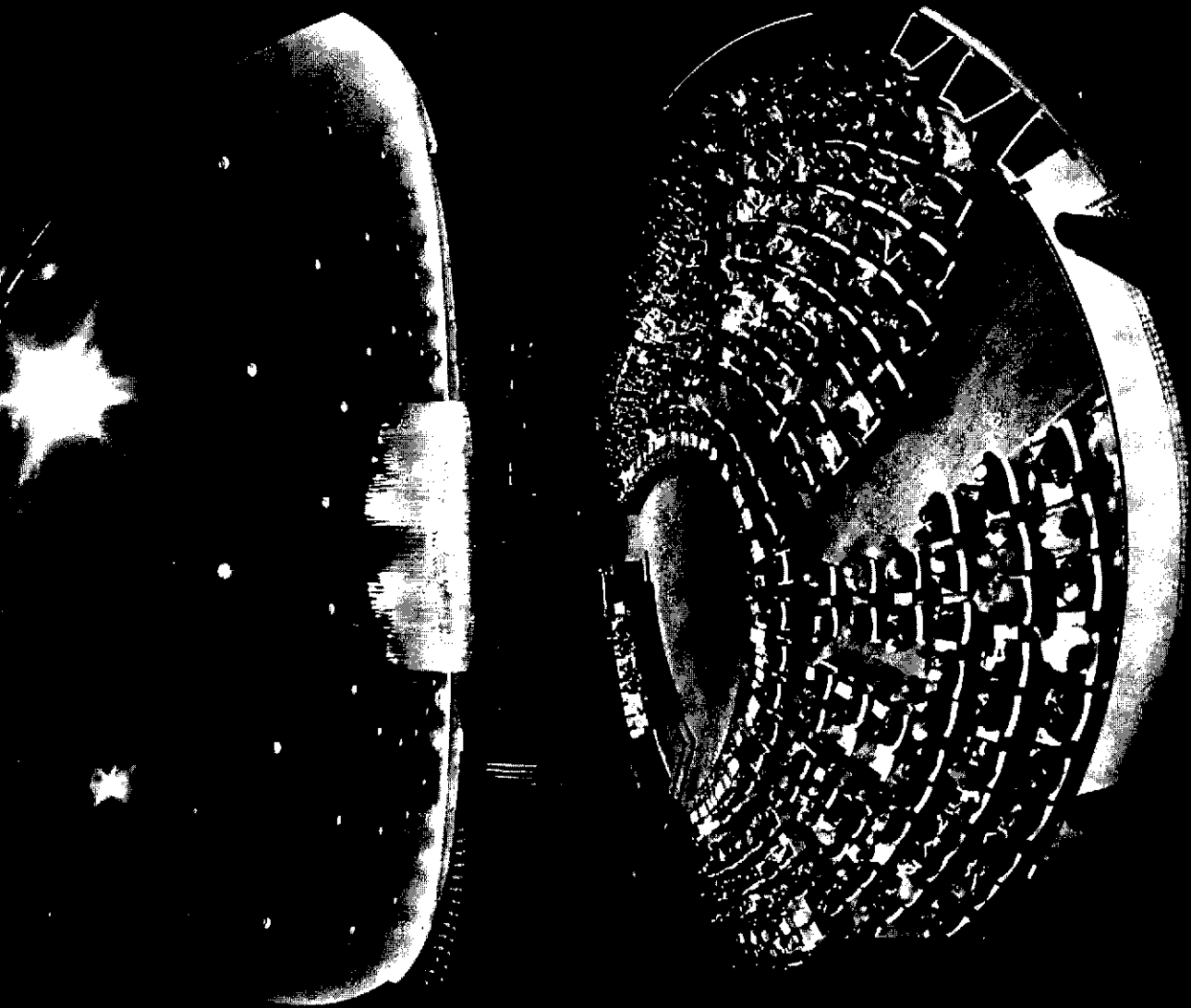
On April 7, observed each year as World Health Day, an attempt is made to focus public attention on a current health event or a serious health problem. The topics chosen by WHO for worldwide attention and disseminated by us in the Americas during 1966-1969 were: "Man and His Cities," in 1966; "Partners in Health," in 1967; "Health in the World of Tomorrow," in 1968; and "Health, Labor and Productivity," in 1969. Material prepared by WHO, accompanied by a message from the Director-General is distributed on these occasions throughout the Continent, along with remarks of the Director of the Bureau underlining the significance of the day. This material is used by teachers in their classrooms, as well as by health authorities and officers in their work. April 7 is one of the few occasions on which the Organization's activities in behalf of health and well-being in the Americas are brought to the attention of the general public.



## TWENTIETH ANNIVERSARY OF WHO

In 1968, World Health Day coincided with the Twentieth Anniversary of WHO. (For the record, PAHO had completed its 65th year of existence.) A special effort was made to encourage the organization of a record number of commemorative events in the countries, Zones, and Headquarters. An illustrated pamphlet entitled *An Approach to Health (Un enfoque en la salud)* was prepared and distributed to 2,000 newspapers in the United States of America, 900 in Canada, and 650 in Latin America. A special radio program was broadcast to 35 stations in Spanish-speaking countries, and a three-minute television newscast, the first TV program ever produced by PAHO/WHO, was sent on tape to 300 stations throughout the Continent, with separate scripts in English, Spanish, and Portuguese.

A highly significant event took place at Headquarters: Dr. Joshua Lederberg spoke in our Council Chamber on "Health in the World of Tomorrow." This, in our opinion, was an eminently fitting way of celebrating the Twentieth Anniversary of WHO.



Plenary Session, XVII Pan American Sanitary Conference, XVIII Meeting of the Regional Committee of the World Health Organization for the Americas, held at Headquarters of PAHO in Washington, D.C., from 26 September to 7 October 1966.

### III. INTERNAL DEVELOPMENTS IN THE ORGANIZATION

#### CONSTITUTIONAL QUESTIONS

##### NEW MEMBERS

Two countries, Barbados and Guyana, became members of the Pan American Health Organization on 2 October 1967, by unanimous decision of the XVII Meeting of the Directing Council, increasing the roster of the Organization to 28, including 25 Member Governments—Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, the United States of America, Uruguay, and Venezuela—and three Participating Governments, France, Kingdom of the Netherlands, and the United Kingdom.

##### AMENDMENT OF THE CONSTITUTION

In view of the increase in the number of Governments making up the Organization and the desirability of providing for broader representation in the Executive Committee, the XVIII Meeting of the Directing Council amended Article 15-A of the Constitution of the Organization to read as follows:

The Executive Committee shall be composed of nine Member Governments of the Organization elected by the Conference or the Council for overlapping periods of three years. Each of the elected Member Governments shall be entitled to designate one representative to the Executive Committee. Each representative may be accompanied by one or more alternates and advisers. A Member Government shall not be eligible for re-election to the Executive Committee until one year has elapsed since the expiration of its term of office.

The Council also approved a transitional article reading as follows:

On the entry into force of the amendment to Article 15-A, the vacancies on the Executive Committee shall be filled and two additional members shall be elected to bring the membership to nine. At subsequent elections a suffi-

cient number of vacancies shall be filled to keep the membership of the Executive Committee at nine Member Governments of the Organization and, if necessary, the terms of office of the Governments elected shall be adjusted, provided that in no instance shall a Government be entitled to be a member of the Executive Committee for more than three successive years.

##### ELECTION OF THE DIRECTOR

One of the functions residing exclusively in the Conference is to elect the Director of the Pan American Sanitary Bureau (Article 4-E of the Constitution). On 29 September 1966, the Conference elected Dr. Abraham Horwitz by virtue of Article 21-A of the Constitution and Rule 42 of its Rules of Procedure (Resolution V). Pursuant to Article 4 of the Agreement between PAHO and WHO and Articles 49 and 52 of the WHO Constitution, the Director-General of WHO was notified of the election for purposes of the appointment of the Regional Director for the Americas.

##### EXECUTIVE COMMITTEE: ELECTION OF GOVERNMENTS AND EXPIRATION OF TERMS OF OFFICE

During the four-year period, the Governments of the following countries were elected to membership in the Executive Committee: Colombia and the United States of America (1966); Nicaragua, Trinidad and Tobago, and Uruguay (1967); Argentina, Brazil, Costa Rica, and Mexico (1968); and Guyana, Peru, and Venezuela (1969).

During the same period, the Governments of the following countries completed their periods of office and received a vote of thanks from the Conference or the Directing Council: Brazil and Mexico (1966); Jamaica, Panama, and Venezuela (1967); Ecuador and Guatemala (1968); and Brazil, Colombia, and the United States of America (1969).

## RULES OF PROCEDURE OF THE GOVERNING BODIES

The Directing Council, at its XVII Meeting, amended Rule 30 of its Rules of Procedure to read as follows:

Resolutions, amendments and substantive motions shall normally be introduced in writing and handed to the Director who shall circulate copies to the representatives. As a general rule, no proposal shall be discussed or put to the vote unless copies of it have been circulated to all representatives not later than the session preceding the meeting. The President may, however, under special circumstances, permit the discussion and consideration of such resolutions, amendments or substantive motions even though they have not been previously circulated.

Proposals shall be voted on in the order in which they are presented, except when the Council decides to the contrary. Parts of a proposal or of an amendment shall be voted on separately if any representative so requests.

The Council also requested the Director to examine the Rules of Procedure of the Governing Bodies with a view to adapting them to the number of members of the Organization and to submit the proposed amendments to the Executive Committee. The Committee, at its 61st Meeting, approved the amendments to its own Rules of Procedure and transmitted to the Directing Council those relating to the Rules of Procedure of the Council and the Conference. The XIX Meeting of the Directing Council approved the proposed amendments to its Rules of Procedure with only one change and referred to the Conference, together with its favorable report and with changes in two articles, the proposals for amending the Rules of Procedure of the Conference. The amendments consisted essentially in providing for the addition of a Rapporteur to the Secretariat of the meetings, with direct participation in the preparation of draft resolutions and the Final Report.

### MEETINGS OF THE GOVERNING BODIES

The XVII Pan American Sanitary Conference was held in 1966, and the XVII, XVIII, and XIX Meetings of the Directing Council in the three following years. These were also the XVIII to XXI Meetings, inclusive, of the Regional Committee of WHO for the Americas. The first and last were held at Headquarters, the second in Port-of-Spain, Trinidad and Tobago, and the third in Buenos Aires, Argentina, pursuant to Article 7-A and 12-A of the Constitution and Resolutions XL of the XVII Conference and XII of the Directing Council in 1967.

The meetings were attended by the highest public authorities of the Governments of the Organization and by many specialists in public health, generally officials of

national health services as required by Article 5-B of the Constitution. Thus, the Conference was attended by 14 ministers of health, four undersecretaries of health, and one director general of health, and the corresponding figures for the meetings of the Directing Council were 11, 5, and 5; 6, 2, and 2; and 7, 4, and 4, respectively.

The Executive Committee held 10 meetings, the 54th through the 63rd, during the period under review. In accordance with Article 17 of the Constitution, the 57th and 58th Meetings took place in Port-of-Spain and the 60th in Buenos Aires.

All of these meetings are specifically provided for in the Constitution, which specifies their function in Articles 4, 9, and 14, with respect to the Conference, the Directing Council, and the Executive Committee, respectively. The relevant documents, including the proposed program and budget estimates, the Annual Report of the Chairman of the Executive Committee, the Annual and Quadrennial (in the case of the Conference) Reports of the Director, and the Financial Report and Report of the External Auditor, were submitted to all of these meetings and received the approval of the appropriate Governing Body, which commended the Bureau on its work.

In addition to considering administrative and financial matters, the meetings of the Governing Bodies examined and discussed every aspect of the technical activities of the Organization with a view to assisting the Governments in establishing the health policies of the Organization. The XVII Conference approved resolutions on the programs of research, mental health, medical care, and medical textbooks, among other matters, and adopted a declaration and standards concerning the international transportation of human remains. The XVII Meeting of the Directing Council approved resolutions on poliomyelitis, water supply, fellowships, and Chagas' disease, in addition to one relating to the Pan American Foot-and-Mouth Disease Center designating the Organization as the agency responsible technically and administratively for the Center, establishing its financing through a quota system, and authorizing the Director to convene annually, beginning in 1968, a meeting of Ministers of Agriculture or their representatives, to review the program of the Center and to consider matters of mutual interest. Salient among the resolutions of the XVIII Meeting of the Directing Council were those on the Institute of Nutrition of Central America and Panama, the development of the River Plate Basin, and teaching and research in the health sciences, as well as Resolution XXVI, which incorporated all the recommendations of the Special Meeting of Ministers of Health of the Americas into the policy of PAHO/WHO. At the XIX Meeting of the Council



54th Meeting of the Executive Committee of the Pan American Health Organization, April 1966.

resolutions were approved on the nutrition program, *Aedes aegypti*, malaria eradication, long-term planning and evaluation, the Regional Library of Medicine, in addition to one concerning the emergency situation in Honduras and El Salvador.

The Executive Committee, at its meetings during 1966-1969, continued to perform its role as an advisory body to the Directing Council and the Conference and

played an extremely active part in the examination of the proposed program and budget estimates prepared by the Director of the Bureau, which was examined item by item at the 56th, 59th, and 61st Meetings. The 57th Meeting (September 1967) devoted particular attention to the financing of the Pan American Foot-and-Mouth Disease Center and to *Official Document 76*, containing the proposed program and budget estimates of PAHO for 1968 and the WHO Region of the Americas for 1969 and the provisional draft of the proposed program and budget of PAHO for 1969. The Chairman of the Executive Committee declared this document to be "perhaps superior to the program and documents of any other international organization." It is a genuine program budget in which the complex activities of international health are presented in an orderly functional arrangement representing definite progress toward the objective of offering the Governments as much information as possible to guide them in the very basic matter of determining the apportionment of available funds for the performance of health activities in the Americas. This progress is part of a continuous process that was started some years ago and is gradually being perfected through experience with a view to improving the service to the Governments of the Organization.

## ORGANIZATIONAL STRUCTURE

### THE CONCEPT OF HEALTH

The general concept of health is summarized in the fundamental purposes of PAHO/WHO: to combat disease, lengthen life, promote health, and contribute to the well-being and development of nations. The demands of the time requires the placement of health in an economic and social context, as a fundamental component of development, a concept which has been gaining increasing acceptance in the Americas since the adoption of the Act of Bogotá (1960), which recognized the thesis upheld by our Organization that health is to be regarded in the Americas as an integral part of the process of economic growth, taken to mean the adoption of a series of measures directed to increasing the welfare of the individual, his family, and his community. Individual and collective health are part of economic development, which influences and is in turn influenced by them. This thesis later received the support of the American Chiefs of State and of the Ministers of Health of the Hemisphere, as can be seen in this *Report*.

### THE STRUCTURE OF SERVICES

The structure of the services is determined by the arrangements considered necessary for the protection, promotion, and restoration of health and for the development of human resources through health activities which are well designed, properly organized and administered, and coordinated and integrated with programs for the economic and social development of the community.

These services are performed in the Organization at three levels: central, zonal, and national, with a view to meeting the needs of the Governments as effectively as possible. This organizational structure remained unchanged: the six Zone Offices, Country Representatives, and the El Paso Field Office continued to provide liaison between Headquarters and the Governments. This division of functions is based on the principle of decentralization of program planning and execution, combined with centralization of administrative functions in Washington, a principle adopted some years ago and

applied since with satisfactory results, including the reduction of costs for operations and personnel. The division into three levels has been shown in practice to be an effective arrangement for the performance of the functions of the Pan American Health Organization/World Health Organization. But we must never forget that an administrative structure is a working mechanism which is in constant activity and whose constituent elements are continuously interacting on one another. And we must always keep in mind that health is indivisible and that only the complexity and diversity of its manifestations has led us to design a multiple structure adapted to them.

In order to bring the administrative structure more into line with the needs, the central services were realigned under an arrangement in which the "traditional" departments (communicable disease control, malaria eradication, health statistics, among others) were retained; the objectives of some of them (environmental sciences and sanitary engineering, scientific and public communications) were expanded; certain units (medical care administration, human resources development, research promotion and coordination and evaluation), were raised to departmental rank; a new department (general and special technical services) and a new section (computer science) were created, along with five new units (poliomyelitis, chronic diseases, cancer, parasitic diseases, and the office for liaison with international organizations).

#### ADVISORY COMMITTEES

Advisory committees and working groups are established as part of the administrative structure and are given responsibility for examining a particular field of activity or exploring new activities so as to offer the Organization and the Bureau, through their reports, new guidelines and critical appraisals that will enable them to develop a more efficient and suitable health policy.

In 1966 the Advisory Group on Pediatric Education was convened and the Research Group on the Chemotherapy of Chagas' Disease held its Second Meeting. The Fourth Meeting of the Regional Advisory Committee on Health Statistics held its Fourth Meeting in 1966 and its Fifth in 1968. The Advisory Committee on Medical Research held its Fifth, Sixth, Seventh, and Eighth Meetings during the four-year period. The Advisory Committee on the Teaching of Preventive and Social Medicine in Latin America held a meeting in 1967, and the Technical Advisory Committee on Nutrition met for the first time in 1968.

The Scientific Advisory Committee of the Pan American Zoonoses and Foot-and-Mouth Disease Centers, appointed by the Director of PASB to review the work

programs of the Centers, especially those related to research, held its First Meeting in 1967. The Committee's recommendations in the past three years have had an important impact on the activities of the Centers and, consequently, on the zoonoses control and research programs carried on by the countries.

In addition to these committee meetings, the Study Group on Coordination of Medical Care Services of Ministries of Health, Social Security Institutes, and Universities, sponsored jointly by the OAS and the Organization, met in August 1969, and the Scientific Advisory Committee on the Regional Library of Medicine met in 1968 and 1969. Other committees, such as those on malaria and *Aedes aegypti*, will be mentioned in the relevant portion of this Report.

#### CENTERS

Also a part of the Organization are a number of centers established to deal with health problems and needs which are common to several countries and require particular research activities and specially trained personnel. The Institute of Nutrition of Central America and Panama, the Latin American Center for Classification of Diseases, the Health Sciences Education Information Center, and the Pan American Zoonoses Center carried forward their regular programs during the four-year period, as did the Pan American Foot-and-Mouth Disease Center, which in 1968 was transferred completely to the Organization.

The PAHO/WHO Immunology Research and Training Center, with headquarters in São Paulo, the Latin American Center for Medical Administration, and the Population Information Center were established in 1966, and the Caribbean Food and Nutrition Institute in 1967. The Pan American Sanitary Engineering and Environmental Sciences Center, the Regional Library of Medicine, and the Pan American Health Planning Program were organized in 1968, and the Computer Center in Health (Argentina) and the PAHO/WHO Immunology Research and Training Center (Mexico) were established in 1969.

All these centers constitute a network of facilities for dealing with important aspects of the health sector. They have generally been established at the initiative of a given country which has provided facilities, installations, services, and contributions of every kind for their operation. Such has been the case with the Pan American Foot-and-Mouth Disease Center, sponsored by Brazil, the Zoonoses Center, by Argentina, and the Caribbean Food and Nutrition Institute, by Jamaica. In certain instances, however, a proposal of a particular Government has been supported by other countries with a view to obtaining assistance from the United Nations

Main building of the Pan American Foot-and-Mouth Disease Center, Rio de Janeiro, Brazil.



Development Program, as in the case of the Pan American Health Planning Program. As for INCAP, all of the Central American countries and Panama are its members by virtue of an agreement.

Each center has a specific field of activity, generally indicated by its name, and all are at the service of the entire membership of the Organization. Their research findings are made available to all the countries, and their laboratories and training courses are open to nationals of any member of the Organization. Centers are established in response to the need for a given activity and the desirability of decentralizing so as to render better service to the Governments.

### CONSULTANTS

Short- and long-term consultants and temporary advisers are a key component of the operational structure. They are generally charged with examining a particular problem in the field and suggesting a means of solving it.

The number of consultants and advisers has grown as the Governments have turned to the Organization for more and more services. This trend was strongly accentuated during the four-year period, as reflected by the following figures: in 1966, 517 consultants and advisers were designated; in 1967, 627; in 1968, 759; and in 1969, 752. The results have amply justified the policy applied in this respect, which enables the Organization to reduce the number of staff appointments, obtain the services of experienced, high-level specialists who, in any event, are generally available for only a short period, and render better service to the Governments.

An evaluation of advisory services provided to the Governments through temporary consultants was made in 1967. Its findings and recommendations served as a basis for preparing a manual setting forth in broad outline the duties of consultants and guidelines for the submission of their reports.

## FINANCIAL QUESTIONS

### PROGRAMS

An increasingly larger number of programs, dealing with a widening variety of subjects, were approved each year during the period under review. Two-thirds of them can be described as "on-going programs" because they are designed to cope with major health problems which are still in process of solution. The remaining third is made up in part of new initiatives of the Governments in which the Organization has been asked to

collaborate. We say "in part" because many such requests (149 in 1966, 172 in 1967, 239 in 1968, and 303 in 1969) could not be complied with for lack of funds. In 1967 the unsatisfied demand for additional services represented more than \$4,000,000.\* The increasing interest of the Governments in enlisting our cooperation is a clear sign of the vitality and efficiency

\* All references to dollars in this *Report* are to United States currency.



TABLE 1. NATIONAL AND REGIONAL PROJECTS, 1966-1969.

PROJECT	1966	1967	1968	1969
Country	371	410	442	452
Regional (intercountry and interzone)	158	171	174	175
Total	529	581	616	627

of the Organization. The number of country and regional programs in which the Organization was involved during each year of the quadrennium is shown in Table 1.

The funds available to the Organization for covering its budgeted expenditures are derived, first of all, from the quota contribution of the Governments, which, according to Article LX of the Pan American Sanitary Code, are based on the scale established by the Organization of American States. A second source of income is the Organization's share in the regular budget of WHO, which during the four-year period represented, on the average, 53.4 per cent of the total yearly PAHO budget. A third source consists of the contributions received from the Malaria Eradication Special Account (WHO), the United Nations Development Program (Technical Assistance and Special Fund), and grants and voluntary contributions from Governments, foundations, and other public and private institutions.

### BUDGET

The budget is a numerical expression of the program and should be the basis of all efficient administration. To make it so and enable the Governments to have a precise concept of the relationship between the program and the budgetary allotments, as well as to make possible a thorough analysis and control of expenditures, a system of program budgeting was adopted some years ago. This required the Organization to introduce important changes in the arrangement of the so-called "gray document," which is published each year and which contains the program and budget estimates of the Pan American Health Organization for a given year, as well as those of the WHO Region of the Americas and the provisional draft estimates of PAHO for two years hence.

The budget document presents the funds according to source, showing separately those derived from the quota contributions of the Governments of PAHO, those received from WHO, and funds received from other organizations and agencies. In the execution of the program, however, the funds from various sources are combined and used in accordance with sound accounting practices and efficient technical and administrative management.

### New Budget Format

*Official Document 76* of July 1967, containing the proposed program and budget estimates of PAHO for 1968, reflected a number of changes in the presentation of the figures. These changes were designed to provide a more profound analysis and project a realistic picture of expenditures. Among the more important changes were the introduction of a table showing the new programs and those being completed; a breakdown indicating each country's share in the benefits of regional (AMRO) programs, and the presentation of budgetary allotments for four years: the year to which the estimates refer; the two previous years, with expenditures for the first given in actual figures; and the year following that to which the program refers. As a result of these changes the gray document doubled in size (*Official Document 61* had 249 pages, *67* had 265, *76* had 547, and *85* had 554).

The Organization was the first international agency to adopt the system of program budgeting, a financial technique which, like all techniques, can be improved. Its aim in doing so was to supply all available information to the Executive Committee, which is constitutionally charged with examining and submitting to the Conference or the Council, along with whatever recommendations it deems advisable, the proposed program and budget estimates which the Director of the Bureau has prepared in consultation with the Governments and in keeping with their general recommendations. The procedure facilitates the work of the Executive Committee by providing it with a program budget enabling it and the Governing Body responsible for its approval with an in-depth analysis of all the financial activities of the Organization and relating them to the program to be carried out.

### Budgetary Expenditures

Because of the growing number of programs and the influence of external factors such as the rise in the cost of living, which affects salaries, and persistent inflation, which places a pressure on prices, the budget has risen steadily, as will be observed in Table 2.

The regular income of PAHO exceeded the regular

TABLE 2. PAHO REGULAR BUDGET AND GRAND TOTAL, 1966-1969.

<i>(In US dollars)</i>		
YEAR	PAHO REGULAR	TOTAL BUDGET
1966	8,080,000	21,450,681
1967	9,115,680	24,668,878
1968	11,392,836	26,505,127
1969	12,592,836	28,802,616

TABLE 3. FUNDS BUDGETED FOR PAHO/WHO, 1966-1969.

(In US dollars)

SOURCE OF FUNDS	1966	1967	1968	1969
Pan American Health Organization				
Regular budget	8,080,000	9,115,680	11,392,836	12,592,836
Special Fund for Health Promotion (textbook program)	—	—	150,970	—
Special Malaria Fund	2,037,223	2,214,965	1,864,060	1,758,480
Community Water Supply Fund	474,979	238,322	117,404	151,241
Grants and other contributions	1,302,687	1,931,994	2,163,352	3,477,529
INCAP and grants received	1,724,834	1,864,533	1,526,715	1,453,025
Organization of American States, Pro- gram of Technical Cooperation	572,788	671,636	298,654	—
Special Zoonoses Fund	—	—	—	4,545
Subtotal PAHO	14,192,511	16,037,130	17,513,991	19,437,656
World Health Organization				
Regular budget	4,115,600	5,582,576	5,821,800	6,345,704
Malaria Eradication Special Account	755,030	401,422	395,869	180,673
UNDP—Technical Assistance	1,439,900	1,439,134	1,496,800	1,317,300
UNDP—Special Fund	792,740	961,271	1,112,841	1,319,850
Other	154,900	247,345	163,826	201,433
Subtotal WHO	7,258,170	8,631,748	8,991,136	9,364,960
Total PAHO/WHO	21,450,681	24,668,878	26,505,127	28,802,616

appropriations in each of the first three years of the quadrennium, because of the payment of quotas in arrears. In 1969 the monetary crisis affecting many of the countries was responsible for a sharp reduction in income and therefore a substantial shortfall in connection with the amount of the budget. However, in line with established Organization policy the average level of expenditures has been kept below the average amount of yearly income, so that the last 10 years, as a whole, yielded a surplus in spite of the 1969 deficit.

The combined PAHO/WHO budgets for the period 1966-1969 are itemized in Table 3.

### Criteria

The proposed budget is prepared in accordance with

TABLE 4. PERCENTAGE OF DISTRIBUTION OF ACTUAL FUNDS, BY ACTIVITY, 1966-1969.

ACTIVITY	1966	1967	1968	1969
Protection of health	32.6	35.4	34.2	33.1
Promotion of health	36.7	36.3	36.0	40.2
Development of educational institutions	11.8	8.5	8.9	8.4
Program services	4.5	4.7	5.1	4.7
Administrative direction				
Executive and technical direction	1.5	1.2	0.8	0.9
Administrative services	5.8	5.8	5.8	5.8
General expenses	4.8	4.6	5.1	5.2
Governing Bodies	2.1	2.0	1.7	1.6
Increase to Assets	0.2	1.5	2.4	0.1
Total	100.0	100.0	100.0	100.0

two basic principles. The first refers to the constant need to make the best possible use of all resources, in view of the fact that they are not sufficient for meeting all requests of the Governments. The second principle is that the resources must be equitably distributed among the many and varied activities required by the Governments.

Table 4 shows the percentage of distribution of actual funds during the last four years.

TABLE 5. PERCENTAGE OF DISTRIBUTION OF ACTUAL FUNDS, BY SERVICES, 1966-1969.

SERVICE	1966	1967	1968	1969
Advisory services	62.0	60.1	59.4	61.9
Development of human resources	11.5	13.4	13.1	13.1
Research	11.6	10.7	9.7	8.8
Indirect costs of programs	14.9	15.8	17.8	16.2
Total	100.0	100.0	100.0	100.0

The distribution of actual funds by services appears in Table 5 and the percentage of investments by groups of expenditures in Table 6.

This percentage distribution of budgetary allotments shows, in financial terms, how the Organization, through the Bureau, has applied the health policy set by the Governments.

### WORKING CAPITAL FUND

This Fund is a means of facilitating normal development of the Organization's financial transactions. It is

TABLE 6. PERCENTAGE OF INVESTMENTS BY GROUPS OF EXPENDITURES, 1966-1969.

	1966	1967	1968	1969
Personnel costs	63.5	60.4	59.3	59.3
Duty travel	4.8	5.1	4.6	4.6
Fellowships	7.8	7.7	7.2	7.5
Seminars	1.0	1.4	1.2	1.5
Supplies and equipment	10.5	12.5	10.9	12.8
Grants and other	12.4	12.9	16.8	14.3
Total	100.0	100.0	100.0	100.0

an indispensable tool for an institution in which the flow of income is not always in line with predicted patterns. The amounts budgeted for increasing this Fund, together with yearly surpluses of income over expenditures, kept the Fund at a satisfactory level during the first three years of the period. In 1969, a drop in quota receipts made it necessary to use resources from the Fund to cover expenditures. However, two-thirds of the cash deficit in 1969 were recovered during the first quarter of 1970 through payments of quotas in arrears, which were returned to the Fund. The financial position of the Organization continues to be satisfactory. The status of the Fund is shown in Table 7.

#### VOLUNTARY CONTRIBUTIONS

The Organization receives voluntary contributions for the conduct of particular programs. These are showing a downward trend, which means that the regular budget must be increased if the Organization is to maintain its program. The trend is particularly evident in the case of contributions for malaria eradication and water supply.

Although an adequate amount of financial support was received for the malaria eradication program during the last four years, the outlook for the coming years is fraught with serious problems. The contributions from the WHO Malaria Eradication Special Account, amounting to \$549,334 in 1966, \$328,728 in 1967, \$395,869 in 1968, and \$177,519 in 1969, were practically used up by the end of that year, with no corre-

sponding increase being made in the WHO regular budget to offset the decline in this source of financing. Moreover, the United States Government, which had provided a total of \$22,840,000 in voluntary contributions to PAHO's Special Malaria Fund, expressed an interest in having its contribution made up from the PAHO regular budget. In keeping with this, a \$200,000 item was added each year to our regular budget. The reduction of the United States pledge to one half for 1970 and its total elimination for subsequent years would result in a shortfall of \$1,200,000 in funds for the malaria eradication program for 1971 and 1972. This deficit will come about even after a substantial reduction in the number of posts, a reduction which was, however, carefully planned so as not to affect the level of activities.

The contributions to the Community Water Supply Fund also experienced a sharp decline during 1966-1969, from \$400,861 in 1966 to \$229,217 in 1967, \$116,176 in 1968, and \$56,742 in 1969.

This situation resulted from the discontinuance of contributions from the principal contributor. In 1968 and 1969, however, the Governments that had requested technical assistance for the establishment of national and local water supply systems contributed to the Fund in amounts in direct relation to the value of the advisory services and training assistance received from the Organization.

The contribution of the OAS Program of Technical Cooperation, amounting to \$683,199 in 1966, and \$689,447 in 1967, was reduced to \$278,654 in 1968 and eliminated entirely in 1969 when the Pan American Foot-and-Mouth Disease Center, for which the contribution had been intended, was transferred to the Organization.

The contributions from the United Nations Development Program were relatively stable during the four years of the period (\$1,765,762, \$1,783,292, \$1,924,233, and \$1,599,430, respectively). The number of technical assistance projects declined, but there was an increase in projects financed by the Special Fund.

TABLE 7. PAHO REGULAR BUDGET, WORKING CAPITAL FUND, 1966-1969.

*(In US dollars)*

	1966	1967	1968	1969
Balance on 1 January	2,839,420	3,342,876	3,990,269	5,280,509
Changes during the year from operational surplus or deficit	488,019	347,393	739,342	(1,803,180)
Budget provision to increase the Working Capital Fund	40,437	300,000	575,898	—
Balance on 31 December	3,342,876	3,990,269	5,280,509	3,477,329
Percentage of budget of prior years	36.67	39.16	41.93	25.10

Grants to INCAP declined as a result of a smaller amount of contributions from United States sources.

Conversely, the total of all funds received by the Organization in the form of grants and subsidies from public and private organizations showed a substantial increase, from \$2,371,690 in 1966 to \$2,429,350 in 1967, \$2,843,750 in 1968, and \$3,300,725 in 1969.

### TAX EQUALIZATION FUND

This Fund, established on 1 January 1969 by virtue of Resolution VII of the XVIII Meeting of the Directing Council, is credited each year with the proceeds of withholdings under the Staff Assessment Plan.

The credits to the Fund are recorded in subaccounts of the Fund, in the name of Governments in the proportion of their assessments for the financial year concerned. These individual credits are then reduced by the amounts which the Organization sets aside to cover the liabilities in respect of taxes levied by each Government on emoluments received by staff members from PAHO/WHO. The resulting amounts are taken into account in determining the contribution due from the Governments for the fiscal year.

In the succeeding fiscal year, the credits allowed each Government are re-examined to take account of the actual charges made in respect of amounts reimbursed to staff who are subject to national taxes. Should such charges exceed the available credit of any Government, the excess shall be added to the contribution of that Government for the second succeeding year.

This system, which is also applied to the United Nations, the OAS, and WHO, is designed to ensure that Governments exempting their nationals on the staff of the Organization from the payment of tax on their salaries are accorded equal financial treatment to that extended Governments levying such taxes.

### PROCUREMENT FUND

The Organization's procurement activities represented an increase in workload over the previous four-year period. The number of purchase orders issued rose by 20 per cent, line items by 3 per cent, and the dollar value by 45 per cent. The proforma invoices rendered to Governments showed a decrease of 50 per cent in terms of line items but the dollar value remained substantially the same. Purchases on behalf of Governments rose 29.4 per cent in comparison with 1962-1965.

Beginning in 1966, the WHO undertook to do its own purchasing in the Americas except where circumstances made it necessary to use the services of PAHO. In

TABLE 8. SUPPLY SERVICE, 1966-1969.

ACTIVITY	NO. OF ORDERS	NO. OF ITEMS	VALUE IN US DOLLARS
Purchases for PAHO projects	3,597	14,560	2,642,215
Purchases for WHO projects	1,921	12,955	3,027,701
Purchases for WHO Headquarters	355	1,808	646,619
Purchases for operations of PAHO Headquarters, Washington	881	3,207	820,996
Purchases made through WHO Headquarters	401	1,907	1,744,380
Contractual services	961	1,448	662,933
Purchases made on behalf of Governments	1,399	7,446	1,774,081
Total	9,515	43,331	11,318,925
Price quotations for Member Governments		7,556	10,803,360
		50,887	

TABLE 9. SUPPLY SERVICE, SUMMARY BY YEAR, 1966-1969.

YEAR	PURCHASES (LINE ITEMS)	PROFORMA INVOICES (LINE ITEMS)	TOTAL (LINE ITEMS)	SHIPMENTS	PRINTED ITEMS
1966	12,134	1,875	14,009	2,186	939
1967	10,110	1,939	12,049	1,913	879
1968	9,613	2,617	12,230	1,845	984
1969	11,474	1,125	12,599	1,722	753

spite of this, net procurement by PAHO increased by 1,622 orders and 1,224 line items.

Purchasing activities are detailed in Tables 8 and 9.

### EMERGENCY PROCUREMENT REVOLVING FUND

This Fund, established in 1949 to enable the Organization to provide service to the Governments in emergency situations, has been used substantially, especially in recent years. It was accordingly decided to increase the Fund in 1963 from \$50,000 to \$75,000 and again in 1966, by decision of the XVII Pan American Sanitary Conference, to \$100,000.

In 1968 the Executive Committee at its 59th Meeting made a careful review of the status of the Fund and recommended to the Directing Council that its amount be increased to \$125,000, urging once again that Governments receiving assistance from the Fund repay the amounts advanced as soon as possible. This recommendation was accepted by the XVIII Meeting of the Directing Council in Resolution VIII.

Table 10 shows the status of the Fund during the four-year period.

The Fund has been used to meet requests from 15 countries and one territory, generally for combating epidemic outbreaks or conducting vaccination campaigns in the case of hurricanes, earthquakes, floods,

TABLE 10. STATUS OF THE EMERGENCY PROCUREMENT REVOLVING FUND, 1966-1969.

(To 31 December of each year)

	1966	1967	1968	1969
Cash in banks	59,972	28,772	48,411	71,992
Invoices to be collected	40,028	71,228	76,589	53,008
Authorized amount	100,000	100,000	125,000	125,000

and other catastrophies. In most cases the assistance has consisted in the purchase and shipment of vaccines.

The Fund, limited though its amount may be, is a genuine manifestation of inter-American mutual assistance and solidarity in the face of emergencies.

#### SPECIAL FUND FOR RESEARCH

The XVII Pan American Sanitary Conference authorized the Director to establish a Special Fund for Research to strengthen the PAHO/WHO research program. Two years later (1968) the Special Meeting of Ministers of Health recommended to the Governments that they contribute to that Fund in order to facilitate the achievement of the social, economic, and health objectives described in the Declaration of the Presidents of America.

During the period under review, a number of Governments pledged contributions to the Special Fund and a part of the amounts so pledged was received.

### ADMINISTRATIVE QUESTIONS

#### QUOTAS

The collection of quota contributions is a matter of continuing concern to the Governing Bodies. The XVII Pan American Sanitary Conference, in Resolution VI, again drew the attention of Governments "to the need for quotas to be paid as soon as possible, within the course of each financial year, and especially to the need for plans for the payment of arrears within stipulated periods to be strictly adhered to." The Directing Council made similar recommendations in Resolutions V of its XVII Meeting and VI of its XVIII Meeting. In the latter resolution, the Council expressed satisfaction at the achievement of "a sound financial position through the consistent application over the years of the policies necessary for maintaining budgetary expenditures within income, building up the Working Capital Fund, and creating reserves for termination costs." At its XIX Meeting, the Council thanked the Governments

#### SPECIAL FUND FOR HEALTH PROMOTION

The Organization has made a yearly budget allocation of \$250,000 to this Fund pursuant to an agreement of October 1962 with the W. K. Kellogg Foundation. These annual allotments are credited to the Fund in lieu of reimbursement of the 20-year interest-free loan of \$5,000,000 received from the Foundation for the construction of the Headquarters building.

The Directing Council at its XIX Meeting, recognizing the desirability of augmenting the size and scope of the Fund, with the objective of further strengthening the health programs of the Americas, decided in Resolution XXXIII to expand the scope of the Fund, initially used only for water supply, nutrition, and education, to include other health activities. The Council also authorized the Director to increase the amount of regular budget contributions to the Fund in years when there were budgetary surpluses; and to transfer to the Fund any portion of such surpluses not needed to keep the Working Capital Fund at an adequate level. The Director was also requested to seek extrabudgetary sources of funds, including voluntary contributions from public and private agencies.

Resources from the Special Fund for Health Promotion have been used since 1968 to finance the textbook program, which is ultimately expected to pay for itself out of proceeds from the sale and rental of books.

"for the success achieved in reducing arrears to the lowest level in many years," but also expressed concern about the number of Governments in arrears more than two years and requested the Director to bring to their attention "the importance of unanimous support of the program of the Organization through the full and prompt payment of quota contributions." The situation can and should be improved to a point where there are no more quotas in arrears and quotas are paid in the year for which they are assessed.

The percentage of quota collections during 1966-1969 is shown in Table 11.

TABLE 11. PERCENTAGE OF QUOTA COLLECTIONS BY FISCAL YEAR, 1966-1969.

YEAR	PER CENT	YEAR	PER CENT
1966	80.68	1968	81.72
1967	81.74	1969	74.22

## APPOINTMENT OF EXTERNAL AUDITOR

The XVII Meeting of the Directing Council, after noting with regret the resignation of Mr. Uno Brunskog as External Auditor, for reasons of age, and expressing its appreciation for his services, appointed Mr. Lars Breie, External Auditor of WHO, to succeed Mr. Brunskog.

## PERSONNEL

The role of the staff in the accomplishment of the Organization's program is fundamental and self-evident. Administrative efficiency requires that the staff be properly qualified and sufficiently large to discharge all the technical and administrative duties. The staff must also reflect the inter-American and international character of the Organization to the greatest practicable extent.

The administrative rationalization carried out between 1962 and 1964 made it possible to keep the size of the staff within proper limits while placing increasing emphasis on activities in the field, where the closest cooperation can be given the national health authorities.

Table 12 gives the size of the staff, with a breakdown by categories and by duty stations.

The staff is composed of persons from nearly all the countries in the Hemisphere and many non-American countries and can therefore be considered amply representative.

## SALARY INCREASE

The professional staff was granted a salary increase in 1966 and a further increase, along with a larger education allowance, effective 1 January 1969, as had been approved by the United Nations General Assembly. The latest salary increase involved a total cost of \$375,000 and represented, on the average, a 5 per cent rise.

Just as the salaries of the international staff are based

TABLE 12. PAHO/WHO STAFF, 1966-1969.

	1966	1967	1968	1969
Headquarters				
Professional	103	105	113	117
Local	157	171	182	180
Zone Offices and Countries				
Professional	407	417	412	416
Local	401	407	455	478
Total				
Professional	510	522	525	533
Local	558	578	637	658
Grand total	1,068	1,110	1,162	1,191

on the scale established by the United Nations, those of the local personnel are set in line with prevailing levels of compensation in each duty station. The local staff at Headquarters received salary adjustments in 1966, 1967, 1968 and in July 1969, an increase of approximately 8 per cent.

Local employees in the Zone Offices served under varying salary conditions over the four-year period but received in every instance a salary at least as large as the best prevailing locally for a similar job.

## PROPERTY HOLDINGS

The Organization acquired a number of new buildings during the period under review. In 1967 it purchased new quarters for the Zone IV Office, and in 1968 it acquired half of one floor in an office building in Guatemala City to house the Zone III offices. Additional space adjacent to the Zone VI offices in Buenos Aires was also acquired. All of this was in keeping with the policy of providing suitable quarters for the operation of our Zone Offices. Negotiations were also undertaken for the purchase of premises in Caracas.

The Pan American Foot-and-Mouth Disease Center, the Institute of Nutrition of Central America and Panama, and the Pan American Zoonoses Center are all operating in quarters donated by the host Governments, Brazil, Guatemala, and Argentina, respectively.

The Executive Committee instructed the Director at its 56th Meeting to report to the next meeting of the Directing Council on short- and long-range plans for meeting space requirements, particularly in the Headquarters area, where land is becoming increasingly hard to get. The Director submitted a report to the XVII Meeting of the Directing Council, which commended him on his efforts to obtain favorable accommodations for the Zone Offices and on his long-range plans and urged him to continue the study of possible solutions to the long-range needs at Headquarters.

In 1969, after receiving the authorization of the Executive Committee, a building was acquired in the immediate vicinity of the present Headquarters building to meet long-range space requirements of the Organization. The XIX Meeting of the Directing Council, in Resolution XXIX, expressed its approval of the purchase and satisfaction at the favorable terms and conditions obtained.

According to financial projections made, the property that was purchased—the Governor Shepherd Apartments at 2121 Virginia Avenue, N.W.—should yield sufficient revenue to repay the investment within a reasonable short time. It will also enable the Organization to meet additional space requirements by gradually converting apartments into offices as the need



"Headquarters for Hemisphere Health"—Building of the Pan American Health Organization, Washington, D.C.

arises and at some future date by replacing the Governor Shepherd with a modern building suited to the functions and services of PAHO/WHO and serving as an annex to the present Headquarters building.

#### HEADQUARTERS BUILDING

The staff of PAHO was moved into the new Headquarters building at 525 Twenty-Third Street, N.W., Washington, D. C., described as "Headquarters for Hemisphere Health," in August 1965. Following adjustments made in 1966 to installations, including the heating and air conditioning system, the building was considered complete in every respect.

A number of works of art, including paintings and sculptures, received as gifts and placed throughout the building, serve to enhance its graceful and functional lines.

The Headquarters building has become a tourist attraction for visitors, and its spacious conference

rooms, equipped with simultaneous interpretation and recording facilities, have been the scene of many important meetings sponsored by national and international institutions engaged in activities related to those of the Organization.

In 1966 the Council Chamber was the site of a solemn ceremony—presided by the Secretary General of the OAS and attended by the President and the Vice-President of the United States of America, the ambassadors of the American nations to the White House and the OAS, several cabinet members, and many other leading figures—marking the fifth anniversary of the signing of the Charter of Punta del Este.

The selection of our Headquarters to commemorate this historic event in the development of the Inter-American System was a source of great satisfaction and pride, for it was the Charter of Punta del Este that gave the decisive thrust and support to so many concepts of development and progress that are now flowing freely throughout the Hemisphere.

## IV. THE PROGRAMS OF THE ORGANIZATION

### GENERAL ACTIVITIES \*

#### HEALTH STATISTICS

The Technical Discussions of the XVI Meeting of the Directing Council of PAHO (1965) on "Methods of Improving Vital and Health Statistics," and the Technical Discussions on the same subject held during the Nineteenth World Health Assembly (1966) established the framework for the regional program in health statistics for the quadrennium. At two meetings (1966 and 1968) the Regional Advisory Committee on Health Statistics supported these recommendations and gave special emphasis to the creation of new research and training centers of medical statistics in Latin America and the strengthening of those already existing, and to the use of computers in health programs.

The major activities in the four years have centered around the collection and publication of information on health conditions in the Region; the improvement of statistical systems in the ministries of health and of the quality of vital and health statistics, including medical records; research on mortality and human reproduction; and the education and training of statistical personnel for the health field.

#### Collection and Dissemination of Statistical Information

Each year the Organization has collected from the countries of the Region information on mortality, morbidity from communicable diseases, vaccinations, hospital resources and their utilization, and health manpower, and at two-year intervals data for the Reports on the World Health Situation. These data are used by both WHO and PAHO for annual and special reports, including those on the world health situation and on health conditions in the Americas.

The *Weekly Epidemiological Report* has published regularly the numbers of reported cases of quarantinable and other notifiable diseases in the Americas, together

\* Detailed information on the general activities and programs of PAHO/WHO in the period 1966-1969 can be found in the Annual Reports of the Director (*Official Documents PAHO* 78, 86, 95, and 102).

with epidemiological notes of current interest. Table 13 and Figure 6 show the trends of reported cases of the quarantinable diseases from 1958-1969. The number of cases of jungle yellow fever has fluctuated from year to year, with the number in 1966 far exceeding those for many years; outbreaks in Argentina, Bolivia, and Brazil accounted for the unusually high number of cases. Almost all the cases of smallpox between 1966 and 1969 have occurred in Brazil. Surveillance programs during extensive vaccination campaigns in that country have resulted in improved reporting of cases and the increase of reported cases in 1969. The annual publication *Reported Cases of Notifiable Diseases*

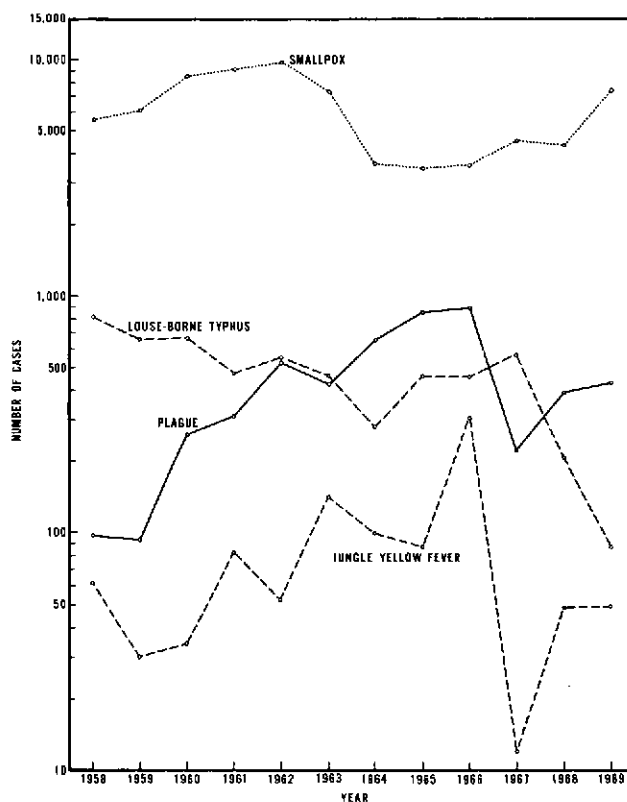


Fig. 6. Number of reported cases of four quarantinable diseases in the Americas, 1958-1969.



TABLE 13. REPORTED CASES OF QUARANTINABLE DISEASES IN THE AMERICAS, 1958-1969.

YEAR	PLAGUE	RELAPSING		TYPHUS LOUSE- BORNE	JUNGLE YELLOW FEVER
		FEVER LOUSE-BORNE	SMALLPOX		
1958	97	6	5301	818	61
1959	93	20	6045	659	30
1960	258	4	8532	668	34
1961	308	2	9065	474	82
1962	527	3	9852	557	52
1963	423	—	7348	465	141
1964	653	—	3621	279	98
1965	845	—	3484	461	87
1966	897	1	3565	461	304
1967	223	—	4537	567	12
1968	392	—	4375	207	47
1969	424	—	7379	85	48

in the Americas has been prepared for each of the years 1964 through 1967 and data for 1968 are in the processing stage.

*Health Conditions in the Americas, 1961-1964* was published in 1966 for the XVII Pan American Sanitary Conference. Similar data have been collected for the issue to cover the years 1965-1968 scheduled for the XVIII Conference (1970).

*Facts on Progress* (Miscellaneous Publication 81) was published in 1966 and *Facts on Health Progress* (Scientific Publication 166) was prepared for the Special Meeting of Ministers of Health of the Americas (1968). Both publications show the progress achieved in the health field toward fulfilling the health goals of the Charter of Punta del Este as well as the magnitude of the remaining problems.

#### Program for Improvement of Statistical Systems

Regional Advisory Committees have formulated recommendations for improvement of statistical systems in the ministries of health and during the Technical Discussions of the XVI Meeting of the Directing Council a list of measures was adopted to raise the quality of vital and health statistics and provide the data necessary for administration of programs.

Statistical consultants have served in all six Zones to assist countries with improving statistical systems and organizing the related necessary training programs. In seven countries statistical consultants have been assigned to work directly with national statistical personnel. By 1969 four medical records librarians were rendering advisory services in the Region on both hospital records systems and training of personnel.

It has become evident that many approaches must be taken to achieve improvement in health statistics. An effective approach is through the use of data, which highlights the need and the deficiencies. The health

planning process has been and will continue to be a stimulus to improvement. Similarly, research such as that being carried on in the Inter-American Investigation of Mortality in Childhood, for which good-quality medical information and records and complete registration of births and deaths are essential, has had an important role in improving statistics systems and medical records in study areas and subsequently in other parts of the same countries.

During the quadrennium attention was focused for the first time on the use of computers in the health field in Latin America. Modern methods of data processing will contribute to improvement in systems of collecting and processing information and will make more data available and at an earlier date. The establishment in 1969 of a Computer Center in Health in the Secretariat for Public Health of Argentina, together with a Computer Science Section in the PAHO Headquarters, offers the means for providing both advisory services in this field and training programs for computer personnel in the Region. Several national health services have installed electronic computers and others have plans for their installation. The regional activities will contribute to the efficient utilization of these facilities in health. The Regional Advisory Committee meetings in 1966 and 1968 urged that the Organization expand its advisory services in this field and serve as a center for the exchange of programs and other information.

The efforts of the health statistics sections in ministries of health to standardize the forms and statistical systems and to prepare manuals for their operations have been impressive. The recognition by hospital administrations and the health services of the need for improving medical records and hospital statistics for patient care, hospital administration, and health planning has been evident through the requests for advisory services in this field and for fellowships for medical records courses.

#### International Classification of Diseases

The period 1966-1969 was an active one in relation to the *International Classification of Diseases*. The Eighth Revision of the *Classification*, as approved by the Revision Conference of 1965 and by the World Health Assembly of 1966, was prepared in final form by WHO. The Regional Office and the Latin American Center for Classification of Diseases took responsibility for translation of Volume I (Tabular List) and Volume II (Index) into Spanish and for the editing and proofreading of these books. Since 1967, beginning with a Regional Seminar, 455 persons have been trained in courses in the use of the Eighth Revision by staff of the Latin American Center or of the Organization.

Many attending these courses in turn trained personnel in their own countries. The Center has prepared teaching materials, with coding examples. Also prepared was a Supplement to the *Classification*, based on the U. S. Adaptation of the *Classification*, for use in coding hospital diagnoses. Six thousand copies of the *Classification* in Spanish have been distributed in the Region.

In 1965 and 1966 the Seventh Revision of the *Classification* was published in Portuguese for use in Brazil. This was the first time the complete *Classification* had been available in Portuguese. The experience with the Seventh Revision was useful in planning for the preparation of the Eighth Revision. Through a contract with the Organization, the School of Medicine of Ribeirão Preto, Brazil, translated Volume I of the Eighth Revision, which was published in 1969. The Ministry of Health of Brazil purchased a large number of copies to ensure a wide use of the *Classification* in the country. A contract concluded in late 1969 provides for the translation to Portuguese of Volume II.

By the end of 1969 plans were already under way for developing regional proposals for the Ninth Revision of the *Classification*.

#### Education and Training Program

In the field of medical records and hospital statistics two courses have been given each year in the quadrennium, one of 11 months' duration in the Ministry of Health and Social Welfare of Venezuela and one of 5 months' duration in the Ministry of Public Health in Costa Rica, which was initiated in 1966.

The subject of medical records was also introduced during the period into the courses on health statistics in Argentina, Colombia, and Peru, either as an area of specialization or as required material for all students. Also, three courses in health statistics were given in Cuba, two in Jamaica, one in Paraguay, and one in medical records in São Paulo, Brazil. Table 14 and Figure 7 summarize the progress in the period, showing that 883 persons were trained in health statistics or medical records as compared with 547 in the preceding five years. All but two of the Latin American countries had at least one person trained in these courses, and for

TABLE 14. NUMBER OF HEALTH STATISTICS AND MEDICAL RECORDS COURSES AND STUDENTS TRAINED AT THE INTERMEDIATE LEVEL, 1953-1969.

PERIOD	COURSES	STUDENTS
1953-1960 <sup>a</sup>	8	283
1961-1965	22	547
1966-1969	35	883

<sup>a</sup> Excludes data on courses in Mexico from 1955-1960.

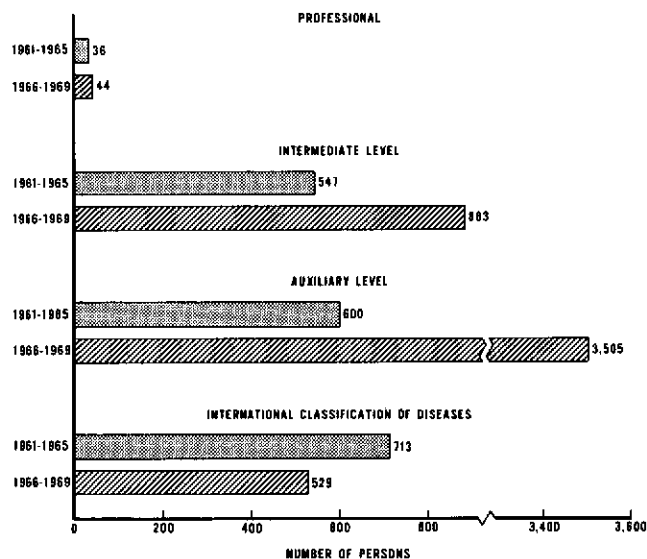


Fig. 7. Number of persons from Latin America trained in specialized courses in health statistics.

half of the English-speaking areas of the Region personnel were trained in the two courses in Jamaica.

Auxiliary-level training received emphasis particularly during the early part of the period, when it was apparent that training of intermediate-level personnel could not be carried on at a pace rapid enough to provide the statistical personnel needed for hospitals and health centers. Beginning in 1965 auxiliary-level courses were developed and during the period 1966-1969 the reports received indicated that more than 3,505 persons had been trained. Almost one-third of these were in Argentina, which early in the period had assessed its situation and developed a schedule to meet the growing demands for trained statisticians and statistical auxiliaries in the health field. In 21 countries and in one other area at least one auxiliary course was given.

Professional-level training in health statistics for Latin American statisticians has been limited principally to the School of Public Health of Chile and to study in the United States of America. In Chile, where the first professional-level course of 15 months was given in 1961, two courses were completed in the four years 1966-1969 by 27 graduates, 12 from Chile, and 15 from other countries. Fellowships to study in the United States were awarded to 13 during these same years.

With the progress made in training at the lower levels, it has become apparent that additional emphasis should be placed on professional-level training. The Regional Advisory Committee on Health Statistics in 1968 recommended the strengthening of existing centers of research and medical statistics and the creation of new centers to prepare biostatisticians to teach sta-

tistics in the medical schools and to participate in research in these schools and other institutions. In Chile the program of the course was reviewed and revised during recent years to add more depth in statistical methodology. A specialized and strengthened department of biostatistics has been formed. Other centers have also been created, including the Biostatistics and Demography Center in the School of Medical Sciences of the National University of Buenos Aires and the Department of Mathematics Applied to Biology, of the School of Medicine of Ribeirão Preto, Brazil. Other schools currently teaching intermediate-level courses are already planning for advanced training for faculty members in preparation for offering higher-level courses.

Training in medical records was introduced into the courses for statisticians at three public health schools. A special annual course of five months was established in Costa Rica with the cooperation of PAHO/WHO. This was made possible through the assistance provided by the W. K. Kellogg Foundation for 1966-1968. The course has become an annual one and in the period under review it enrolled 66 students, of which 29 were from countries other than Costa Rica. As was the case with health statisticians, medical records personnel in Latin America have been prepared at the intermediate and auxiliary levels. The need for a professional-level group to give leadership in this field in university hospitals, in teaching programs, and at the national level in health services has become clear. In 1969 a working group assessed the medical records

situation in Latin America, defined the functions and role of personnel in this field, and recommended an educational program for the professional medical records librarian. A tentative program prepared by Argentina for initiation in 1970 was reviewed. Other countries have also already expressed their interest in providing more advanced training in this field.

Beginning in 1966 courses on health and population dynamics were added to programs of the biostatistics departments of the schools of public health in Santiago, Chile, and São Paulo, Brazil. A total of 170 persons received training; in Santiago students were principally physicians and in São Paulo they mainly represented other specialties.

### Research

The research activities in health statistics initiated in 1961 have centered around mortality and human reproduction. Analysis of data from the Inter-American Investigation of Mortality was continued and the book *Patterns of Urban Mortality* was published in English in 1967 and in Spanish in 1968. The findings from this study are serving as a source of epidemiological data on many diseases in the Region and should continue to provide the background from which to initiate research in greater depth on the etiology and epidemiology of many diseases in the Region (Figure 8). Pamphlets of excerpts from the book were prepared in the two languages and large quantities were made available to medical schools for teaching purposes. Data from the study have also been analyzed

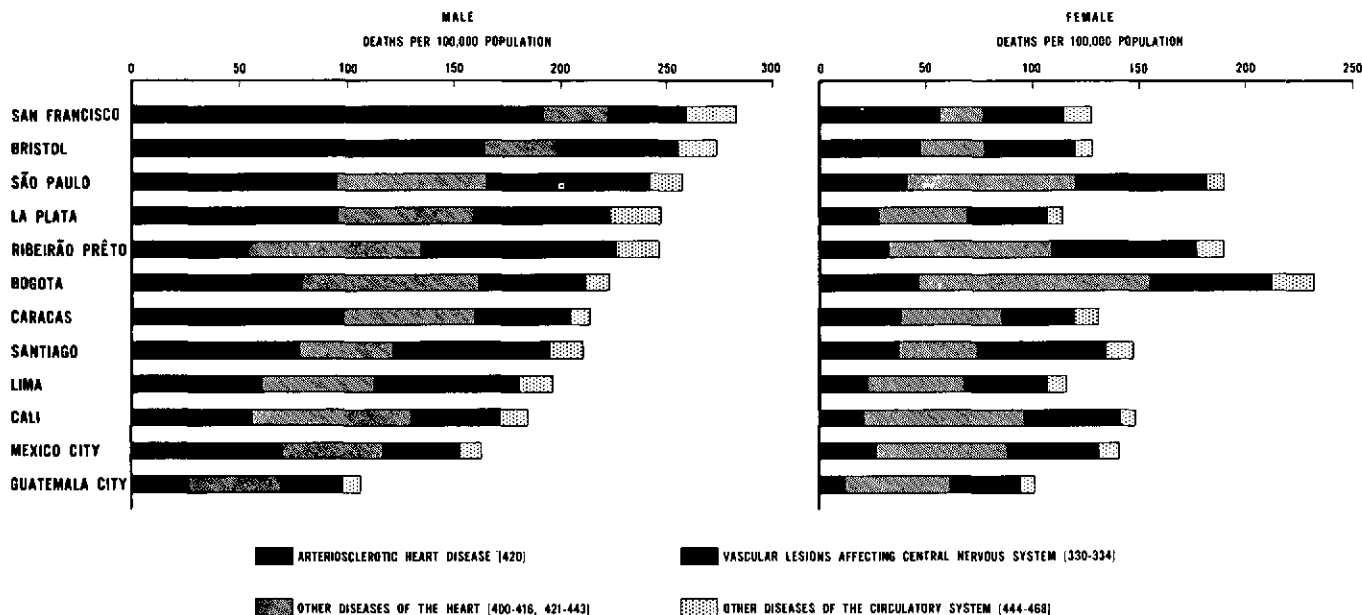


Fig. 8. Annual age-adjusted death rates from four groups of cardiovascular diseases per 100,000 population at ages 15-74 years by sex in each city, 1962-1964.



Fig. 9. Areas included in the Inter-American Investigation of Mortality in Childhood.

for two papers on heart disease and for one on multiple causes of death.

#### *Inter-American Investigation of Mortality in Childhood*

The benefits and experience with this first large collaborative study in the Americas led to the development of the Inter-American Investigation of Mortality in Childhood, which has financial support from the U. S. Agency for International Development. The continued high death rates occurring in early childhood have emphasized the need to assign this problem priority in regional activities. One of the goals of the Charter of Punta del Este in 1961 was to reduce mortality in children under 5 years of age by one-half in the decade. To define the problems and the necessary actions, qualitative and quantitative data are essential.

Following the general plans of the Inter-American Investigation of Mortality, in which deaths in the age group 15-74 years were studied, the study in childhood was initiated in 1967 with a pilot study of deaths under 5 years of age in five areas in order to test questionnaires and develop standard procedures. The full-scale study

in 13 areas in eight countries (Figure 9) of Latin America was begun in mid-1968 with plans for collecting over a two-year period data on 35,000 deaths, including household, socioeconomic, nutritional, and medical data. Families, physicians, clinics, and hospitals are sources for information on the child, his environment, and his medical history. To learn about the universe of children in which these deaths occur, a sample of households is being studied in each of the communities in relation to some of the same household, socioeconomic, nutritional, and medical factors. An estimated 22,000 children will be included in these samples.

Preliminary analyses of data from the early months of the study have brought out the role of malnutrition in the high death rates in several cities. In Recife, Brazil, for 70 per cent of deaths of children from 1-4 years of age, nutritional deficiency was an underlying or associated cause (Table 15). The corresponding percentages in Bolivia (La Paz), Jamaica (Kingston), and Chile (Santiago) were 51, 43, and 37 per cent. In both Recife and La Paz unexpectedly large numbers of deaths in the early months were from measles—30 per cent of deaths in Recife and 26 per cent in La Paz; and for over two-thirds of these measles deaths malnutrition was an associated cause. Already the Organization and the Pan American Development Foundation have assisted in obtaining measles vaccine for an immunization program in Recife, and in La Paz vaccine was obtained through the Brother's Brothers Foundation.

The contributions of such research to the field of health statistics are large. The emphasis on this study in the many areas in Latin America has accentuated both the deficiency and the need for complete birth and

TABLE 15. DEATHS FROM ALL CAUSES WITH RATES PER 1,000 POPULATION AND FROM NUTRITIONAL DEFICIENCY AS UNDERLYING OR ASSOCIATED CAUSE WITH PERCENTAGE OF ALL DEATHS, FOR AGE GROUP 1-4 YEARS, FOR 8 PROJECTS.

PROJECT	DEATHS ALL CAUSES		DEATHS <sup>a</sup> WITH NUTRITIONAL DEFICIENCY	
	NUMBER	RATE	NUMBER	PER CENT
Kingston area	103	2.0	44	43
La Paz	313	10.4	161	51
Monterrey	206	3.6	134	65
Recife	291	10.6	203	70
San Juan Province	98	4.9	40	41
San Salvador area	205	6.9	138	67
Santiago	76	2.0	28	37
São Paulo	160	2.7	69	43

<sup>a</sup> Excludes two deaths in Kingston area, two in San Salvador area, two in São Paulo and one in Santiago area with nutritional deficiency as an associated cause as well as an underlying cause and one associated cause in Monterrey of a death with two types of nutritional deficiency.

death registration systems and for medical records of good quality in hospitals and clinics. In the study areas special efforts have been made to assure improvement in these data, and the procedures initiated should be extended beyond the study areas. Similarly the contributions of research to medical education and medical practice should also be great. In several countries where there is more than one study area, coordinating meetings of national groups from the association of medical schools, the ministry of health, the local collaborators, and the PAHO/WHO staff of the Investigation have been held to ensure that the findings of the study will have the broadest possible use in medical education and the greatest application in the health field. As a result of these meetings, autopsy services have been expanded in some areas.

In 1969 an area in California was added to the study. This project is supported by the Children's Bureau of the U.S. Department of Health, Education, and Welfare. At the beginning of 1970 an area in the Province of Quebec, Canada, is to enter the study and will have financial support from the National Health Service.

Research on multiple causes of death was carried out with the study of records from two cities in the Inter-American Investigation of Mortality in adults, supported by funds from the National Center for Health Statistics of the U.S. Public Health Service. Plans are being made for analysis of multiple causes from the Investigation of Mortality in Childhood and also from samples of death certificates in the countries of the Region. Such research will contribute to the planning for the Ninth Revision of the *International Classification of Diseases*.

#### Other Studies

In 1966 two longitudinal investigations of human reproduction were begun in the Americas with the support of PAHO and WHO. One was in Peru in two communities of under 3,000 population (Lurín on the coast, and Masma in the highlands). Following initial censuses of the population, monthly visits were made to all households with women in the child-bearing ages and at three-month intervals to all other households. At each visit data were obtained on births, deaths, migration, pregnancies, fetal deaths, breast feeding, and condition of live-born children in the household. Each community is being followed for a three-year period. Already provisional data show differences in birth rates, birth weights, and intervals between pregnancies.

In São Paulo, Brazil, a prospective fertility study in 1966-1967 covered a sample of women previously interviewed in a retrospective study. The women were

interviewed at four-month intervals over a one-year period.

A working group in Santiago, Chile, in 1968 reviewed the methodology of these two studies and of other research in Chile and Colombia. Recommendations were made for a collaborative longitudinal study of human reproduction with the participation of several Latin American countries, which would encompass investigation of biological phenomena of reproduction, health characteristics of the mother, and the product of conception including growth and development of the child.

Studies of this kind, as they progress toward the achievement of their objectives, and other measures such as the use of computers for health data, will contribute greatly in future years toward the improvement of statistical systems, which form the basis for all sound planning in the health sector. The period 1966-1969 was one of intensive activity in the health statistics field, and the advances made promise much for the future.

#### HEALTH PLANNING

The countries of the Hemisphere, in cooperation with the Organization, continued their work in the field of health planning within the framework of national economic and social development plans.

In the quadrennium activities were directed mainly to establishing a methodology for planning in the health sector, training personnel through national and international courses, and formulating and later evaluating plans. An analysis of the development of the health planning process during the period reveals a clearly marked tendency in a considerable number of countries to use planning as an instrument for improving institutional and intrasectoral coordination, for ensuring better utilization of resources and their allocation to the true requirements of the health situation, and for promoting research aimed at increasing knowledge of the health situation and the investment of resources. It is to be noted, however, that this tendency is encountering two fundamental obstacles which are affecting not only the health sector but also the more general development process: these are deficiencies in the decision-making process, and the limited operating capacity of the administrative systems that have to implement these decisions.

It can be said that, in the health sector, planning has followed the lines of general planning and development. In the first stage emphasis was laid on the development and application of over-all methods drawn largely from econometrics, and on the formulation of plans of a general nature, with institutional coverage

most often limited to the ministries of health. The experience gained and the results observed in the evaluations of implementation programs point to the need to widen the objectives and attempt to strengthen the administrative and information systems and coordination between institutions, as well as to plan the development of the infrastructure and promote greater effectiveness of the decision-making machinery. These concerns are evident in the change in the content of new health plans, in the reformulations derived from the evaluation of older plans, and in the modifications made in training programs, with the inclusion of new disciplines and new knowledge relevant to the development of the planning process and its administration.

#### Pan American Health Planning Program

Along these same lines, the methodology developed under the auspices of the Organization was revised by a working group of consultants in this field. At their meeting in March 1967, the group examined the status of health planning in the Americas and, following a critical analysis, recommended a number of basic improvements and additions to the methodology, stressing the need to perfect it through systematic research. A review of the period showed that both methodological and operational research and the investigation of health as a component of economic and social development merited immediate and preferential attention. In this context, it was gratifying to note that, in accordance with the recommendation of the XVII Pan American Sanitary Conference (Resolution XXI) and as a result of the interest displayed by the countries of the Hemisphere, assistance was received from the United Nations Development Program in establishing the Pan American Health Planning Program. This Program has made it possible to consolidate and extend the training activities that the Organization had been carrying out since 1962 in conjunction with the Latin American Institute for Economic and Social Planning.

The Program has as its objects the development of human resources, the implementation of a research program, and the dissemination of technical and scientific knowledge. The establishment of the Program is an effective response to the need for training of personnel and for research in line with the planning situation in the countries. The efforts made by the Governments are evident from the fact that 12 countries currently have health plans with a national coverage, at various stages of execution. Eight of these plans have been periodically evaluated and revised. Of the 12 countries that were considered to be fully engaged in the planning process, five had reached the stage

of consolidating the measures for the execution of their plans at the local operational level. The remaining seven countries were in the initial stages of the process.

As a result of the training program, the countries have been able to train some 2,000 workers. In addition, 226 health specialists have attended the international courses organized by the Pan American Health Planning Program. It should be noted that five countries have provided systematic training in planning techniques through regular courses given at their schools of public health.

#### Quadrennial Projections

In order to implement the recommendations made by the Governing Bodies of the Organization, a procedure for the long-term planning of PAHO/WHO activities in cooperation with national Governments was designed and put into practice. This method, known as the PAHO/WHO Quadrennial Projections, enables the various factors that are directly or indirectly involved in the assistance provided to Governments of the Organization to be considered within the context of a single process. It is based on the establishment of a common frame of reference within which the major health problems are examined, health policy is considered in the light of the stage reached in economic and social development, goals and priorities are established, and the sectors are identified in which PAHO/WHO assistance is required in order to realize these priorities and reach the goals set.

The suggested procedure was approved by the XIX Meeting of the Directing Council (Resolution XXVII) and has begun to be adopted by the countries. With this method, which permits joint planning with the countries, it is hoped to arrive in 1970 at a first approximation of the program for cooperation with the Governments, and of the budget for a four-year period starting in 1972. Refinements to the method should make it possible to set up a permanent and more dynamic process.

In short, during the quadrennium we have remained true to the principle laid down in the Charter of Punta del Este that planning is "an instrument for establishing priorities in an objective manner, for increasing the output of available resources, and for making investments to achieve measurable objectives. The World Health Assembly, the Pan American Sanitary Conference, and the Directing Council of PAHO have decided to make health planning part of the policy. For planning is a means, not an end; a process, not an endpoint; a path of action, not a terminus. The method used in preparing the plan is of no importance. The essential thing is the decision to draw up a plan and

the achievement of its objectives," as was stated by the Ministers of Health in 1968.

### ADMINISTRATIVE METHODS AND PRACTICES

Among the international agencies, our Organization has taken a leading position in recognizing the importance of administration and incorporating advisory services and training in this subject as an integral part of its program of collaboration with and assistance to Governments. The increasing demand for consultant services in this subject arises from the consciousness in the Americas of the possibilities for more productive utilization of resources, through organizing and administering them in a more effective manner.

Advisory services provided to the health ministries have proved not only that effective improvement in procedures and performance can be made within existing national regulations, but also that administrative advances in one ministry can complement, and even stimulate, national administrative reform.

Cooperation of the Organization directed toward promoting improvement of administration in general, and administrative services in particular includes:

a) Promotion and advice in regard to administration as an integral part of the totality of activities which constitute planning in the health sector.

b) Promotion and advice in regard to the implementation of systems, comprising the best structural organization and procedures to assure efficient use of resources for dynamic health services.

c) Promotion and advice in regard to training in administration for health personnel at all levels.

Advisory services and fellowships in administration, for ministries of health as well as for special programs such as malaria eradication and water supply, have

been provided to 24 countries, and a series of seminars and courses have been organized.

Under this heading, special reference should be made to the work of computerization and mechanization that has been carried out in the Organization. The activities of the data processing unit were greatly expanded during the quadrennium in both administrative and technical program areas, and in 1969 a Computer Science Section was established in the Health Statistics Department.

Computerization, which allows great quantities of data to be stored and processed, has been applied since 1967 in the finance and accounts areas, and a cooperative arrangement was made with the Pan American Union for the use of the IBM 360/30 Computer, which made it possible to institute new methods that could not be employed before because of their high cost. At the end of 1969 a start was made on the standardization of data for the computer so as to permit exchange of information between WHO and PAHO.

The methods and procedures used for reproducing and distributing the Organization's publications have also been modernized. The equipment acquired in 1969 included a Cheshire labeling machine, two photo-offset machines, and a collecting machine. Two Xerox 3601 and 3603 machines were also put into use to reduce the typing workload in the Departments.

Modernization of the reproduction and distribution facilities—a requirement of the present age—has enabled the Organization to handle an increased volume of work at reasonable cost.

### HEALTH LEGISLATION

The advisory services to Governments in the review and modernization of their health legislation were

Fourth Seminar on Organization and Administration of Health Services, Maracay, Venezuela, November 1969.



broadened and extended to include a study of the relationship between health and law, in compliance with Resolution XXIII of the XVII Meeting of the Directing Council.

#### Group of Experts

A study group was convened in April 1968 to define the technical, practical, and financial aspects of this relationship. The report submitted by this group points out the scope of the relationship between health and law in the national, regional, and international spheres and examines aspects such as nutrition, water supply, pharmaceutical products, industrial hygiene, and others. The report also deals with education, public administration, international cooperation, economic integration, and the establishment of community legislation, with special emphasis on the general development plans for integration of frontier areas or joint utilization of regional resources. The 59th Meeting of the Executive Committee recommended that the Directing Council approve the preliminary report of the Director, which was based on the expert group report, and that a study of the problem be presented to the XVIII Pan American Sanitary Conference. For its part, the Special Meeting of Ministers of Health devoted a special chapter of their Final Report to health legislation and recommended that the laws be revised to bring them into line with scientific advances and the requirements of economic and social development. The Ministers also emphasized the need to achieve a certain uniformity in the national health legislations or to give them sufficient flexibility to facilitate international cooperation. They also placed renewed stress on the need for an in-depth study of the Pan American Sanitary Code.

#### Study on Health Legislation

A study on health legislation was also completed, the first stage of which covered the information available for the period 1948-1966 on 20 Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. The legal systems of the countries listed are comparable since they have, in general, a common origin. Three sectors were defined for the purposes of the study: constitutions, special legislation, and penal codes. The constitutions were examined to identify aspects relating to health. Special health legislation, including health codes, was then analyzed. Finally, the sections of the penal codes dealing with health were examined. The second stage of the study

will cover an analysis of similar features of health legislation in the English-speaking countries; it is hoped to complete this in 1970.

#### Pan American Sanitary Code

It has been pointed out that this Code, which was signed in Cuba in 1924, together with its Additional Protocols of October 1927 and September 1952, can no longer be generally said to be relevant to the health situation in the Western Hemisphere. Moreover, the new Member States of the Organization (Barbados, Guyana, Jamaica, and Trinidad and Tobago) are not parties to this international treaty, which was concluded between the 21 American Republics that originally signed and ratified it. Nonetheless it should be noted that the Governments mentioned in the preceding paragraph have undertaken to apply the provisions of the Code in their respective territories. Once the comparative study of health legislation in the countries of the Americas (called for in Resolution XXVIII of the XIX Meeting of the Directing Council) has been completed, work will start on analyzing the Pan American Sanitary Code in the light of advances in science and technology, present-day problems, and projections of economic and social development. A draft study has been prepared, which will be submitted to the Conference for its consideration, in order to determine whether it is desirable to amend the Code or to replace it by a dynamic and flexible instrument that will allow periodic updating of its various provisions and be in harmony with the laws of each country.

#### International Transportation of Human Remains

It is of interest to note that the V Meeting of the Technical Committee on the Removal of Travel Barriers (Managua, Nicaragua, 18-21 July 1967) recommended the national application of the standards for the international transportation of human remains, approved by the XVII Pan American Sanitary Conference (Resolution XXIX). The following countries have implemented these standards or modified their national regulations accordingly: Argentina, Barbados, Brazil, Colombia, Costa Rica, Dominican Republic, Guatemala, Mexico, and Nicaragua. While not supported by a special legislative or regulatory act, the standards are being applied in Guyana, Antigua, Dominica, Grenada, Montserrat, St. Kitts, Nevis and Anguilla, St. Lucia, St. Vincent, and the Virgin Islands (United Kingdom). In British Honduras, Jamaica, Trinidad and Tobago, and Venezuela the implementation of these standards is awaiting the enactment of the necessary legislation. This has been the first time that the



Organization has endeavored to establish juridical norms, through the Conference, with regard to a health problem, while at the same time leaving the Governments at perfect liberty to incorporate them in their own legislative systems or not.

#### Future Activities

The developments that have taken place in this new activity and the many and varied juridical questions raised by economic integration and the future Latin American Common Market have highlighted, as was stated by the Ministers of Health in 1968, the lack of a harmonious and uniform inter-American health legislation. The future activities of our Organization will have to develop in this direction.

### EVALUATION

The work of the Organization in this field has been guided by the policies laid down by the Governing Bodies and by the instructions contained in the WHO Manual.

At its XV Meeting (1964) the Directing Council decided, in Resolution XIII:

To request the Director to continue the evaluation of the Organization's program, to extend it to all country projects in which the Organization cooperates, and to make a continuing review of the project activities in all stages of their development.

At its XIX Meeting (1969) the Council examined the report on the evaluation process and in Resolution XXVI reiterated the earlier resolution and called upon national personnel to participate in the process of program and project evaluation.

A revised version of the principles of project evaluation, dated 15 June 1967, is to be found in the WHO Manual. The Manual requires, among other things, a quantitative and qualitative appraisal of the achievement of each project in relation to its objectives and an assessment of the degree to which the different programs of the Organization are developing in accordance with needs and policies. It places particular emphasis on the description of the impact of each project within its specific field, on public health in general, and in the socioeconomic sphere.

In pursuit of these purposes the Department of Evaluation was created at Headquarters at the end of 1967. It was decided, as a first step, to concentrate upon the measurement of project "effectiveness," that is to say, to determine the degree of accomplishment of predetermined objectives. A working paper on evaluation was prepared in April 1968 explaining in detail the procedure that was proposed. After thorough dis-

ussion of this document with staff in the field and at Headquarters, general instructions on project evaluation were issued in July 1968. According to these instructions every project in operation was to be reviewed and a basic document prepared, containing a description of the problem that gave rise to the project and of the baseline situation, the project objectives clearly defined in terms of time and coverage, the significant activities, and appropriate indicators. To complement the basic document, those responsible for each project were to formulate and report their annual targets early each year, to keep a record of the activities carried out, and to prepare evaluation sheets at the end of the year in the form specified.

There have been four main features of the work of the Organization in this field during the quadrennium: first, a vigorous effort to apply the evaluation procedure to all the projects; second, the utilization of the results of evaluation; third, the incorporation of the evaluation procedure in the Quadrennial Projections of the cooperative activities of the Organization; and, finally, the intensive orientation of the staff in all aspects of the work.

In 1968 and 1969 a series of meetings were held with the staff at Headquarters, in the Zones, and in the countries to promote the utilization of the process of evaluation as a working tool at all levels of operation, select appropriate technical criteria for project evaluation in the various specialized fields of work, and prepare model basic documents.

In 1969 the incorporation of the evaluation procedure in the preparation of the Quadrennial Projections firmly established project evaluation as a continuous process, indispensable for determining the extension or termination of projects and for deciding upon changes in the program and budget. This facet of the policy envisaged in Resolution XXVI of the XIX Meeting of the Directing Council was thereby implemented.

When evaluation documents arrived at the Headquarters Office the following criteria were applied:

- 1) Was there an adequate definition of the baseline situation?
- 2) Was the interrelationship among the various entities (problem, purpose, objectives, activities) clearly established?
- 3) Were the objectives clearly defined?
- 4) Was there an appropriate selection of indices?
- 5) Were the annual targets adequate in relation to the duration of the project and its objectives?
- 6) In general, were the documents prepared in such a way as to facilitate the measurement of attainment of objectives?
- 7) Was there an adequate appraisal of the impact

of the project in its own field, on public health, and when appropriate, in the socioeconomic sphere?

8) What general impression did the documents convey of the extent to which the evaluation procedure was applied?

By the end of the quadrennium there had been significant progress toward the goal of making evaluation an indispensable tool in the management of the projects in which the Organization was cooperating with the Governments. Of the 452 country projects in operation in 1969, 81 per cent were applying the procedure as compared with 65 per cent in the previous year. Among reporting projects, the percentage that applied the procedure effectively was 64 as compared with 43 in the previous year. Those responsible for country projects, without exception, received comments from the Headquarters Office on their evaluation documents. The regional and Zone consultants, on their visits to the field, paid particular attention to the status and utilization of the documents.

The results of the work in the Region as a whole were the subject of discussion at staff meetings in Washington and in the field. The existing Policy Guides for

the Planning of PAHO/WHO Programs were to be revised by the technical advisers in the Headquarters Office in order to furnish the staff in the field with clearer guidance on the technical components of project evaluation. A procedure is to be developed for the evaluation of programs (as distinct from projects) at the country and regional levels. A glossary of terms used in evaluation is to be prepared. Short-term consultants will in the future receive specific briefing on the evaluation aspect of their work. In the light of Resolution XXVI of the Directing Council, a further stimulus will be given to the participation of national staff in the process of evaluation; this participation will be embodied in a specific clause in all future project agreements. All existing instructions on evaluation, reports, and agreements are to be consolidated in a single document. The Organization will maintain continuous liaison with other agencies interested in the evaluation of health work. The Annual Report of the Director will in the future reflect more specifically the process of measurement of the effectiveness of the projects that Member Governments carry out in collaboration with the Organization.

## CONTROL OR ERADICATION OF DISEASES

### YELLOW FEVER

In the period 1966-1969, as in the preceding four-year period, no cases of urban yellow fever were reported. On the other hand, 411 human cases of jungle yellow fever were reported in Argentina, Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam, and Venezuela.

The yellow fever virus continued to be active in the enzootic region of South America, which extends to the basins of the Amazon, Magdalena, and Orinoco Rivers. After the epizootic wave of 1964 and 1965, which produced various human cases of the jungle form of the disease in the southern part of central Brazil, the virus appeared farther south in 1966, causing a number of additional human cases in the States of Paraná, Santa Catarina, and Rio Grande do Sul in Brazil and in Misiones and Corrientes Provinces in Argentina. The virus has reached Latitude 30° South.

The distribution and location of the cases reported from 1966 to 1969 are shown in Table 16 and Figure 10.

In Bolivia almost all the cases occurred in the center

of the country and west of the Andes, in the basins of the Amazon's tributaries. There was one case in 1966 in the extreme south of the country, in Gran Chaco Province, Tarija Department, on the Argentine border.

The cases reported in Colombia and Peru occurred in the same regions as those in the 1962-1965 period. Ecuador, which had not reported any cases for several years, recorded one in Napo Province in the Amazon Basin. The Venezuelan cases occurred in the eastern region in the Orinoco valley.

TABLE 16. REPORTED CASES OF JUNGLE YELLOW FEVER IN THE AMERICAS, 1966-1969.

COUNTRY	1966	1967	1968	1969	TOTAL
Argentina	51	1	—	—	52
Bolivia	69	—	27	8	104
Brazil	167	2	2	4	175
Colombia	3	5	11	7	26
Ecuador	—	1	—	—	1
Guyana	—	—	1	—	1
Peru	9	3	5	28	45
Venezuela	5	—	—	—	5
Surinam	—	—	1	1	2
Total	304	12	47	48	411

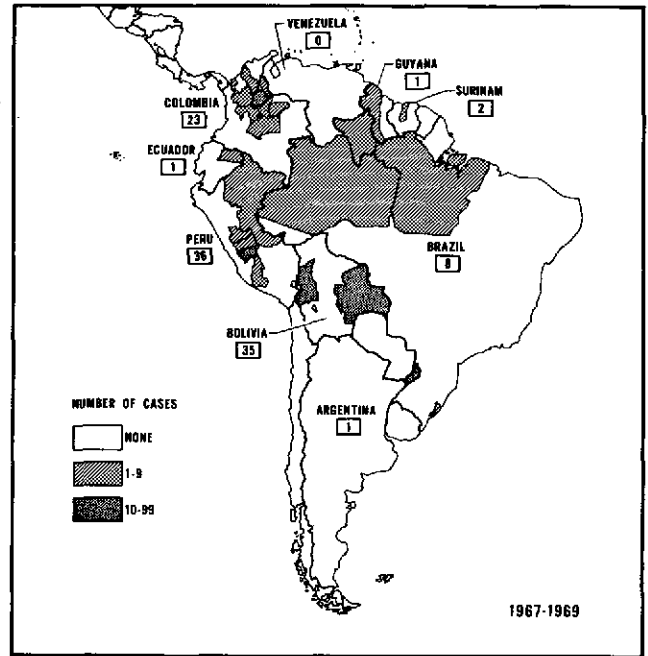
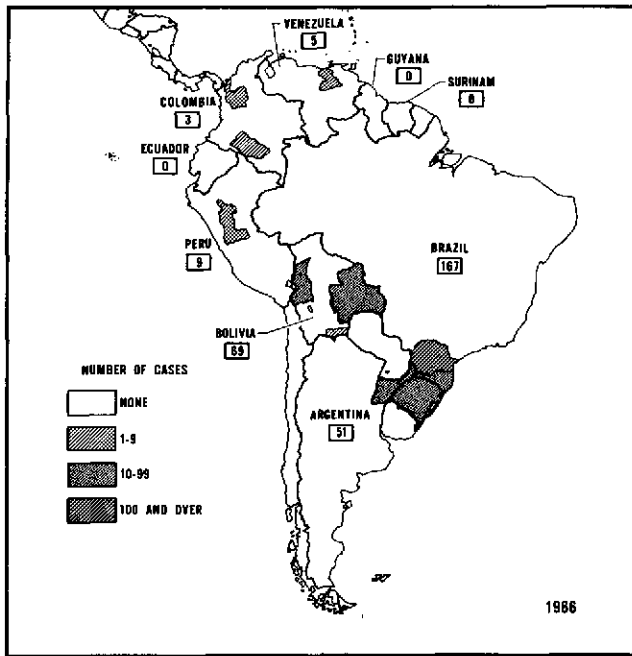


Fig. 10. Reported cases of jungle yellow fever, by major political division of each country, 1966 and 1967-1969.

At the end of 1968 the Organization extended up to 31 December 1971 its agreement with the Brazilian Health Ministry, by which it makes an annual contribution of US\$10,000 to the Oswaldo Cruz Institute; and it maintained the agreement with Colombia's Public Health Ministry on the execution of programs and activities related to yellow fever epidemiology and control, through cooperation between PAHO/WHO and the Colombian National Institute of Health. Both institutes produce and distribute 17D yellow fever vaccine and provide free diagnostic services to all countries of the Americas.

### AEDES AEGYPTI

The eradication of *Aedes aegypti* both made advances and suffered setbacks during the quadrennium. At the beginning of the period the *A. aegypti* problem persisted in the extreme north of South America, in the United States of America, and in the Caribbean area. At the same time Argentina, Guatemala, Mexico, Brazil, Honduras, and Panama were reinfested. The reinfestations in the first three countries were quickly eliminated, but not in the other three, despite the fact that eradication campaigns were actively reorganized. The question of the eradication of *A. aegypti* in the Caribbean islands is receiving close attention. The campaign has been intensified in Barbados, Guyana, and Surinam and preparations have been made for starting it in Antigua, Grenada, the Cayman Islands, and Montserrat, while studies for the organization of the program

in the Netherlands Antilles, Jamaica, and St. Vincent have been conducted. Campaigns have also been started in Guadeloupe, French Guiana, and Martinique. The campaign in the United States, Puerto Rico, and the Virgin Islands (USA) was interrupted in 1969. These setbacks are helpful in that they oblige us all to look afresh at the problem of the eradication of *A. aegypti*, which on many occasions has not been considered in all its seriousness and vital importance for the health of the Hemisphere.

All the necessary authority has been received from the Governing Bodies for extending effective support to programs for the eradication of *A. aegypti*. The validity of the eradication certificate does not extend for longer than three years, and visits, which in fact represent full-scale inspection, are authorized. Resolution XVIII of the XVII Meeting of the Directing Council covers, from the administrative point of view, the requirements of a Hemisphere-wide eradication program. The basis for the resolution was furnished by the reports of the Conference on *Aedes aegypti* Eradication in the Americas and of the Study Group on the same subject, and also the report of the Working Group on Laboratory Colonies of *Aedes aegypti*, as approved at the meetings held at Headquarters in 1967 under the auspices of the Organization.

### Activities

The following activities are worthy of mention:

- 1) Technical cooperation for the development and

evaluation of the campaigns and training of personnel in Barbados, Colombia, Cuba, Surinam, St. Lucia, and Venezuela.

2) Review of the surveillance operations in Argentina, Bolivia, Brazil, British Honduras, the Canal Zone, Ecuador, Guatemala, Honduras, and Peru.

3) Collaboration in the organization of surveillance operations in Costa Rica, Nicaragua, and Panama.

4) Assistance to the Governments of Argentina, Guatemala, Honduras, and Panama in instituting attack measures to eliminate the reinfestation foci discovered.

5) Technical assistance to Antigua, the Cayman Islands, Grenada, Guadeloupe, Jamaica, Martinique, Montserrat, and the Netherlands Antilles for the organization of their campaigns.

6) Cooperation with the special mission which carried out an extensive evaluation of the program in the United States of America, Puerto Rico, and the Virgin Islands (USA), and also in the studies to establish a system for coordinating the surveillance activities in the U.S.-Mexico border area.

7) Assistance in connection with a meeting of U.S. and Mexican technicians, held in El Paso, Texas, in September 1969, for the study and discussion of various matters connected with the problem of the reinfestations of Mexico in the area along the U.S. border.

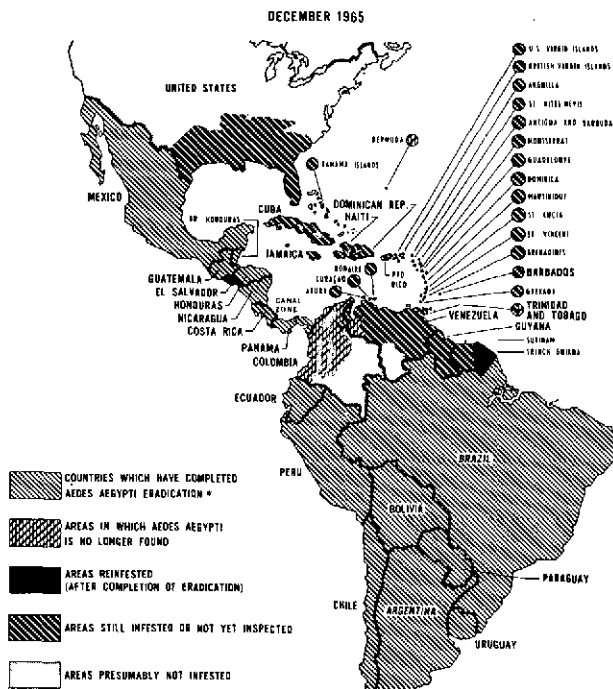
8) Cooperation through the insecticides testing unit operating in Jamaica, with the Government of that

country and the University of the West Indies in order to continue the field evaluation of new insecticides and determine the susceptibility of *A. aegypti* to the insecticides used in certain countries and territories.

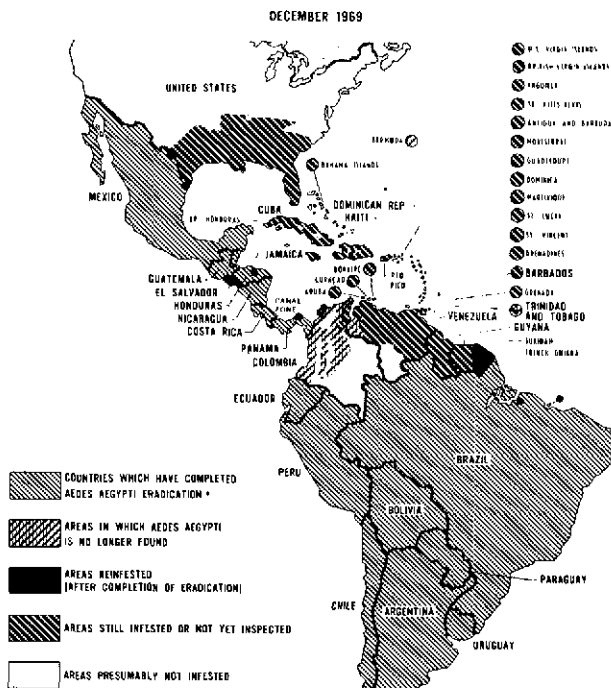
9) Special visit to the Brazilian program to observe the organization and execution of the attack measures reinitiated in the focus of reinfestation in the north of that country.

The results obtained may be seen from a comparison of the maps in Figure 11, which show the status of the program in each country and territory of the Hemisphere at the end of 1965 and 1969, respectively. After recognizing that the Hemisphere program did not have available to it the means essential to ensure eradication, the group of experts formulated certain criteria and conditions indispensable for achieving that objective; these, in summary, are to provide it with an adequate budget, an organization equal to the task, administrative autonomy, and authority that will enable it to eradicate the vector without delay.

The Special Meeting of Ministers of Health (1968) made a detailed analysis of the status of the program for the eradication of *A. aegypti* and recommended that our Organization assume, with the highest priority, leadership of the eradication program. The following words of the Ministers reflect, in our opinion, the realities of the situation: "There is at present no technical obstacle to the eradication of *A. aegypti* from the Americas. The reasons why the campaigns are not



\* ERADICATION CARRIED OUT ACCORDING TO THE STANDARDS ESTABLISHED BY THE PAN AMERICAN HEALTH ORGANIZATION



\* ERADICATION CARRIED OUT ACCORDING TO THE STANDARDS ESTABLISHED BY THE PAN AMERICAN HEALTH ORGANIZATION

Fig. 11. Status of *Aedes aegypti* eradication campaign, December 1965 and December 1969.

proceeding satisfactorily are administrative and financial in nature. Removal of those obstacles depends on whether Governments are prepared to give eradication of the vector the priority the problem deserves.”

### MALARIA

Since the XIV Pan American Sanitary Conference in 1954 proclaimed it to be both possible and a matter of urgency, the eradication of malaria has been one of the programs receiving highest priority in the Americas. This situation continued in the period 1966-1969, during which the Ministers of Health emphasized, at their meeting in Buenos Aires, the need to intensify national efforts in order to speed up the eradication of this disease. For its part, the XIX Meeting of the Directing Council drew the attention of the Governments (Resolution XVII) to the importance of the malaria eradication program, as part of the health sector, in the over-all national economic development plan.

Developments over the period 1959-1969 (Figure 12) show the continued and sustained progress of the eradication program in the Americas. In 1969, of the 491,483,000 inhabitants of the Americas, 176,325,000 (35.9 per cent) were living in areas that were originally malarious. Of this last figure, 119,744,000 (67.9 per cent) lived in areas that had reached the maintenance and consolidation phases of the program; 56,375,000 (32.0 per cent) were in areas still in the attack phase and consequently exposed to the disease; and 206,000 (0.1 per cent) were still without protection.

If we consider the Hemisphere by regions (Table 17), we find that malaria has been eradicated throughout Northern America, and that in Middle America 53.4 per cent of the population living in originally malarious areas has been freed from this endemic

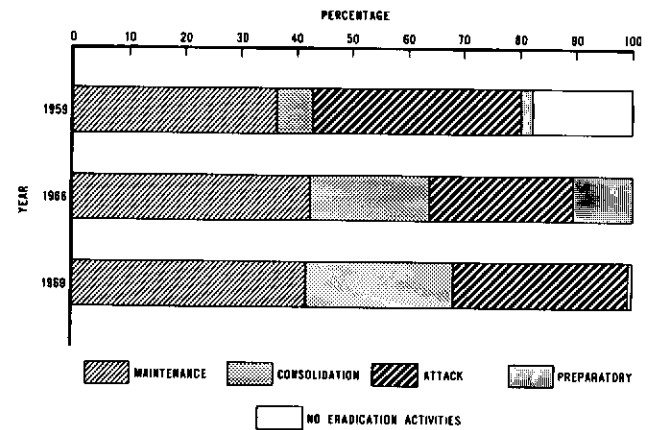


Fig. 12. Percentage distribution of population of originally malarious areas of the Americas by phase of program, 1959-1969.

disease, while the remainder are protected by attack measures. In South America, 52.8 per cent of the population of the originally malarious areas live in zones that are now in the consolidation or maintenance phase and the remainder, with the exception already mentioned, live in attack-phase areas.

#### Progress Achieved

The changes that have taken place are positive if we consider the Hemisphere as a whole (Table 18) but are even more striking if measured only against the programs that had not yet eradicated malaria before 1955 (Table 19). During the period under review, 10,800,000 people were practically freed from the risk of infection as the areas in which they lived passed from the attack phase to the consolidation phase; more than 2,000,000 were in areas that passed from consolidation to maintenance, while antimalaria measures were

TABLE 17. STATUS OF MALARIA ERADICATION IN THE AMERICAS, BY REGION, 1969.

(Population in thousands)

REGION	TOTAL POPULATION	POPULATION OF ORIGINALLY MALARIOUS AREAS									
		TOTAL		MALARIA ERADICATION CLAIMED (MAINTENANCE PHASE)		CONSOLIDATION PHASE		ATTACK PHASE		PREPARATORY PHASE OR PROGRAM NOT YET STARTED	
		POPULATION	% <sup>a</sup>	POPULATION	% <sup>b</sup>	POPULATION	% <sup>b</sup>	POPULATION	% <sup>b</sup>	POPULATION	% <sup>b</sup>
Northern America	221,895	55,692	25.1	55,692	100.0	—	—	—	—	—	—
Middle America	86,657	50,220	58.0	5,907	11.8	20,899	41.6	23,414	46.6	—	—
South America	182,931	70,413	38.5	11,158	15.8	26,088	37.0	32,961	46.8	206	0.3
Total	491,483	176,325	35.9	72,757	41.3	46,987	26.6	56,375	32.0	206	0.1

<sup>a</sup> Percentage of total population.

<sup>b</sup> Percentage of population of originally malarious areas.

TABLE 18. DISTRIBUTION OF POPULATION IN THE AMERICAS, BY PHASE OF PROGRAM, 1966-1969.

YEAR	TOTAL POPULATION	POPULATION OF ORIGINALLY MALARIOUS AREAS (IN THOUSANDS)				
		TOTAL	MAINTENANCE	CONSOLIDATION	ATTACK	PREPARATORY
1966	463,649	166,469	69,760	36,128	43,369	17,212
1967	474,868	169,901	70,720	41,581	44,766	12,834
1968	484,664	174,704	72,441	45,812	56,234	217
1969	491,483	176,325	72,757	46,987	56,375	206

being applied throughout the attack-phase areas, with the exception of 47,000 square kilometers with a population of 206,000 where social problems made it impossible to work in the areas affected.

The incidence of the disease has been reduced even where conditions are most difficult, and its effects have been diminished. According to an estimate for 1969, if the incidence of malaria had continued at the level obtained prior to the start of the eradication campaigns, there would have been some 22 million cases and 220,000 deaths from the disease; however, as a result of the eradication measures, the number of cases reported in 1969 was 323,314, although there are estimated to have been some 1,200,000 cases with some 3,000 deaths. In addition, account has to be taken of the reduction or elimination of mortality and morbidity from other diseases transmitted by arthropods susceptible to the agents employed against malaria.

Furthermore, the antimalaria campaigns have had an effect on basic health services, since, as the Director-General of WHO stated to the Twenty-Second World Health Assembly: "these campaigns reached the most remote areas, they changed the urban emphasis of these services in many countries, and paved the way for coverage of the entire population."

The Government of the United States of America requested certification as an area in which malaria had been eradicated (including Puerto Rico and the U.S. Virgin Islands); the relevant report was prepared and submitted to WHO for its consideration.

TABLE 19. DISTRIBUTION OF POPULATION BY PHASE OF PROGRAM IN COUNTRIES WITH ACTIVE PROGRAMS AFTER 1955 AND PERCENTAGE OF CHANGE DURING 1966-1969.

PHASE	POPULATION (IN THOUSANDS)		PERCENTAGE OF CHANGE
	1966	1969	
Eradication claimed or registered	12,834	14,154	+10.3
Consolidation phase	36,128	46,987	+30.1
Attack phase	43,369	56,375	+30.0
Preparatory phase or not yet initiated	17,212	206	-98.8

### New Activities

In 1967 a coordinated three-year plan was started for Central America, which has reduced the incidence of malaria from 142,257 cases in 1967 to 88,046 in 1969; however, a point has been reached where only Costa Rica is likely to continue making progress with the current measures of attack. In Panama the three-year plan has been applied for only six months. Mexico has approved a new six-year plan of operations but has not yet started its implementation. All the Caribbean islands are in the maintenance or consolidation phase, except for Haiti and a small portion of the Dominican Republic.

In South America, the most striking development has been the advance to the attack phase in zones previously in the preparatory stage in Argentina, Brazil, Colombia, and Paraguay. In the first two countries mentioned, and also in Guyana and Surinam, there was also an increase in the population living in maintenance and consolidation areas. Eradication activities in Ecuador were resumed; the situation in Peru improved slightly, while in Venezuela no major changes occurred. In Bolivia and Colombia it was necessary to reintroduce attack measures in some consolidation-phase areas.

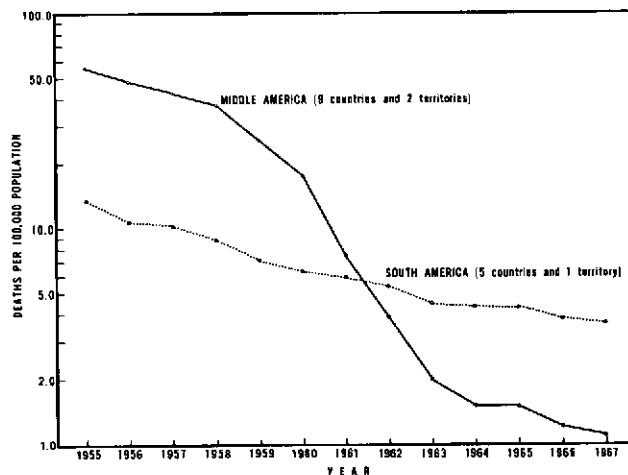


Fig. 13. Malaria deaths per 100,000 population in two regions of the Americas 1955-1967.

TABLE 20. PRINCIPAL ACTIVITIES OF THE MALARIA ERADICATION PROGRAMS IN THE AMERICAS, 1966-1969.

ACTIVITY	1966	1967	1968	1969
House sprayings	12,682,173	12,937,746	14,178,391	14,264,304
Population protected with sprayings	48,790,897	50,938,011	56,935,843	52,410,465
Population covered with mass treatment	1,355,964	1,284,297	2,018,871	1,151,912
Blood samples examined	11,731,451	11,609,226	12,522,696	12,161,178
Positive blood samples	333,245	369,341	282,773	323,314

Some of the various activities (Table 20) that call for special mention are: house-spraying with insecticides; mass distribution of antimalaria drugs; case-detection through examination of blood samples; training of malaria staff in general health activities in areas in the final phases of the campaign; and a number of research studies to determine the causes of persistent transmission and find effective means of interrupting transmission.

#### *Difficulties in Execution*

The major difficulties that have held back progress of the eradication programs are financial and operational problems, in many cases resulting from administrative problems, and a series of technical factors relating to the parasite, the vector, and man.

Some strains of the parasite survive in the human body longer than the estimated three years. Strains of *Plasmodium falciparum* that tolerate the normal doses of chloroquine are found in Brazil, Colombia, and Venezuela; there is also a possibility that some human infection may be produced by monkey parasites. Nevertheless, it is not considered that problems inherent in the parasite will seriously hold back eradication.

Entomological factors are most frequently the cause of persistent transmission. The most spectacular facet is the physiological resistance of the vector to the insecticide, which plays a role in parts of Central America and Mexico; but the most important aspect, by reason of its extension, is the behavior of the vector that avoids contact with the insecticide sprayed on the walls of the houses.

Man, with his ecology and his habits, creates difficulties that at times are not easy to solve (houses that are uncompleted and hence difficult to protect with insecticides, nomadic life styles, existence of communities in almost inaccessible areas, and opposition to implementation of eradication measures, to name but a few).

#### *Problems and Possible Solutions*

The research organized and coordinated by PAHO/

WHO has been directed to increasing knowledge of existing problems and seeking means to solve them. Some of the major research projects have been: (a) evaluation of insecticides OMS-29, OMS-33, OMS-716, and OMS-708 in El Salvador, as a result of which only OMS-33 proved successful in large-scale field trials; (b) evaluation of the efficacy of BHC in areas where there is high vector irritability to DDT, in Mexico; (c) studies on the efficacy of a combination of chloroquine, pyrimethamine, and primaquine as a radical cure for *P. vivax*, in Colombia; (d) studies on the resistance of *P. falciparum* to 4-aminoquinolines and the reaction of resistant strains to other drugs or combinations of drugs, in Brazil; (e) field trials of a liquid preparation of amodiaquine-primaquine, as a collective treatment, in Honduras; (f) field trials of a long-acting injectable drug, in Guatemala; (g) cooperation with the Gorgas Memorial Laboratory in investigating the efficacy of a pyrimethamine-primaquine combination for collective treatment, in Panama; (h) entomological studies into the behavior of vectors, particularly in Colombia, Brazil, and El Salvador; (i) comparative studies of parasitological and serological techniques for malaria diagnosis, in Brazil; (j) study of the economic impact of malaria in an area recently included in the eradication program, in Paraguay; (k) field trials with modified sprayers, in Nicaragua and El Salvador; and (l) assistance in examining administrative problems and making recommendations on how to solve them.

#### *Investments*

All the countries currently affected by malaria in the Americas have eradication programs; national budget allocations for these programs have risen from \$22 million in 1959 to \$47 million in 1969 (Figure 14). A vital factor for the success of these programs is international assistance, which in 1969 amounted to \$7.5 million. This assistance was provided by WHO through its regular budget and the Malaria Eradication Special Account, which is maintained by voluntary contributions; by the United Nations Technical Assistance Program; by UNICEF; by PAHO through its regular

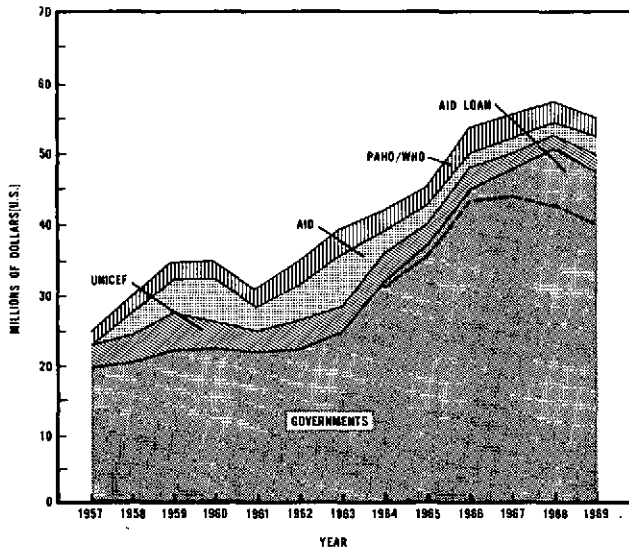


Fig. 14. Expenditures for malaria eradication in the Americas, 1957-1969.

budget and the Special Malaria Fund, which is also maintained by voluntary contributions; and by the U.S. Agency for International Development, through its contributions and loans.

PAHO's budget has been seriously affected by the depletion of its Special Fund and of the WHO Special Account, and in spite of the sizable reduction in the number of posts a shortfall of more than \$1.2 million is anticipated for the next four-year period. There is, however, a limit to the cuts that can be made. International assistance is an essential complement for a Hemisphere program, since it strengthens the national teams and coordinates efforts toward a common goal.

### The New Strategy

As a result of the interest displayed by most Governments and the progress that has been achieved, the World Health Assembly was able to declare in 1969 that the "complete eradication of malaria from the world remains a primary task of national public health organizations," but as "socioeconomic, financial, administrative, and operational factors" have prevented progress from being as extensive as had been hoped, the Assembly pointed out the need to review the situation locally and adapt each country's strategy to prevailing epidemiological, economic, and social conditions and the existing health organization.

Of the 22 countries or territories in the Americas with eradication programs, the prospects for success in a short time are good in five of them, while in a further 10 progress to date has been slow but the prospects for success are still good if changes can be made in the

operational programs and their execution; in the remaining seven countries progress has been hampered by serious administrative and technical problems.

Our Advisory Committee on Malaria Eradication met in 1969 to consider probable developments in originally malarious areas covered by the 22 active programs, which affect a total population of 113 million. In terms of population, it is estimated that for 59 per cent the prospects for eradication are good; for 13 per cent progress will depend on a solution being found to financial problems; for 17 per cent technical and operational problems are holding up progress; and for the remaining 11 per cent there are serious technical problems that require changes in the present methods of attack.

In conjunction with other international organizations, a start has been made on the review of the programs in order to apply the strategy referred to in Resolution WHA22.39 of the Twenty-Second World Health Assembly. All the programs are being analyzed in order to determine the feasibility of eradication in the whole or in part of the country, in accordance with the decisions and plans of the Governments concerned, existing resources, and the possibility of applying the necessary measures. In areas where eradication is considered feasible, efforts are to be stepped up to achieve this end, in conformity with the recommendations of the Governing Bodies of PAHO, while in areas where eradication will not be possible with the available resources within a reasonable period of time, an endeavor will be made to keep the incidence of the disease as low as possible while continuing research into the various means that can be applied until sufficiently effective ones are found that will lead to eradication.



A team member takes blood samples from children encountered along the road, during a survey to evaluate the progress of the malaria eradication campaign in Paraguay.



In this campaign we have reached the point of no return, since if it were to be interrupted a large part of the territory that has been freed from malaria would be lost, and with it all the investment in money and effort. A glance at the data showing the status of malaria eradication in the Americas is sufficient to convince everyone of the need to carry this undertaking to completion.

### SMALLPOX

In the period 1966-1969 a total of 19,856 cases of smallpox were reported to PAHO/WHO, as compared with 24,305 in the preceding four-year period. Although expressive enough, these figures do not fully reflect the significant change that has occurred during the quadrennium. Figure 15 shows the situation as it was in 1962-1965, when smallpox occurred in every country in South America, except Chile, French Guiana, Guyana, and Surinam. It also shows the situation in 1966, when smallpox occurred in only five countries, and in 1969, when Brazil was the only country where smallpox was still endemic, plus Uruguay, where the incidence was due to cases imported from Brazil.

The large number of cases reported between 1966 and 1969 (Table 21), particularly with regard to

TABLE 21. REPORTED CASES OF SMALLPOX IN THE AMERICAS, 1966-1969.

COUNTRY	1966	1967	1968	1969	TOTAL
Argentina	21	23 <sup>a</sup>	—	—	44
Brazil	3,518	4,514	4,372	7,377	19,781
Colombia	8 <sup>a</sup>	—	—	—	8
French Guiana	—	—	1 <sup>a</sup>	—	1
Paraguay	5	—	—	—	5
Peru	13	—	—	—	13
Uruguay	—	—	2 <sup>a</sup>	2 <sup>a</sup>	4
Total	3,565	4,537	4,375	7,379	19,856

<sup>a</sup> Confirmed cases only.

Brazil in 1969, was due to better case notification and investigation as a result of improved vigilance, investigation, and reporting systems.

### Activities

The activities have been concentrated on implementing the decisions of the Governing Bodies of PAHO and WHO. These included Resolutions XXII and XXXI of the XVII and XIX Meetings of the Directing Council and in particular Resolution XVIII of the XVII Pan American Sanitary Conference, which laid down

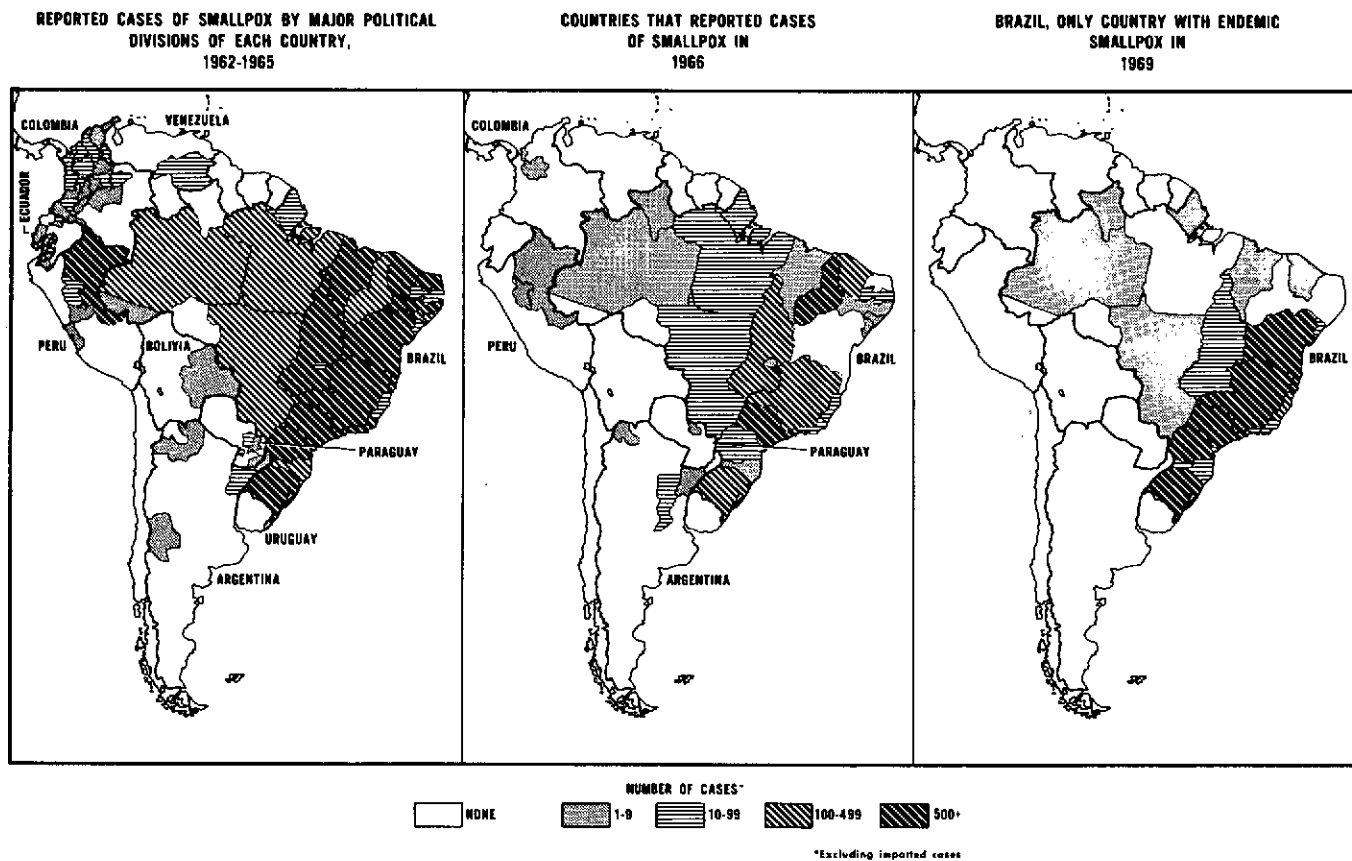


Fig. 15. Smallpox in the Americas, 1962-1965, 1966, and 1969.

the criteria to be followed by the Governments and tasks to be carried out by our Organization. All of these resolutions reaffirmed, to quote the words of the Ministers of Health in Buenos Aires, that "eradication of smallpox, as part of the world program, is one of the most important priorities of the countries of the Americas and of the Pan American Health Organization.

The XVII Conference considered the report on the "Status of Smallpox Eradication in the Americas and the Estimated Requirements for Achieving It," describing the current situation and the characteristics of each stage of the program and recommending criteria for setting priorities for assistance to the countries.

"Standard agreements" for eradication, maintenance, and epidemiological surveillance programs were signed with the Governments of Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Paraguay, Peru, Uruguay, and Venezuela. The assistance provided to the Latin American countries by PAHO/WHO between 1967 and 1969 amounted to \$2,248,692, in addition to the 27 vehicles for the transport of personnel and 80 jet-injectors supplied to Brazil in 1966.

The Government of Brazil, the National Communicable Disease Center (NCDC) of the U.S. Public Health Service, and the Organization jointly sponsored three courses on laboratory techniques for smallpox diagnosis at the Adolfo Lutz Institute of São Paulo; a total of 27 technicians from 13 countries were trained in this way.

Among other noteworthy activities were the following:

- 1) Organization of laboratories for the production of sufficient quantities of good-quality freeze-dried vaccine. On the basis of an agreement with the University of Toronto, Canada, experts from the Connaught Laboratories visited the laboratories of several countries to provide advice on production techniques, purity tests, and efficacy of the vaccine produced. In addition, staff of the production laboratories in several countries of the Americas have received training in the Toronto laboratories.

- 2) Research into more efficient operational techniques, especially in Brazil, where trials have also been conducted to evaluate different types of jet-injectors.

- 3) Evaluation of the program in Bolivia, where the attack phase was completed in February 1968. A group consisting of two of our consultants and a representative of the Ministry of Public Health concluded that the goals had been attained as far as initial protection of the population was concerned, although budgetary difficulties had made it impossible to undertake the necessary maintenance and epidemiological surveillance work.

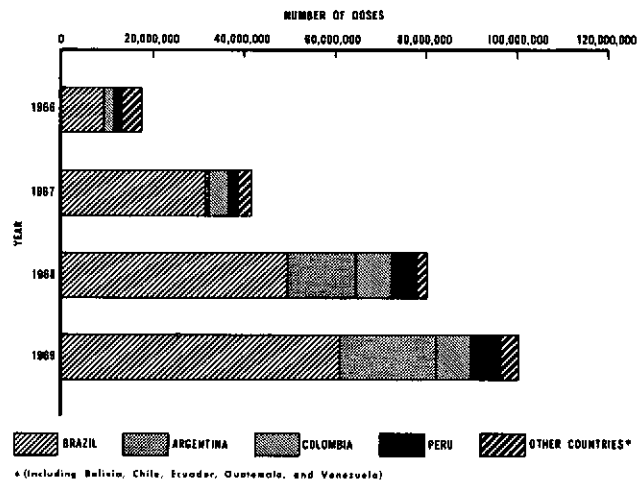


Fig. 16. Production of freeze-dried smallpox vaccine in the Americas, 1966-1969.

### Results Obtained

Some of the salient achievements of the past four years are listed below:

**Production of vaccine.** During the quadrennium all countries of the Hemisphere except Mexico, Uruguay, and Venezuela switched from production of glycerinated vaccine to freeze-dried vaccine. The three countries mentioned have been supplied with the necessary freeze-drying equipment and production is scheduled to start shortly. Figure 16 shows the production of freeze-dried vaccine between 1966 and 1969, by country.

**Diagnostic laboratories.** The courses held in the Adolfo Lutz Institute made possible the setting up of 18 diagnostic laboratories in 13 Latin American countries; in addition, the NCDC acts as a reference laboratory for the analysis of samples for smallpox diagnosis (Figure 17).

**Seminars.** A seminar was held in Rio de Janeiro, Brazil, on techniques of vaccine production and laboratory diagnosis, in conjunction with the U.S. Public Health Service, the Connaught Laboratories (Canada), and the Virology Department of the National Bacteriology Laboratory of Sweden. In this seminar, which was attended by representatives of all the countries with smallpox eradication programs, emphasis was laid on the role of the laboratory in smallpox eradication programs and on vaccine production techniques, including production in eggs.

**Maintenance and surveillance.** The Organization cooperated actively with countries in the maintenance and surveillance phases to encourage them to continue with vaccination programs, particularly those for children under 5 years and persons without vaccination marks, until not less than 20 per cent of the population has been vaccinated.

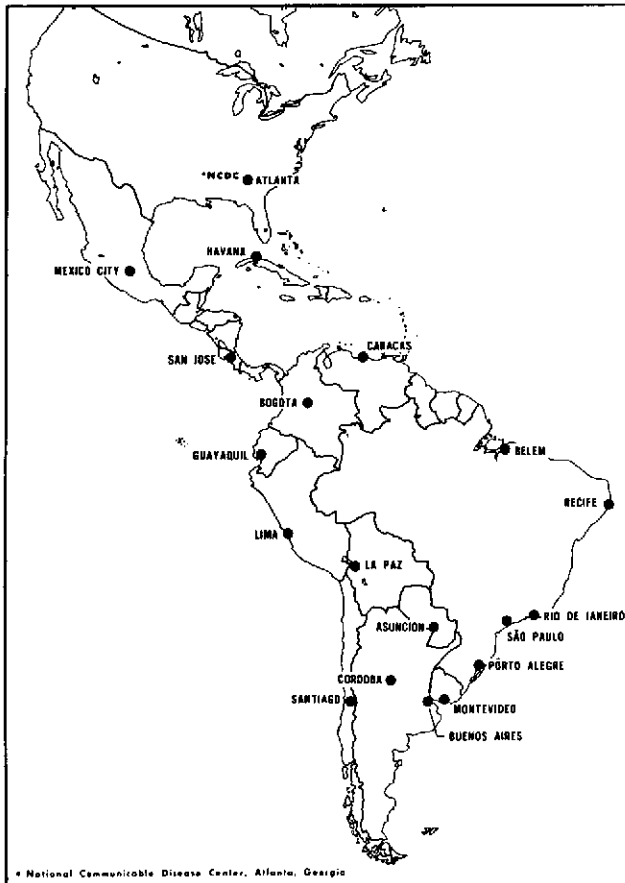


Fig. 17. Laboratories for smallpox diagnosis in the Americas.

Figure 18 shows the number of vaccinations carried out between 1966 and 1969 by the countries that have signed agreements for smallpox eradication.

*Program in Brazil*

Table 22 shows the number of vaccinations carried out in Brazil since the start of the campaign in 1962-1966, and following the stepping up of activities in 1967-1969. Figure 19 shows the status of the vaccination campaign as of December 1969. Figure 20 presents the number of smallpox cases in the northeast of Brazil and in the States of Rio de Janeiro, Goiás, and the Federal District during 1966-1969, and their relationship with the immunization carried out during the attack phase.

*Summary of the Situation*

As already stated, the situation has changed fundamentally during the past four years. In only one country, Brazil, is smallpox still endemic, whereas in 1965 five countries were in this category.

Glycerinated vaccine, formerly used almost everywhere, has been replaced by freeze-dried vaccine in

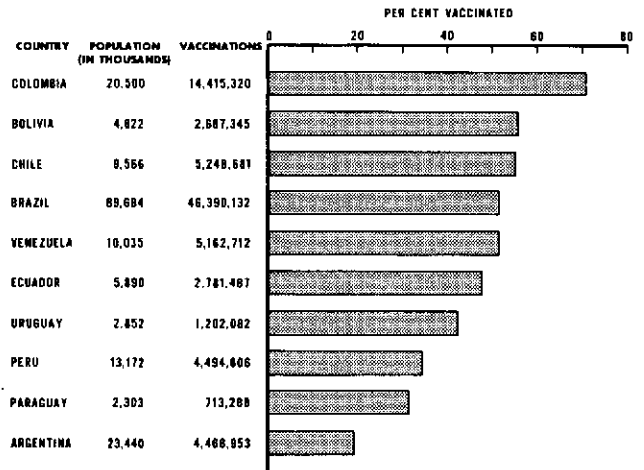


Fig. 18. Percentage of population vaccinated against smallpox by country, South America, 1966-1969.

quantities and quality sufficient to meet the requirements of the Hemisphere. There are still certain problems with regard to the stability of the vaccine, but with the advice of the Connaught Laboratories a solution to this problem is being sought.

Budgetary problems have prevented maintenance vaccination from reaching the recommended safety levels in certain countries. Nevertheless, whenever suspected cases are reported, the investigation includes laboratory examination, making it possible to verify a smallpox diagnosis in all the countries that have concluded eradication.

Brazil is continuing the attack phase in order to obtain a minimum level of immunity and achieve eradi-

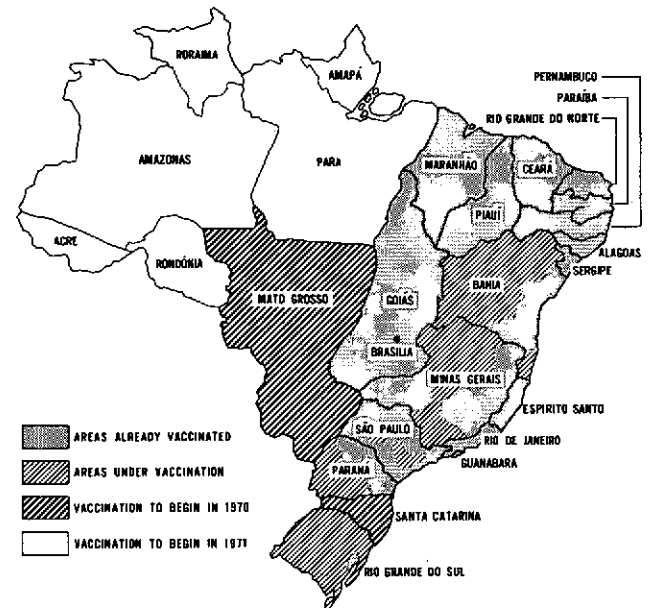
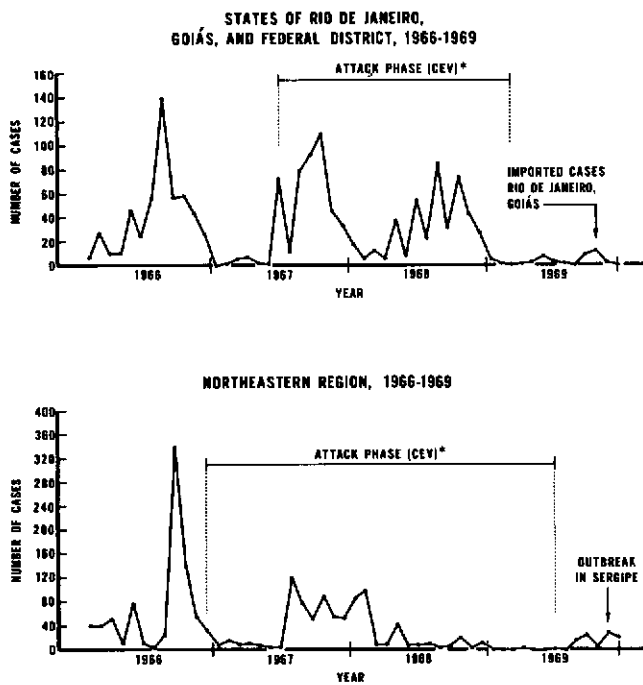


Fig. 19. Status of the smallpox eradication campaign in Brazil, mass vaccination program, December 1969.



\* Smallpox Eradication Campaign  
 Fig. 20. Cases of smallpox by month of notification in regions of Brazil, 1966-1969.

cation more rapidly. Through 1969, a total of 46,144,349 persons had been vaccinated, representing 50 per cent of the population. Epidemiological surveillance was stepped up and encouraged in all areas, whether or not they had completed their attack phase. With the advisory assistance of the Organization, improvement has been achieved in the reporting and investigation of smallpox cases, supplemented by laboratory analyses. In addition, a new weekly bulletin on the smallpox eradication campaign has made a major contribution to promoting interest in and developing the national vaccination program.

If the work carried out to date is continued and the countries do not lose interest, particularly in maintenance and surveillance operations, it is to be hoped that, in the not too distant future, Latin America will reach the goal of smallpox eradication, since, as the Ministers of Health stated at their Special Meeting, "smallpox can be eradicated from the Americas."

### TUBERCULOSIS

Tuberculosis remains a serious health problem in Latin America, despite the progress achieved in recent

TABLE 22. SMALLPOX ERADICATION CAMPAIGN IN BRAZIL—VACCINATIONS CARRIED OUT IN ATTACK PHASE, 1962-1966, 1967, 1968, AND 1969.

FEDERAL DIVISIONS	ESTIMATED POPULATION <sup>a</sup>	1962-1966 <sup>b</sup>	1967 <sup>c</sup>	1968	1969	GRAND TOTAL
<i>Northeast</i>						
Maranhão <sup>d</sup>	3,615 <sup>e</sup>	—	—	1,106,633	1,186,059	2,292,692
Piauí <sup>d</sup>	1,438	980,044	326,170	—	—	1,306,214
Ceará <sup>d</sup>	3,914	—	2,528,610	1,180,433	—	3,709,043
Rio Grande do Norte <sup>d</sup>	1,312	954,812	—	—	—	954,812
Paraíba <sup>d</sup>	2,287	—	1,525,083	794,501	—	2,319,584
Pernambuco <sup>d</sup>	4,817	3,837,202	—	—	—	3,837,202
Alagoas <sup>d</sup>	1,420	—	1,263,293	—	—	1,263,293
Fernando de Noronha <sup>d</sup>	2	—	—	1,240	—	1,240
Sergipe <sup>d</sup>	864	665,776	—	—	—	665,776
Bahia <sup>d</sup>	7,054	—	—	1,355,157	2,193,609	3,548,766
<i>Southeast</i>						
Minas Gerais	11,735	—	—	995,926	5,241,195	6,237,121
Espírito Santo <sup>d</sup>	1,537	—	—	—	1,455,393	1,455,393
Rio de Janeiro <sup>d</sup>	4,678	—	69,698	3,483,458	396,595	3,949,751
São Paulo	17,186	—	—	1,693,341	5,943,675	7,637,016
<i>South</i>						
Paraná	7,723	—	—	—	3,338,199	3,338,199
Rio Grande do Sul	6,728	—	—	—	1,132,218	1,132,218
<i>West central</i>						
Goiás <sup>d</sup>	2,865	—	507,878	1,613,237	—	2,121,115
Federal District <sup>d</sup>	410	—	374,914	—	—	374,914
<b>Total</b>		<b>6,437,834</b>	<b>6,595,646</b>	<b>12,223,926</b>	<b>20,886,943</b>	<b>46,144,349</b>

<sup>a</sup> Estimated population (in thousands) on 1 July 1969; *Anuário Estatístico do Brasil (1969)*; Brazilian Statistical Institute, Rio de Janeiro.

<sup>b</sup> State vaccination carried out in collaboration with the former Smallpox Campaign (Ministry of Health) and considered as epidemiological surveillance and maintenance.

<sup>c</sup> The total for Alagoas includes 452,093 vaccinations carried out in December 1966.

<sup>d</sup> Completed.

<sup>e</sup> Population of the State according to Campaign census was 2,419,396 inhabitants.

years as a result of modern chemotherapy, BCG vaccination, and greater knowledge of the facts concerning the disease by the public. The lack of personnel qualified to use modern methods and techniques, the shortcomings in the planning of the control programs, and inadequate utilization of health services with consequent poor performance of existing resources, are factors which help to aggravate the harm caused by the disease.

Despite the substantial reduction in the mortality and morbidity rates, tuberculosis has not been eliminated as a public health problem in any country in the Americas.

The inadequacy of the information available in various countries hampers a precise evaluation of the present epidemiological situation of the disease. It is estimated that in Latin America there are 85 million persons with the infection and 1,250,000 active cases.

According to the latest data, the mortality per 100,000 inhabitants is 22 in South America and 18 in Central America and the Caribbean, and the respective rates for new cases are 92 and 45 per 100,000. In Northern America, where mortality is 3.5 and the rate for new cases 21.4 per 100,000, in addition to the annual occurrence of 50,000 cases there are many millions of infected persons and each year the reactivation of tuberculosis is confirmed in thousands of persons.

Figures 21 and 22 show, respectively, the deaths from tuberculosis in all its forms per 100,000 population and the number of reported cases in the three regions of the Americas between 1953 and 1968.

#### PAHO/WHO Program

In prior years, the principal assistance furnished by

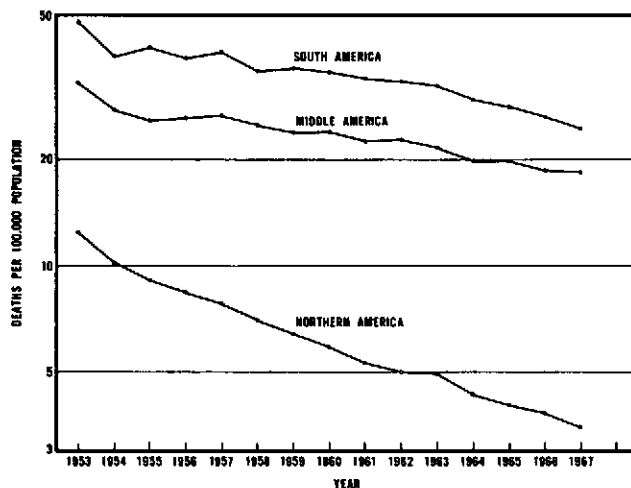


Fig. 21. Deaths from tuberculosis per 100,000 population in three regions of the Americas, 1953-1967.

the Organization was in the form of collaboration with the Governments in BCG vaccination campaigns. The radical changes which have come about in tuberculosis control techniques and methods have meanwhile had their inevitable repercussions on the programs, which were initially directed to:

a) Training of national personnel in new methods and techniques, through the provision of fellowships for courses, participation in seminars, and inservice training.

b) Assistance in the establishment of national projects in pilot areas, including prevalence surveys, the detection and treatment of cases, and BCG vaccination.

c) Surveys on the tuberculosis problem in the countries in order to study the mortality and morbidity trends, ascertain the availability of personnel, installations and equipment, determine the needs and formulate possible recommendations for meeting them.

The Organization has reviewed and brought up to date its policy, standards, basic concepts, and general orientation on tuberculosis control, and has drawn up a four-year projection of the operations to be carried out.

In the past few years the program has been directed toward the promotion of effective and economical tuberculosis control by means of the systematic application of the knowledge and resources available.

In accordance with this policy, the Organization pays special attention to the bacteriological diagnosis of cases; incorporation of antituberculosis programs in general health services; determination of priorities in the program, among which emphasis should be given to suitable chemotherapy as the basis of any control effort; establishment of limited areas in which the

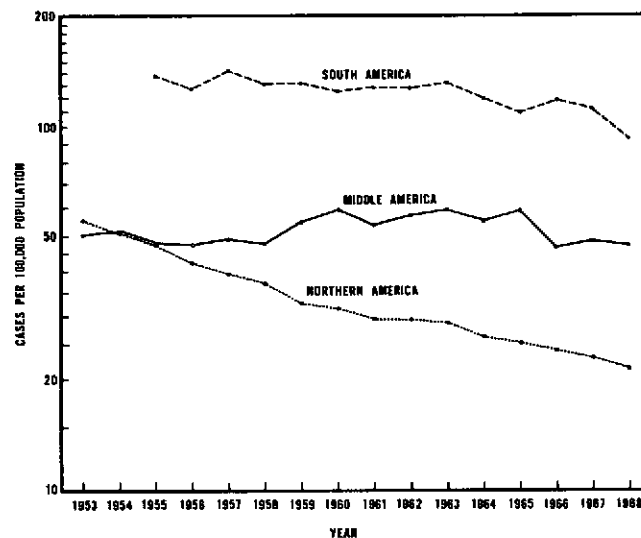


Fig. 22. Reported cases of tuberculosis per 100,000 population in the three regions of the Americas, 1953-1968.

TABLE 23. REQUIREMENTS FOR VACCINE AGAINST TUBERCULOSIS IN THE VARIOUS YEARS OF THE PROGRAM.

(In thousands of doses)

YEAR OF PROGRAM	NO. OF LIVE BIRTHS (IN THOUSANDS)	PRIMARY VACCINATION		REVACCI-NATIONS (NECESSARY DOSES)	TOTAL DOSES
		NO. OF PERSONS <sup>a</sup> (IN THOUSANDS)	VACCINE DOSES		
1	10,935	11,482 <sup>b</sup>	34,446		34,446
2	11,242	5,621	16,863	11,482	28,345
3	11,556	6,934	20,802	5,621	26,423
4	11,880	8,316	24,948	6,934	31,882
5	12,212	9,770	29,310	8,316	37,626

<sup>a</sup> Assuming a 40 per cent coverage of those born the first year and increasing that percentage by 10 per cent annually.

<sup>b</sup> Includes 40 per cent of children under 3 years of age.

objectives of the operations may be reasonably calculated; need for reorientation of existing tuberculosis services and review of budgets for hospital beds in such a way as to obtain a better yield from these investments by using them to improve and expand outpatient services; need for establishment of a system for uniform data recording and periodic information on activities as a basis for continuing evaluation of programs; and vaccination of children at the earliest age and direct immunization with BCG if economic conditions permit.

As a general rule for the application of these priorities, the Organization has recommended the planning of national programs which can meet the known needs and are integrated with the activities of the basic health services, under the supervision and guidance of specialists.

From the technical and operational point of view, the tuberculosis control program must be adapted to the particular situation in each country.

An evaluation carried out in September in El Salvador and Nicaragua showed that the technical, administrative, and operational work done in the verification areas had contributed effectively to the national standardization of techniques, procedures, and specific standards, as well as to the training of personnel.

It is considered necessary to incorporate the tuberculosis control activities in the basic health services for reasons of cost and effectiveness. In actual fact, 50 per cent of the contagious cases voluntarily seek treatment at local institutions, including those in rural areas (40 per cent of all cases are to be found in these areas), which indicates the need for measures to meet this demand.

In some countries, such as Brazil and Venezuela, it has already been demonstrated that these services can make a decisive contribution without upsetting the other priorities of the general health program. In others, the

idea has been accepted and steps are being taken to implement it (Argentina, Colombia, Nicaragua). However, this incorporation or integration process still requires a major effort if it is to be effective.

In view of the importance of the problem, the Organization will continue its efforts to encourage the utilization of the network of basic health services in order to extend the benefits of immunization, diagnosis, and ambulatory treatment. In addition, it is prepared to cooperate in the carrying out of operational research designed to find simple and practical means of promoting such integration.

The decisive contribution of the laboratory toward the success of tuberculosis control activities carried out by basic health services, its importance for diagnostic work, orientation and control of treatment, and for the obtaining of epidemiological information, all serve to warrant the Organization's collaboration with the countries concerned in order to provide these basic services with facilities and means for the microscopic examinations required for case detection and data collection, and also to strengthen national and regional laboratories, especially for evaluation of the problem of bacterial resistance to drugs.

Experts have visited Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Peru, Uruguay, and Venezuela to cooperate in the evaluation of BCG vaccine produced in their laboratories and to advise on freeze-drying techniques.

### Prospects

The reduction of tuberculosis mortality, set as a goal by the Punta del Este Charter for the decade commencing in August 1961, is not yet within sight. This underlines the necessity of implementing the recommendations of the Ministers of Health in 1968 which, after inviting the Governments of the countries of the Amer-

icas to continue assigning the highest priority to tuberculosis control in their national health programs, put forward criteria and guidelines for the greater effectiveness of the means adopted.

For our part we shall follow the recommendation made by the Ministers that "the Pan American Health Organization and the World Health Organization continue to assist the Governments in the formulation of programs, conduct of operations, research, and personnel training." This is a most extensive program, for the implementation of which we trust we shall be able to count on the necessary financial resources.

### POLIOMYELITIS

The number of reported cases of and deaths from this disease has dropped spectacularly in those countries which have carried out systematic vaccination programs, such as Canada, Cuba, and the United States of America. The outbreaks which have occurred in Latin America show that urbanization and environmental improvements have an effect on the development of poliomyelitis into a serious health problem. Figure 23 shows the reported cases of poliomyelitis per 100,000 population for the period 1955-1969 in the three regions of the Americas.

The reduction in infant mortality in a large number of countries, with the consequent increase in the number of children susceptible to the disease, and the con-

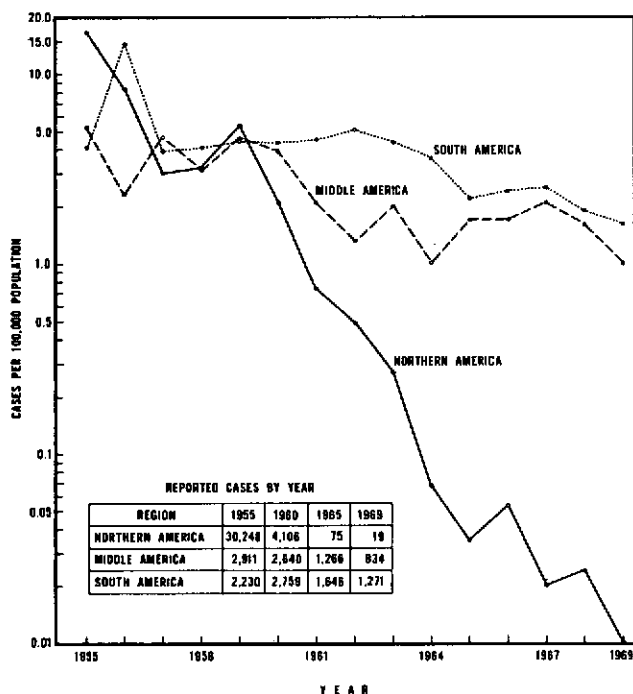


Fig. 23. Reported cases of poliomyelitis per 100,000 population in three regions of the Americas, 1955-1969.

TABLE 24. LABORATORIES FOR DIAGNOSIS OF POLIOMYELITIS IN LATIN AMERICA.

COUNTRY	CITY	LABORATORY
Argentina:	Buenos Aires	National Institute of Microbiology "Carlos A. Malbrán"
	Córdoba	Institute of Virology, National University of Córdoba
Brazil:	Rio de Janeiro	Oswaldo Cruz Institute
	São Paulo	Adolfo Lutz Institute
Chile:	Santiago	Virus Department, Bacteriological Institute
Colombia:	Bogotá	National Institute of Health
	Cali	Virology Laboratory, School of Medicine, University of Valle
	Medellín	Virology Laboratory, School of Medicine, University of Antioquia
Cuba:	Havana	National Institute of Health
Ecuador:	Guayaquil	National Institute of Health
Mexico:	Mexico City	Laboratory of the National Institute of Virology
		Institute of Tropical Diseases
Peru:	Lima	Institute of Tropical Diseases
Trinidad and Tobago:	Port-of-Spain	Trinidad Regional Virus Laboratory
Venezuela:	Caracas	National Institute of Health

current decrease in the likelihood of natural infection, give rise to conditions favorable for the occurrence of cases, the majority of them in children under 3 years of age—as has been observed in the outbreaks in Argentina, British Honduras, Costa Rica, Ecuador, Honduras, Nicaragua, and Peru.

Intensive vaccination programs bring about the reduction or the elimination of the disease, as has been observed in Canada, Cuba, and the United States of America. In the latter country there were only 41 cases and 16 deaths in 1967, 53 cases in 1968 and in 1969, 17 cases with no deaths. In Canada there were three cases in 1966 and two in 1967, with no deaths; no cases were reported in 1968 and only two in 1969. No cases have been reported in Cuba since 1965.

On the other hand, the figures for Middle and South America indicate scant results, reflecting the low coverage of immunization among the population exposed to the risk.

The Organization requested the assistance of Dr. Albert Sabin and Dr. Dorothy Horstmann in drawing up a continental program of vaccination against poliomyelitis that would bring down the incidence of the disease and, if possible, lead to its eradication. The plan was submitted to the Special Meeting of Ministers of Health, which in its Final Report endorsed the principles set forth in the plan. Also, in 1968 a poliomyelitis unit was established in the Department of Communicable Diseases.

In order to ensure that sufficient quantities of vaccine are available (Table 24), the Organization is in-

terested in promoting the establishment of two production laboratories in the Americas. To this end, an agreement was signed at the end of 1968 with the Government of Mexico to increase the production of poliomyelitis vaccine in that country and to set up a reserve supply for meeting the needs of other Latin American countries. Besides appointing an adviser specialized in vaccine production for Mexico, the Organization in 1969 contributed equipment and supplies valued at \$95,471 for the expansion and modernization of the vaccine production laboratory of the National Institute of Virology. Dr. Sabin is advising directly on the organization of the laboratory and Dr. J. Perkins of the British Research Council is assisting with the training of personnel. It is hoped that vaccine production in Mexico will effectively facilitate the execution of vaccination programs.

The Organization likewise carried out a survey to ascertain which Latin American countries are equipped to carry out diagnosis of the viruses responsible for epidemic outbreaks. There are in all 10 countries capable of doing so, in addition to Canada and the United States of America.

The Organization has approached the World Health Foundation to obtain its financial cooperation in vaccination programs, and by the end of 1969 specific studies had been initiated for a vaccination program covering the entire susceptible population of Guatemala.

## LEPROSY

Leprosy exists in all countries and territories of the Hemisphere with the exception of mainland Chile, but the true magnitude of the problem is unknown. Detection and reporting of cases are incomplete and in general control programs are of limited scope, so that the data available show only a part of the picture.

Figure 24 shows the cases reported per 100,000

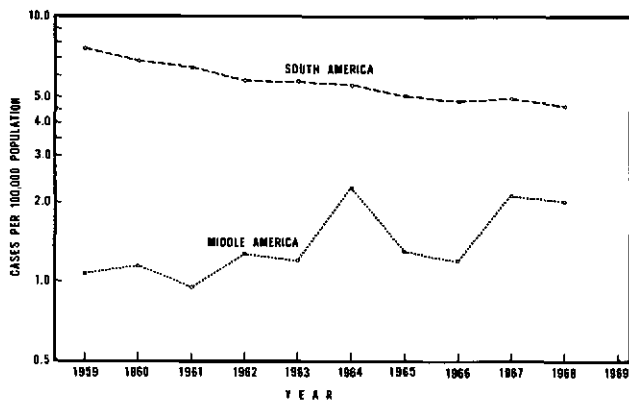


Fig. 24. Reported cases of leprosy per 100,000 population in Middle and South America, 1959-1969.

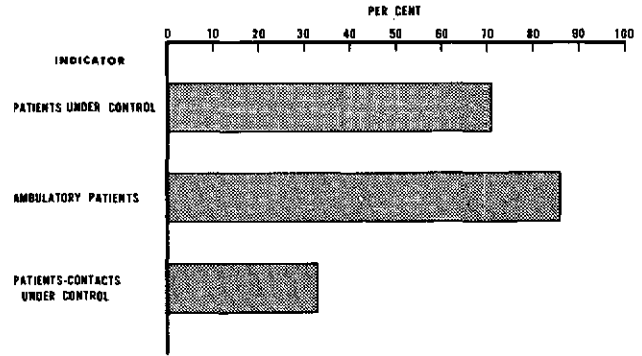


Fig. 25. Status of leprosy control programs in the Americas, 1969.

population in Middle and South America in the period 1959-1969. The slight downward trend in South America is due mainly to the reduction in Brazil, which usually accounts for more than two-thirds of the cases in South America. The distinct increase in Middle America can probably be explained by the improved case localization program and better reporting in recent years.

Table 25 presents the data on cases reported and rates per 100,000 for the four-year period 1966-1969. French Guiana, Surinam, Guadeloupe, Paraguay, Martinique, and Guyana show the highest rates: 115.8, 64.2, 42.5, 21.7, 18.3, and 16.6, respectively.

On the other hand, taking the distribution of leprosy cases according to the main political divisions of the countries concerned, it is apparent that the areas of greatest incidence and highest prevalence are concentrated in a part of South America comprising large sections of Brazil and the adjoining regions in neighboring countries. It can also be seen that there is a limited area of relatively high prevalence in Middle America, in western Mexico.

It has been calculated that there are more than 400,000 cases in the Americas.

According to data supplied to the Organization by 31 countries and territories in the Americas, there were 196,515 cases in the active register at the end of 1969. Of these, 139,303 (71 per cent) were under surveillance (Figure 25). Of the 185,847 cases classified by clinical form, 100,076 (about 54 per cent) were lepromatous, which is the most highly infectious form, 20.5 per cent were tuberculoid, and 26 per cent were of other forms.

The number of contacts registered in 21 countries and territories was 657,295, of whom 216,927 (33 per cent) were under surveillance.

The information available shows that only about 71 per cent of all the known cases are under control. If it is then borne in mind that the cases diagnosed represent only a part of the total and that more than



TABLE 25. REPORTED CASES OF LEPROSY WITH RATES PER 100,000 POPULATION, BY COUNTRY, 1966-1969.

COUNTRY OR OTHER POLITICAL UNIT	NUMBER				RATE			
	1966	1967	1968	1969	1966	1967	1968	1969
Argentina	921	986	554	450	4.0	4.2	2.3	1.9
Barbados	—	—	—	—	—	—	—	—
Bolivia <sup>a</sup>	19	...	49	...	1.0	...	2.1	...
Brazil	4,563	5,439	5,568	4,691	5.5	6.3	6.3	5.2
Canada	1	3	3	2	0.0	0.0	0.0	0.0
Chile	—	—	—	...	—	—	—	...
Colombia	990	237	246	...	5.3	1.2	1.2	...
Costa Rica	37	39	32	25	2.4	2.5	2.0	1.5
Cuba	330	283	326*	277	4.2	3.6	4.0	3.4
Dominican Republic	26	166	148*	2	0.7	4.3	3.7	0.0
Ecuador	179	155	200	...	3.4	2.8	3.5	...
El Salvador <sup>a</sup>	7	2	3*	4	0.2	0.1	0.1	0.1
Guatemala	169	146	107*	...	3.7	3.1	2.2	...
Guyana	22	...	119	...	3.3	...	16.6	...
Haiti	2	7	...	...	0.0	0.2	...	...
Honduras <sup>a</sup>	21	26	25	7	1.5	1.6	1.5	0.4
Jamaica	21	19	29*	14	1.1	1.0	1.5	0.1
Mexico	121	864	765	...	0.3	1.9	1.5	...
Nicaragua	11	...	2	—	0.6	...	0.1	—
Panama	1	1	—*	...	0.1	0.1	—	...
Paraguay <sup>a</sup>	215	245	217	...	19.7	21.7	18.7	...
Peru	51*	47*	112*	...	0.8	0.8	1.8	...
Trinidad and Tobago	48	—	2	...	4.8	—	0.2	...
United States of America	109	81	123	...	0.1	0.0	0.1	...
Uruguay	33	15	12	6	1.2	0.5	0.4	0.2
Venezuela <sup>a</sup>	381	381	334	...	6.1	5.9	5.0	...
Antigua	—	...	...	...	—	...	...	...
Bahamas	3	1	2	...	2.1	0.6	1.1	...
Bermuda	1	—	—	...	2.0	—	—	...
British Honduras	—	—	—	...	—	—	—	...
Canal Zone	—	—	—	...	—	—	—	...
Cayman Islands	—	...	...	...	—	...	...	...
Dominica	3	—	1	—	4.4	—	1.4	—
Falkland Islands	—	...	—	...	—	...	—	...
French Guiana	25	44	41*	39	67.6	115.8	102.5	92.9
Grenada	...	...	...	18	...	...	...	17.1
Guadeloupe	119	106*	135*	119	37.3	33.1	42.5	37.4
Martinique	60	49	27	...	18.3	14.8	8.3	...
Montserrat	—	...	...	...	—	...	...	...
Netherlands Antilles	5	4	—	...	2.4	1.9	—	...
Puerto Rico	3	—	19	1	0.1	—	0.7	0.0
St. Kitts-Nevis-Anguilla	1	1	...	...	1.8	1.8	...	...
St. Lucia	3	11	5	69	2.9	10.5	4.6	62.2
St. Pierre and Miquelon	—	...	...	...	—	...	...	...
St. Vincent	—	...	...	...	—	...	...	...
Surinam	181*	222	237*	249	58.2	61.2	63.2	64.2
Turks and Caicos Islands	3	5	...	...	50.0	83.3	...	...
Virgin Islands (UK)	—	—	...	...	—	—	...	...
Virgin Islands (USA)	—	...	...	...	—	...	...	...
Northern America	111	84	126	...	0.1	0.0	0.1	...
Middle America	994	1,730	1,628	...	1.2	2.1	2.0	...
South America	7,580	7,771	7,689	...	4.8	4.9	4.6	...

<sup>a</sup> Reporting area.

\* Provisional data.

half of them are infectious, there is good reason for believing that, under present circumstances, no significant reduction in the problem is to be expected.

### Difficulties

Although little is known about many aspects of the

epidemiology of the disease that are of fundamental importance if leprosy control is to be improved, this difficulty can be overcome in part by means of programs with clearly defined objectives and efficient administrative and data-recording systems. However, in the past many of the control programs have suffered from im-

precise objectives and failure to apply suitable methods and to effectively utilize existing resources.

In addition, the number of specialists is small and general practitioners have not received in the medical schools the necessary training to enable them to collaborate in the programs. These are two further factors which contribute to the inadequate coverage and effectiveness of the programs.

In view of this situation the Organization has endeavored to stimulate the Governments and cooperate with them in order to determine the frequency and epidemiological characteristics of leprosy in the Americas and to help them with the planning, programming, organization, implementation, and evaluation of control activities and with the prevention and treatment of disabilities, together with the training of the staff required.

### *Changes*

There have been a number of developments in leprosy control over recent years. New and more effective drugs, which are less toxic and easier to administer, have had a radical effect on treatment, reducing the need to isolate patients. As a result, the leprosaria have tended more and more to be converted into leprosy hospitals where special cases are treated over limited periods, instead of being subjected to lifetime isolation. Periodic supervision of patients and contacts is considered an essential factor in the early diagnosis of new cases, which is a means of breaking the infection chain and preventing disabilities. Leprosy has been added to the category of communicable diseases, from which it had formerly been excluded by a barrier of prejudices. Control of the disease as a regular activity of the general health services has been accepted, and renewed emphasis has been placed on physical and social rehabilitation and the prevention of disabilities.

The arresting of the development of the disease in advanced cases and the improvements obtained with recent cases by means of chemotherapy have created a new awareness concerning leprosy and have encouraged the Governments, voluntary institutions, and national agencies to make an all-out effort to prevent the spread of the disease.

The national health authorities have shown a greater interest in leprosy. In many countries leprosy control activities already form part of the normal work of the services responsible for the control of communicable diseases; in others, plans are being prepared for this to be done. The Organization is collaborating in these control programs either through special agreements or as part of the assistance it provides on communicable diseases as a whole.

The progress achieved by these programs varies from

one country to another. As a general rule, the Governments are faced with three principal tasks in their fight against leprosy: (1) to ascertain the extent and characteristics of the problem; (2) to set up the technical and administrative structures needed to achieve the planned objectives, taking into account the special factors that play a role in each country and region; and (3) to train medical and paramedical staff in all aspects of leprosy diagnosis, control methods, and program administration.

### *Seminars*

In 1963 PAHO/WHO, in collaboration with the Government of Mexico, organized a Seminar on Leprosy which drew up a set of recommendations on health administration as applied to leprosy control programs.

Argentina, Ecuador, and Venezuela, which have completely different administrative organizations and economic structures, agreed to apply certain of the Seminar's recommendations and, later, submitted the results of these trials at the Pan American Seminar on Administrative Methods for Leprosy Control Programs held in Guadalajara, Mexico (July 1968), under the auspices of the Organization.

### *Work To Be Carried Out*

Although many aspects relating to the infectious agent are unknown, resources are available which, if properly employed, would make it possible to greatly reduce the risk of healthy persons contracting the disease. The leprosy control programs in their present form do not modify the natural course of the disease. It is believed this could be done if the planning, programming, organization, and evaluation of programs were carried out in accordance with a methodology which ensures that the resources employed are the most effective, that they produce maximum output for minimum cost, and that the activities are carried out at a useful level and in a relatively short space of time, thus making possible a downturn in the incidence and prevalence curves for the disease.

A great amount remains to be done, especially in the research field, since fundamental facts that would make it possible to interpret the dynamics of the disease are still unknown and important aspects of the epidemiology of leprosy are yet to be revealed. To sum up, the years 1966-1969 have not brought about any radical changes in the Americas as regards leprosy, but there has been progress in the preparation of a methodology that will permit a systematic, continuing reduction in the disease.

## Recommendations of the Ministers of Health

At Buenos Aires, after stating that the mere presence of leprosy in a country should justify its consideration as a high priority public health problem, the Ministers of Health recommended that PAHO and WHO collaborate with the countries of the Americas by "giving them technical and material assistance in the planning, conduct, and evaluation of their national leprosy control programs; endeavor to coordinate the activities being carried out in various countries; and request assistance from the United Nations Children's Fund (UNICEF)." This has been the policy of PAHO and will continue to be in coming years.

### VENEREAL DISEASES

Venereal diseases are widespread throughout the Hemisphere, and although the true magnitude of the problem is not known, everything appears to indicate that their incidence is higher than one might gather from the data available.

Case-reporting is very incomplete and reporting practices vary from country to country, and in some instances even within the same country. In the United States of America, where an active venereal disease program has been in operation since 1940, a recent survey revealed the existing shortcomings, since of the patients treated during the survey period, physicians reported to the health authorities only 11 per cent of the cases of infectious syphilis, 38 per cent of the cases in other phases of the disease, and 11 per cent of the gonorrhoea cases.

Syphilis and gonorrhoea rank among the top 10 notifiable diseases in the Americas and data from outpatient clinics indicate that there are about four cases of gonorrhoea for every case of syphilis.

As in the rest of the world, the other venereal diseases—chancroid, lymphogranuloma venereum, and granuloma inguinale—are found in the Americas, although the number of cases is not very high. However, soft chancre is of some significance in South America, since it is reaching approximately half the syphilis rate.

Table 26 shows the data relating to the four-year period under review, as received by the Organization.

The syphilis mortality rates have continued to drop in the Americas and in 1967 they were 1.1, 0.9, and 1.2 per 100,000 population in Northern America, Middle America, and South America, respectively (Figure 26). Treatment has effectively reduced the mortality.

The world-wide survey made by WHO during the period 1950-1960 revealed the rise in the incidence of syphilis and gonorrhoea.

In order to tackle this problem the Organization has

TABLE 26. REPORTED CASES OF SYPHILIS, BY COUNTRY, 1966-1969.

COUNTRY OR OTHER POLITICAL UNIT	1966	1967	1968	1969 <sup>a</sup>
Argentina	5,710	7,456	5,719	4,814
Bolivia <sup>a</sup>	91	103	213	271
Canada	1,970	2,342	2,233	2,301
Chile	3,603	3,990	4,300	3,193
Colombia <sup>b</sup>	16,530	17,939	...	...
Costa Rica	754	963	677	1,090
Cuba	2,049	1,055	548 <sup>c</sup>	594
Dominican Republic	...	...	8,101 <sup>c</sup>	9,432
Ecuador	...	...	1,014	...
El Salvador <sup>a</sup>	8,675	7,118	9,152	8,209
Guatemala	1,755	1,307	1,479 <sup>c</sup>	1,174
Guyana <sup>d</sup>	961	...	...	...
Haiti	2,600	2,626	1,220 <sup>c</sup>	1,455
Honduras <sup>a</sup>	2,588	2,844	2,049	1,476
Jamaica	3,766	1,505	957 <sup>c</sup>	1,176
Mexico	12,907	13,557	14,322	9,204
Nicaragua	1,745	879	1,156	896
Panama	254	361	111 <sup>c</sup>	194
Paraguay <sup>a</sup>	1,836	2,060	2,016	2,006
Peru <sup>a</sup>	3,141	2,847	2,511 <sup>c</sup>	...
Trinidad and Tobago <sup>d</sup>	598	329	704	750
United States of America	105,159	102,581	96,271	...
Uruguay	423	336	316	136
Venezuela <sup>a</sup>	10,032	10,855	10,047	...
Antigua	6	...	...	...
Bahamas	27	149	120	285
Bermuda	68	43	29	23
British Honduras	...	...	...	16
Canal Zone	33	16	24	11
Dominica	69	20	25	13
French Guiana	19 <sup>c</sup>	30 <sup>c</sup>	78 <sup>c</sup>	56
Grenada	...	...	...	222
Guadeloupe	309	297	100 <sup>c</sup>	124
Martinique	1,079	996	...	...
Montserrat	62	...	...	...
Puerto Rico	2,116	2,282	2,059	2,358
St. Kitts-Nevis and Anguilla	11	7	6	2
St. Lucia	164	86	130	421
St. Pierre and Miquelon	1	...	...	...
St. Vincent	17	...	...	...
Surinam	288	...	...	...
Turks and Caicos Islands	24 <sup>c</sup>	5 <sup>c</sup>	...	...
Virgin Islands (USA)	206 <sup>c</sup>	447	...	...
Northern America	107,198	104,966	98,533	2,324
Middle America	41,814	36,849	42,940	39,102
South America	42,634	45,616	26,214	10,476

<sup>a</sup> Reporting area.

<sup>b</sup> Congenital and early syphilis.

<sup>c</sup> Provisional or incomplete data.

<sup>d</sup> Reporting not obligatory.

cooperated with the Governments to gain a better knowledge of the situation and to improve the programs and activities for its control, especially those for the training of personnel, the development of laboratory services, the investigation of contacts, and the application of appropriate administrative methods. In addition, through the services of the Zone epidemiologists and short-term consultants and the awarding of fellowships, it has assisted the Governments in the study of

the problem and in the preparation, execution, and evaluation of control programs.

### Training

Special attention has been paid to the training of personnel in different control techniques and to the improvement of laboratory services for diagnosis of venereal diseases. This type of assistance has been provided to Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Panama, and Trinidad and Tobago.

The Organization has promoted the countries' participation in the evaluation of laboratory test performance undertaken annually by the WHO International Reference Center at the U.S. National Communicable Disease Center (NCDC) in Atlanta, Georgia. At the end of the period Argentina, Bolivia, Canada, Costa Rica, Curaçao, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Trinidad and Tobago, Uruguay, and Venezuela were participating in the study.

### Publications

In 1966 the Organization published and distributed to the Hemisphere health services a Spanish translation of the manual *Serologic Tests for Syphilis (1964)* published by the Venereal Disease Research Laboratory of the NCDC. It also published and distributed the volume *Seminario sobre Enfermedades Venéreas*, containing the papers presented at the Seminar on Venereal Diseases held in Washington in 1965.

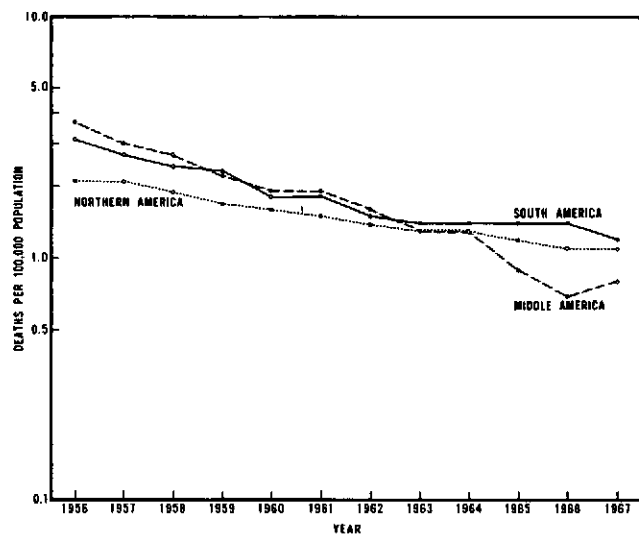


Fig. 26. Deaths from syphilis per 100,000 population in three regions of the Americas, 1956-1967.

### Measures To Be Taken

In view of the upward trend in venereal disease incidence in almost all countries in the world, despite the fact that effective control methods are available, it is necessary that the health services adopt measures to strengthen their methods of combating these diseases.

Their epidemiology must be reviewed and programs organized, at least in the large urban centers, where for obvious reasons the number of cases is greater, especially as regards early syphilis.

Venereal diseases should be considered in the same way as any other communicable disease and should be included in the systematic control programs operated by the health services for such diseases. There are in fact effective techniques for the diagnosis and treatment of infected persons and for the investigation and treatment of contacts which, if properly used, produce very good results. The application of these techniques must be encouraged.

In these programs, health education for both physicians and the public should carry out an important function. Moreover, case-reporting must be improved. Where this reporting is very deficient, it forms a major obstacle to the detection of sources of infection and contacts.

Urgent consideration should also be given to the epidemiological problems caused by groups frequently on the move, such as seamen, foreign workers, members of the armed forces, and others whose movements are tending to increase as a result of the expansion of international cooperation.

The Organization's activities have been directed toward the objectives referred to, in order to assist the Governments to unite their policies and efforts to organize a Hemisphere-wide control program for venereal diseases, which also represent a serious social problem since they mainly affect youth. The 1968 Meeting of Ministers recommended "that the Pan American Health Organization and the World Health Organization collaborate with the countries of the Americas by providing them with technical and material aid, to the extent funds permit, in the planning, programming, organization, execution, and evaluation of venereal disease control programs; and that at the same time they serve as the coordinating agency for the programs of the countries, so as to ensure that they attain the same level throughout the Hemisphere and move forward in a coordinated manner." For the implementation of this policy, which is in fact in accordance with the approach to the problem adopted by the Organization so far, concerted efforts will have to be made.

## YAWS

Beginning in 1954, with the adoption of Resolution XLI by the XIV Pan American Sanitary Conference, the Governments of the Hemisphere showed great interest in eradicating yaws. Owing to its epidemiological characteristics and its vulnerability to available control techniques, this disease can be eradicated. PAHO/WHO, with the assistance of UNICEF, collaborated with various countries and territories in control programs and the results obtained were highly satisfactory; in recent years, however, the eradication activities have suffered a gradual decline.

After programs against yaws had been successfully carried out in Haiti and the Dominican Republic, and the disease had been reduced to minimum levels in the first-mentioned country, the activities were interrupted for various reasons and the disease again appeared. The eradication programs have also been suspended in Colombia and Ecuador. In Venezuela, on the other hand, a surveillance and control program covering residual foci is being continued. The present situation calls for a study to be made to determine and evaluate the status of the problem. Table 27 gives the numbers of cases reported to PAHO/WHO by the countries during the period 1966-1969.

In Haiti the study was carried out in 1967, and as a consequence a new program has been established with the assistance of the Organization. The bases have also been worked out for a survey to investigate the frequency and distribution of the disease, and particularly its infectious forms, in the Dominican Republic. The relevant report has been submitted to the Government.

At the request of the Brazilian Government a con-

TABLE 27. REPORTED CASES OF YAWS IN THE AMERICAS, 1966-1969.

COUNTRY OR OTHER POLITICAL UNIT	1966	1967	1968	1969 <sup>a</sup>
Bolivia	2	...	—	...
Colombia	84	62	63	23
Dominican Republic	6	35	7	—
Guyana	30	...	...	...
Haiti	161	72	25 <sup>a</sup>	52
Jamaica	52	14	13	4
Panama	1	—	...	1
Peru	25	33	...	...
United States of America	3 <sup>b</sup>	...	...	...
Venezuela	6 <sup>c</sup>	12	—	...
Dominica	125	128	86	65
Montserrat	7 <sup>d</sup>	...	...	...
St. Kitts-Nevis and Anguilla	—	1	—	—
St. Lucia	27	9	8	11
St. Vincent	1,097	...	...	...

<sup>a</sup> Provisional and incomplete data.

<sup>b</sup> Imported.

<sup>c</sup> Infectious cases.

<sup>d</sup> Latent cases.

sultant visited the country in 1967 to review the eradication work carried out in the preceding years and plan a study to determine the current status of the problem. The report was submitted to the Government for its consideration.

The persistence of yaws is a matter of concern for PAHO/WHO, which hopes that the problem will once again be given the attention it deserves and the programs the support they need. The Organization remains prepared to give its assistance. The uninterrupted implementation of programs incorporating effective epidemiological surveillance could eradicate yaws from the Hemisphere. This would fulfill the objective stated in the Declaration of the Presidents of America to the effect that "measures be taken to eradicate those (communicable diseases) which can be completely eliminated by existing techniques." This is the case with yaws.

## PLAGUE

For many years plague has been an important health problem for some countries of the Hemisphere. At present the disease exists in its sylvatic form in the western part of the United States of America and in Bolivia, Brazil, Ecuador, Peru, and Venezuela.

During the twentieth century, plague has been known to exist in 15 countries of the Americas. In the past 10 years reported human cases of the disease have been limited to the afore-mentioned six countries.

A steady decrease in human cases had occurred from the beginning of the century until 1959, when only 93 cases were reported. Then there was a definite upward trend until 1966, when there were 897 cases. In 1967, however, there was a sharp decline in the number of cases reported, while the reports for 1968 and 1969 seem to indicate again a trend toward increase.

The number of cases reported in the period 1960-1969 (1,936) was 21 per cent less than in the previous four-year period (2,448) (Figure 27).

### Geographic Distribution

In Bolivia sylvatic plague is present in large areas where rodents of the genus *Rattus* do not occur. The infected area extends from north to south, from Ichilo Province to the Argentine border, and from east to west from Cordillera Province to Mudánez Province. This is an area of approximately 70,000 km<sup>2</sup>. However, in 1969 the disease occurred (95 cases) in the locality of Apolo, about 600 km north of La Paz, in the Province of Caupolicán. The area where Apolo is located is situated in the Amazon Basin and on the slopes of the Andes, about 1,000 km from the foci in the southern

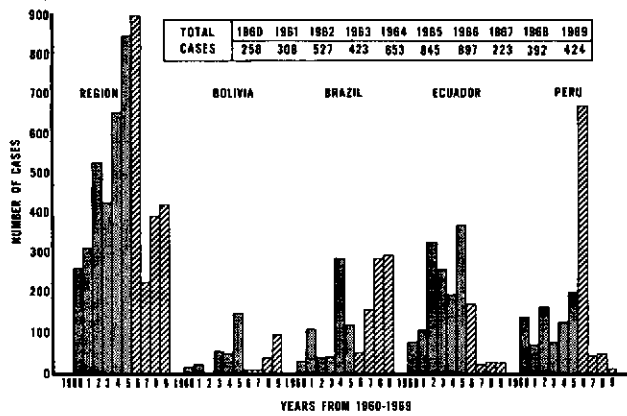


Fig. 27. Reported cases of plague in the Americas and in four countries, 1960-1969.

part of Bolivia. The occurrence of plague in Apolo is of great importance for its epidemiological implications and deserves careful investigation. During the period 1966-1969, 136 cases of plague occurred in Bolivia, in the Departments of Santa Cruz, Tarija, Chuquisaca, and La Paz.

Plague has been eliminated from the Brazilian ports and cities, but is endemic in the rural areas of several states (Ceará, Pernambuco, Rio Grande do Norte, Paraíba, Alagoas, Bahia, Minas Gerais, and Rio de Janeiro) and its incidence has been increasing since 1967, particularly in the States of Ceará and Pernambuco, reaching 293 cases in 1969, the highest annual figure for that country since 1964. In order to establish an adequate control program in the enzootic and endemic areas of the country, the Organization, at the request of the Government, is collaborating with the national health authorities in a comprehensive epidemiological study.

In Ecuador, beginning in 1960 and extending to 1966, a serious spill-over of sylvatic plague to domestic rats occurred in the Provinces of Manabí, Chimborazo, Loja, and El Oro. Particularly affected was the Province of Manabí. The occurrence of the disease in that province was of special importance because of the danger of the possible spread to other areas, especially the city of Guayaquil. However, in 1967 the incidence of plague declined sharply, particularly in the Provinces of El Oro and Loja, which together with the Department of Piura, Peru, were affected by a major outbreak in late 1965 and early 1966. The 237 cases which occurred in Ecuador during 1966-1969 were localized in the Provinces of Cañar, Chimborazo, El Oro, Guayas, Loja, and Manabí.

The incidence of disease in Peru has shown a very sharp decline starting in 1967. In the last few years sylvatic plague has been observed in an area of approximately 100,000 km<sup>2</sup> which includes several provinces of

the Departments of Piura, Lambayeque, Cajamarca, Tumbes, and Amazonas in the northern part of the country. In the enzootic areas the ecological conditions are extremely favorable to the wild rodents. Besides the existence of a great agricultural production (corn, rice, barley, etc.), the conditions of housing constitute an important contributory factor.

Most of the cases occurred in the Provinces of Ayacucho and Huancabamba, in the Department of Piura, which borders on Loja Province in Ecuador and is part of the focus which exists along the border of the two countries.

There is particular concern because the disease is spreading toward the east. Plague is already present in the Department of Cajamarca (Tabaconas) and Amazonas (Copalín and Bagua) on the banks of the tributaries of the Alto Marañón River, which joined by the Ucayali flows into Brazil on the Amazon River. The increase in 1965 and 1966 was due to epidemics in the Ecuador-Peru border region, the 1966 outbreaks being the largest ever recorded in that region. As in the other plague regions of the Americas, the infection is constantly present among wild rodents and their ectoparasites; seasonal trends are observed in the human cases, with greatest incidence at harvest time and in the rainy season. The 763 cases reported in Peru during the period 1966-1969 occurred in the Departments of Cajamarca, Lambayeque, and Piura.

The 17 cases of plague reported from the United States of America during the period occurred in the States of Arizona, Colorado, Idaho, New Mexico, and Utah. One case was imported from Vietnam by a soldier returning home. Sylvatic plague, now permanently established in the country, extends from the West Coast into North Dakota, Kansas, and Texas, and from the Mexican to the Canadian border and into Alberta.

The incidence of human plague in Venezuela has been declining in recent years, although the disease still exists in the wild rodent population of a limited area of the States of Aragua and Miranda. No human cases have been reported since 1962.

#### *Studies and Other Activities*

Epidemiological studies carried out by the Governments with the cooperation of the Organization revealed that the rodent fauna of these areas has been greatly reduced, which may explain the decline of the disease.

The Organization continued to assist the Governments of Ecuador and Peru in their plague control program by providing the services of the Regional Adviser on Plague and of short-term consultants, as well as fellowships and supplies and equipment. Unfortunately, owing to administrative difficulties and lack of adequate

financial support, the progress has been slowed down and it has not been possible to attain the goals established in the plan of operations. The details of this assistance can be found in the Annual Reports of the Director for the years 1966 to 1969.

While current control and containment measures have been more successful, it has become evident that before further progress can be made against plague it will be necessary to undertake a thorough study of the nature of the disease.

On the basis of a detailed examination and evaluation of the information on plague in the Americas, contained in the technical literature, official reports and other sources, a series of ecological research studies were designed.

This program includes ecological studies, research on the natural infection of wild rodents and fleas, on sensitivity to plague of different species of rodents, study of the strain of plague bacillus isolated, and research on the flea fauna and methods of control.

Investigations of this kind may reveal the existence of species of prime importance for the maintenance of plague, and possibly even of limited foci where the infection persists and from which it is apt to break out whenever an increase in the wild rodent and *Lagomorpha* population provides adequate fuel for a spread of the disease. Though admittedly requiring great initial efforts, such investigations will in the long run facilitate a watch over the trend of sylvatic plague in the Americas.

These studies, which are of great importance for a national approach to the effective control of the disease, are being carried out in Brazil, where a very active research program on plague has been under way since 1966 with the cooperation of the Organization.

Similar studies were planned to be initiated in 1968 in Peru and Ecuador and later in Bolivia. However, owing to lack of resources in the first two countries the initiation of this program had to be postponed indefinitely.

## INFLUENZA

Because of the rapid spread of this disease from country to country, WHO established an influenza program in 1947. Since then it has collected and disseminated laboratory and epidemiological information on the nature and extent of epidemics, in collaboration with national health authorities, two international centers (the World Influenza Center at the National Institute for Medical Research in London, England; and the International Influenza Center for the Americas, at the U.S. National Communicable Disease Center in Atlanta, Georgia), and recognized national influenza

laboratories, of which there are now 80 in 55 countries. Of these, 16 are located in the Region of the Americas (Argentina 2, Brazil 2, Canada 1, Chile 1, Jamaica 1, Mexico 1, United States of America 6, Uruguay 1, and Venezuela 1).

The functions of the two international centers are as follows:

- 1) To obtain, characterize, and preserve representative strains from outbreaks in different parts of the world and distribute them to research and production laboratories.
- 2) To recommend upon request, the strains that should be included in influenza vaccines.
- 3) To arrange for the training of research workers in specialized techniques.
- 4) In collaboration with WHO, to collect and distribute information on the strains of influenza virus prevalent in different parts of the world.
- 5) To assist national centers in the solution of technical problems.
- 6) To collaborate with WHO in the field and laboratory studies.

National influenza centers are designated by national health authorities and are recognized by WHO on the basis of technical ability, willingness to send firstly isolated strains to one of the international influenza centers, and willingness to send virological and epidemiological information to WHO and the international centers.

### *Epidemics, Outbreaks, and Virus*

As in previous years, the Organization continued to assist the countries of the Hemisphere by providing information on influenza outbreaks throughout the world, reagents for early diagnosis of the disease, technical assistance for control activities, and in certain instances, vaccines.

The epidemics reported to WHO during the period October 1965 to September 1966 were of small to moderate extent. The clinical forms of this disease were generally mild. In this Region, strains of virus A2 were isolated from Canada, Panama, the United States of America, and Venezuela. Virus B was isolated from Argentina, Canada, and the United States. Only serologic evidence of virus A2 was obtained in Trinidad and Tobago. Periods of increased influenza morbidity, without laboratory confirmation, were reported by El Salvador, Guatemala, and Honduras.

Laboratory studies of the antigenic evolution of virus A2 showed gradual shifts away from the 1957 prototype. The strains isolated during the 1965-1966 influenza season constituted a relatively homogenous group,

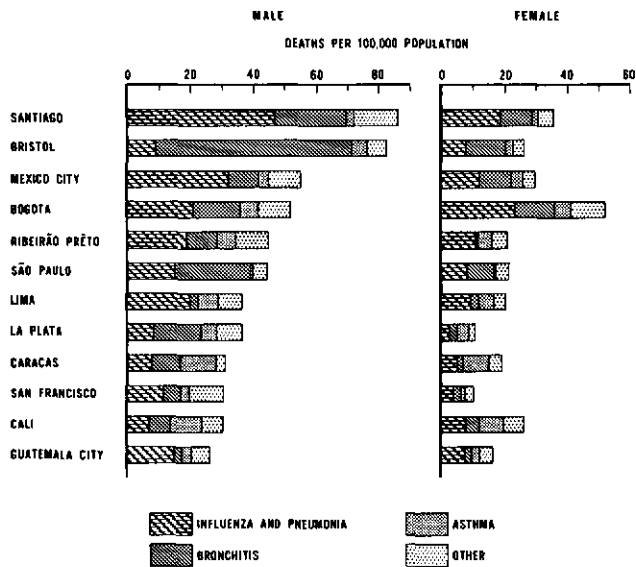


Fig. 28. Annual age-adjusted death rates from influenza and pneumonia, bronchitis, asthma, and other respiratory diseases per 100,000 population, by sex, at 15-74 years, in each city, 1962-1964.

and were readily differentiated from the variants found before 1962.

In 1967 epidemics of influenza-like disease were reported in Argentina, Canada, Chile, Jamaica, Trinidad and Tobago, and the United States. As in the previous epidemic season, the disease was generally mild.

In the United States outbreaks of influenza-like disease were reported in 29 of the 37 states in the eastern and central regions of the country. Although outbreaks were reported from Colorado, Montana, New Mexico, Utah, and Wyoming, activity in that mountain region did not appear to be widespread as in the eastern and central states.

Laboratory studies indicated that the prevalent viruses in 1967 constituted a homogenous group of strains related to the isolates from the 1966-1967 season.

Influenza viruses are known to undergo continual antigenic change. Minor variations, as discerned by laboratory procedures, occur frequently. Moderate changes can result in increased number of influenza cases, presumably on the basis of the population's heightened susceptibility to the variant. Major antigenic shifts occur infrequently. When they do, they may produce widespread or even pandemic disease, as in 1957 when the A2 (Asian) strain first appeared.

**Hong Kong Strain.** In 1968 a new strain of influenza appeared. The first outbreak caused by this new strain of influenza virus A2/Hong Kong/68 was reported in mid-July by the health authorities in Hong Kong and

the virus was isolated by the National Influenza Center there. The strain was immediately dispatched to the WHO World Influenza Center, Mill Hill, London, where it was found to be sufficiently different from previous strains of the A2 virus to inform WHO Headquarters that the WHO influenza emergency plan should be put into action.

Each of the 80 National Influenza Centers which cooperate with WHO in 55 countries were immediately informed about the emergence of the new strain and its availability at the World Influenza Center and the International Influenza Center for the Americas for distribution to them and to vaccine producers and laboratories interested in working with it.

The Hong Kong strain of influenza virus A2 caused a very large epidemic in Hong Kong and spread rapidly to countries as far as India and the northern territory of Australia, as had happened in the 1957 epidemic. Later its progress slowed down, but epidemics occurred in many countries of the northern hemisphere in the winter 1968-1969. In all these countries, except the United States, the disease was mild and not associated with a large increase in deaths. In the United States, however, the number of "excess deaths" was similar to the number in 1957-1958. This experience of widespread infection associated with a high level of excess mortality was unique. It did not occur in the other temperate-climate countries in the Americas. Canada, for example, experienced a relatively slight increase in incidence of disease and practically no excess deaths.

With the exception of Canada, the United States, and Puerto Rico, no outbreaks of influenza caused by the Hong Kong strain were reported in the Americas during 1968.

Low levels of antibodies against the A2/Hong Kong/68 strain were demonstrated in 1968 in the sera of persons who had documented influenza during the previous epidemic. Similar observations were made in a group of persons vaccinated with the previously available commercial vaccines.

Because the new strain differed quite considerably from the older A2 strain, which it displaced, previously existing supplies of vaccine A2 Singapore provided little protection against the Hong Kong strain.

Thanks to early warning given through the WHO network of influenza centers, biological products laboratories were able to set up their production lines quickly.

The Organization kept the Governments continuously informed about the development of the epidemic through cables and the *Weekly Epidemiological Report*, and provided them with viral reagents for the early diagnosis of influenza, strains of A2/Hong Kong/68 virus for the preparation of vaccines, assistance in



acquiring vaccines, and technical assistance for control activities.

The epidemic of A2 Hong Kong influenza diminished in the late spring of 1969 in most areas of the world. Although little or no activity was reported in the northern hemisphere after that, smoldering activity was reported in the southern hemisphere, beginning in May-June 1969. During 1969 outbreaks of A2/Hong Kong/68 influenza were reported in Argentina, Aruba, Brazil, Canada, Chile, Jamaica, Mexico, Peru, Uruguay, and Venezuela.

In the United States the influenza activity due to the Hong Kong strains declined during January 1969, with only sporadic outbreaks occurring in rural areas and in populations not involved in the early part of the wave. However, influenza B activity was reported during the first months of the year in several areas of the country. In all, 37 states had one or more cases of influenza B and 20 states had one or more outbreaks. The influenza B activity was widespread only in the central part of the country. Unlike the Hong Kong strain A2 influenza, which affected all groups, type B influenza illness occurred primarily in school-age children.

## ARBOVIRUS INFECTIONS

Ecological conditions in large areas of the Americas offer excellent opportunities for the persistence and spread of arboviruses. Of the 204 arboviruses registered in the *Catalog of Arthropod-Borne Viruses of the World* (U.S. Public Health Service Publication No. 1760), 105 have been initially isolated in the Americas from human specimens or animals. Of that total, 34 produce infections or infectious diseases in man, contracted by natural means or in the laboratory.

The infections caused by these agents are tending to increase, as was noted between 1966 and 1969 when arboviruses caused epidemics in man and in domestic animals in several countries of the Americas. The Organization, together with other international agencies, assisted the Governments in controlling these epidemics.

### Encephalitis

The Venezuelan equine encephalitis virus has caused frequent epidemics and equine epizootics in the northern part of South America. A serious epidemic with more than 1,000 human cases and 16 deaths occurred in

OUTBREAKS\* OF ARTHROPOD BORNE ENCEPHALITIS BY TYPE, IN THE AMERICAS  
1962-1964

OUTBREAKS\* OF VIRAL ENCEPHALITIS BY TYPE  
1966-1969

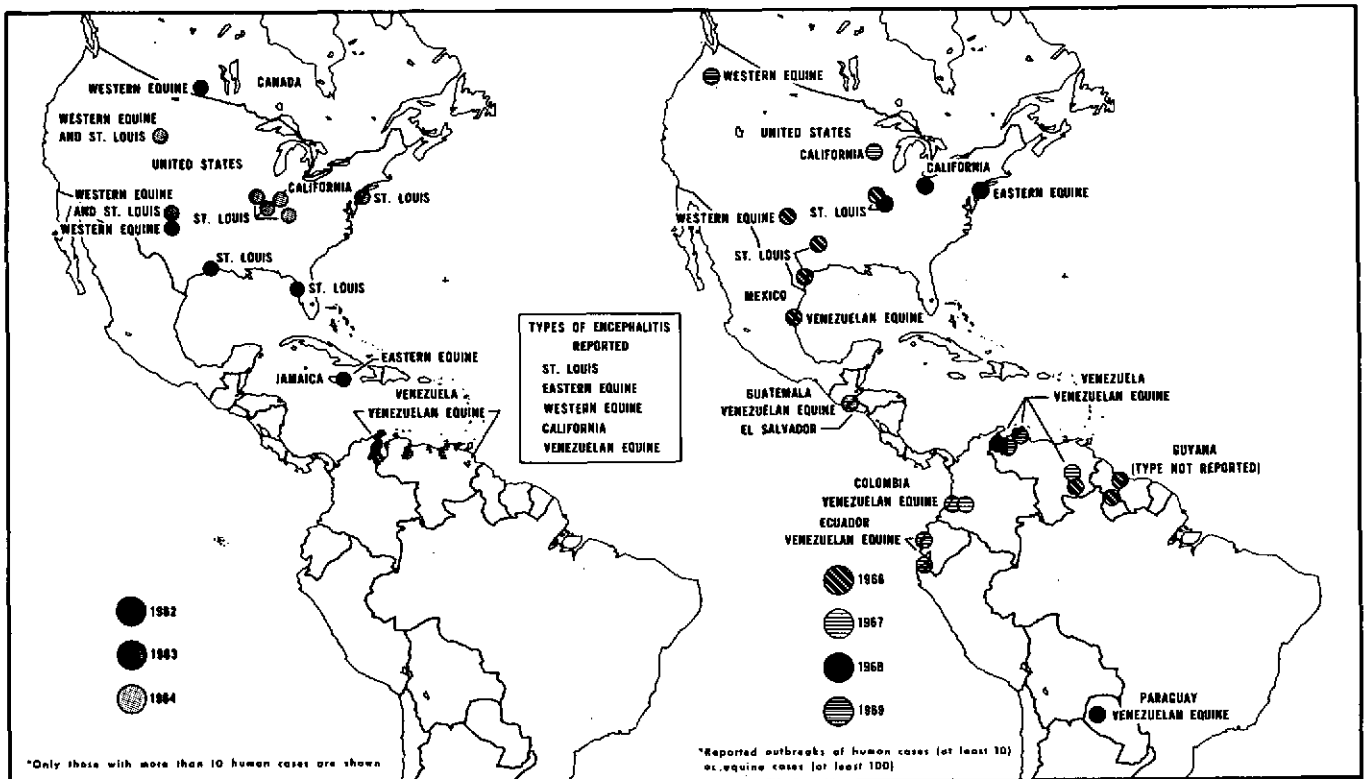


Fig. 29. Outbreaks of encephalitis in the Americas, by type.



Fig. 30. Occurrence of dengue in the Caribbean.

Guayas and Manabí Provinces in Ecuador in 1969. It is also estimated that 15 per cent of the 180,000 equines in the area died during the epizootic.

In Venezuela there was another epidemic, caused by the same virus, that started in November 1969 in Zulia State and spread into Falcón State, with a total of 4,017 cases reported. Of these, 200 cases presented neurological symptoms and there were 19 deaths.

The virus has also been isolated in Guatemala, Honduras, Mexico, and the Caribbean countries, as well as in the United States of America and in Manitoba Province in Canada. The Atlantic and Pacific coastal regions of Central America are infected with the virus.

Human cases due to the St. Louis, California, and Eastern viruses were identified by serologic means in the United States. The mosquitoes *Culex tarsalis* and *Psorophora confinis* were found to be connected with outbreaks that occurred in California, U.S.A., and in the ricefields of Venezuela, respectively.

In Guatemala, as preventive measures during an epidemic in 1969, 112,000 horses were vaccinated with a modified virus vaccine and a quarantine was established.

## Dengue

During the period 1966-1969 dengue remained present in Venezuela and the Caribbean countries and territories still infested with *Aedes aegypti* (Fig. 30).

An investigation carried out at Valera (Trujillo State, Venezuela) during the dengue outbreak that produced 7,750 cases in 1966, showed that the *A. aegypti* index was 47 per cent. From 1964 to 1966, successive dengue outbreaks occurred throughout the country, attacking the states one after the other in the east-west direction.

A dengue epidemic started in Puerto Rico in March 1969; 16,665 cases were reported but there were no hemorrhagic forms. An investigation revealed that *A. aegypti* was present in 50 per cent of the dwellings examined.

With a view to reducing the number of adult mosquito vectors and interrupting the infection cycle in two areas with a high incidence of cases, aerial spraying was carried out at the same time as the perifocal treatment of breeding places.

## Hemorrhagic Fever

Since the notification of the first cases of hemorrhagic fever in Argentina in 1943 and the isolation of the etiologic agent in 1958 (Junín virus), yearly outbreaks have occurred in that country. In 1966, 643 cases were reported, a figure which served as a warning to expect a recrudescence of the disease in 1967, when 1,125 cases were reported with a case-fatality rate of 8 per cent. There were 164 cases in 1968 and 721 in 1969. The disease is widespread among wild and domestic rodents (*Proenchimis guayamensis* and *Calomys callosus*).

A seminar on hemorrhagic fever was held in Pergamino (Buenos Aires Province) in Argentina in 1968. The meeting underscored the need to continue the epidemiological studies related to sources of infection, reservoirs, and mechanisms of transmission and to analyze the ecological factors that have a bearing on these points. Guidelines for preventive measures were drawn up and emphasis was placed on the need to continue research studies in order to develop an effective vaccine for human use.

In Bolivia an outbreak occurred in January-February 1969 in the small agricultural community of Cayoba,

25 miles north of Magdalena, in Beni Department. There were 10 cases with six deaths. The Machupo virus was isolated in the rodents *Calomys callosus* captured underneath the houses. During the outbreak 100 inhabitants fled and the rest were transferred to another area to permit extermination of the rodents at Cayoba. The rodent population rises during the corn harvest, a fact that is frequently linked with the outbreaks. In 1968 an earlier date was set for the corn harvest and this resulted in the outbreak also occurring earlier, hence reconfirming the generally held view that the rodents are virtual reservoirs of the disease.

## PARASITIC DISEASES

The parasitic diseases are among the most important public health problems in the Americas. From the point of view of both public health and economic development, parasitic diseases stand out as massive problems which remain essentially unsolved. They create a tremendous drain on the health and economic efficiency of a large part of the population in almost all countries of the Americas. They also affect the health of domestic animals and so have an important influence on the food supply and the general level of human nutrition. Thus the parasitic diseases are important handicaps to programs for social and economic progress.

The magnitude of the problem is evident from records of prevalence of the more important diseases in this category. In a recent report the approximate number of persons in Brazil with schistosomiasis was stated to be over 6 million. Of this number, about 1.5 million are partially disabled by the disease and 119,000 totally disabled. The economic loss due to this disability is great; according to one estimate it exceeds \$60 million per year. Over-all data for Chagas' disease are not available, but in Venezuela about 20 per cent of the rural population is infected and of these about half, or 280,000 persons, have significant heart damage due to the infection. In those infected persons, heart disease was four times more common than in uninfected persons of the same area.

In Argentina 400,000 persons currently have significant heart damage due to the disease. Up to 82 per cent of the heart lesions found in sampled populations were due to Chagas' disease.

Schistosomiasis and Chagas' disease have been given priority in the Organization's parasitic diseases program because they produce the greatest amount of injury. Other parasitic diseases also take their toll, however. Onchocerciasis affects a significant portion of the population in Mexico, Guatemala, and Venezuela. Toxoplasmosis is undoubtedly of great importance in many countries. Leishmaniasis in its various forms occurs in

numerous areas. Amebiasis, cysticercosis, and the intestinal worms also demand attention because of the morbidity they cause.

Although national programs vary greatly with respect to the relative emphasis they place on the parasitic diseases, it can be said without hesitation that these diseases are almost universally underestimated. While striking progress has been made against some of the more important communicable diseases in recent years, very little real progress has been made against the parasitic diseases.

During the past four years there has been an increase in interest in the parasitic diseases and a greater recognition of their importance and of the need to control them. There has also been considerable progress in the development of more effective control measures. Nevertheless, it must be admitted that there has been little increase in the size and scope of national programs and little concrete evidence that most countries are ready to give higher priority to control of the parasitic diseases, even when they have been clearly demonstrated to be national scourges of great social and economic significance.

One reason often given for the weakness of anti-parasitic programs has been the purported lack of effective and economical means to control them. To a degree this has been justified in the past, but advances in knowledge have begun to make that point of view obsolete, at least for some of the parasites.

The program of the Organization has been designed primarily to stimulate countries to improve their control programs. In order to assist progress in that direction, encouragement has also been given to improvement in collection of prevalence and morbidity data and in procedures for evaluation of control programs. In addition, support has been given to programs for training, exchange of technical information, and research related to control programs.

A Regional Adviser on Parasitic Diseases was placed on the staff of the Organization to plan and coordinate the program in this field.

As part of a broad program to increase the exchange of technical information among workers in the Americas, publications and references on the principal problems in this field were collected and selected information was distributed. One of the projects of this type included the distribution of information and materials for the Kato thick-film technique for the diagnosis of intestinal worm infections and schistosomiasis. The technique is rapid, easy, accurate, and inexpensive, and is being recommended for routine laboratory diagnosis and for survey and evaluation work.

## Chagas' Disease

Chagas' disease is considered to be a major health problem in many countries and it probably is a significant health problem in at least a part of every country in which it occurs. For example, although the disease is probably not highly prevalent in the countries of Middle America, foci of intense transmission are known in most of them and severe infections have been reported from all of them.

The principal aims of the Organization's program on Chagas' disease are the following:

- 1) To promote better and larger control programs.
- 2) To support research, especially on morbidity, diagnosis, and treatment. Also to support work on the ecology and control of the insect vectors.
- 3) To promote exchange of information among research and control workers.
- 4) To stimulate the development of a standard complement-fixation test for the disease and a standard antigen. This would permit, for the first time, accurate measurement of prevalence of infection and valid comparison between laboratories and between countries.
- 5) To encourage search for a better and more simple diagnostic method which could reduce the cost of diagnosis and give more rapid results.
- 6) To produce a bibliography of the disease as another means to advance research and control programs.

### *Study Groups*

With the collaboration of the WHO Headquarters, a meeting of specialists was convened in Washington, D.C., to compare American and African trypanosome

infections with the objective of gaining a better knowledge of both diseases through a fuller understanding of similarities and differences (Scientific Group on Comparative Studies of American and African Trypanosomiasis, 11-16 December 1967).

In recognition of the need to evaluate present control programs and to stimulate sound new control programs, the Organization convened a Study Group on Chagas' Disease which met in Washington in September 1969. Fourteen specialists from eight countries discussed existing control programs, reviewed available control measures, made recommendations concerning control, survey and evaluation procedures, and advised the Organization concerning future policy. The Group concluded that the existing programs using insecticides to control the vectors have been effective in reducing transmission. Continuing evaluation of control measures and the search for better methods were strongly recommended. It was stressed that evaluation of the progress of control programs must include measurement of their impact on human infection. The utility and economy of sampling procedures for collection of basic pre-control data and for evaluation of progress were discussed and the use of sampling methods was strongly advocated.

A project to produce a bibliography of all the periodical literature on Chagas' disease was begun with the aid of a grant from the Wellcome Trust and with the collaboration of the United States Department of Agriculture (Index Catalog of Medical and Veterinary Zoology). It is intended to present all references in two languages and to list them by both author and subject. Essentially all the citations have been collected and the



Chagas' disease: In Venezuela, a jeep specially adapted and equipped for use by a team responsible for spraying houses to kill the bugs that are the vectors of this disease. The team is a mobile unit of three persons who carry all the necessary materials for their work.

process of checking, translating, and editing is under way. It is believed that the bibliography will give substantial assistance to individuals and institutions engaged in research or control of the disease.

The Organization started a new program to support studies on Chagas' disease, aimed at developing better methods for its control. One of the major needs is an effective and standardized technique for serologic detection of the infection. In November 1966, a meeting of 10 specialists from six countries was convened in San Juan, Puerto Rico, to discuss diagnostic methods and propose measures for improving serologic diagnosis. The group approved and recommended the adoption of a standard procedure for the complement-fixation test. In addition, a group of specialists agreed to conduct carefully controlled cooperative tests of antigens in order to develop a sensitive and specific antigen that can be adopted as a standard.

When a standard antigen and a standard test procedure have been developed, it will be possible to advocate their use for all routine diagnosis, including blood-bank screening, and consequently to promote the collection of reliable information on the distribution and prevalence of the disease throughout the Hemisphere. The standard test will also aid laboratory and clinical research.

Experience in the work has led to the development of a highly sophisticated method for evaluation of antigens and has revealed wide differences in the quality of antigens that had been extensively used. Moreover, numerous improvements in the test procedure have been adopted. It is expected that the procedure will result in the selection of a sensitive and specific antigen that can be recommended as a standard.

A standard antigen of high potency and specificity, when available, will provide surer diagnosis, permit collection of more significant prevalence and evaluation data, facilitate the comparison of prevalence data between laboratories, and provide a basis for judging the quality of new antigens.

At the request of the XVII Meeting of the Directing Council, a comprehensive review of the status of Chagas' disease in the Americas was written and recommendations for the future were formulated. The review pointed out that, although precise data are lacking, the disease occurs in almost every country; about 35,000,000 persons live in the endemic areas and the prevalence of infection ranges up to 75 per cent or more in some localities, while the prevalence of cardiopathy and other symptoms may be as high as 20 per cent of all those infected. Emphasis was placed on the economic importance of the disease and the inadequacies in the available information concerning it. Specific

recommendations were made concerning the design, scope, and evaluation of control programs. Attention was called to the danger of transmission of infection by blood transfusion as well as to the need for improvement in diagnostic tests, more adequate evaluation of control efforts, increased training for national personnel, and fuller exchange of information among specialists in this field.

#### *National Programs*

With the Organization's assistance, Argentina assembled a group of its specialists to examine its Chagas' disease program in detail. It was agreed that the disease is one of the major health problems of the country: some 2,000,000 people are infected and 400,000 of them are believed to have significant heart damage. It was also agreed that the national control program should be maintained and well supported, with the objective of eliminating the disease as a public health problem.

National programs were reviewed in eight additional countries.

Uruguay negotiated an agreement with the Organization for a national program aimed at controlling the disease, which occurs in a large part of the country. The control program depends primarily on systematic use of insecticides in the houses to destroy the insect vectors.

Grants were awarded to five individuals for research on essential problems related to diagnosis and control of the disease.

The over-all effect of the program has been to raise the level of interest in Chagas' disease and to increase national awareness of its seriousness. In addition, many individual workers in control or research programs have been assisted in various ways so that they could perform their tasks more effectively. Progress was also made toward better survey and evaluation procedures. However, the most important part of the program—the effort to increase the scope and strength of national programs—was not effective. Although a number of countries were assisted in reviewing their control programs, only one country substantially increased its emphasis on the problem. In general, national programs remained essentially unchanged.

#### *Future Activities*

The course for the future is to continue to press for increased attention to this grave problem and to stimulate work that will make control more effective, less costly, and more durable.

Effective procedures for controlling the disease are

well known. There is no technical reason why the disease cannot be brought under control in any area. The disease deserves more attention in the next four years.

### Schistosomiasis

The distribution and prevalence of schistosomiasis and its importance as a public health problem have continued essentially unchanged in the last four years. It remains a problem of paramount importance in Brazil and is a matter of serious concern in Venezuela, Surinam, and some of the Caribbean islands. Only in Puerto Rico and Venezuela have the prevalence and importance of the disease declined significantly in recent years. The economic impact of the disease has been mentioned earlier.

The public health significance of the disease is hard to measure objectively and quantitatively. However, it is generally agreed that it is of very great importance in Brazil, where it has been studied intensively over a long period. Hospital admissions and autopsy reports demonstrate that severe damage due to the infection is frequent in the areas where the prevalence of infection is high. Thorough clinical surveys are rare but some data are available. For example, in one highly endemic area in Brazil, 19 per cent of all the people had relatively severe chronic schistosomiasis with evidence of hepatic involvement. Another 28 per cent had clear evidence of intestinal involvement. Thus, 47 per cent of the people had clinical schistosomiasis.



A field worker prepares a solution of molluscicide, which will be dripped into the stream to combat the snails that transmit schistosomiasis.

Control of the disease has been technically feasible for some time, but newer molluscicides and new therapeutic drugs have increased the possibility of effective control at reasonable cost. A new liquid formulation for niclosamide (Bayluscide) has increased its usefulness, and the introduction of n-trityl-morpholina (Frescon) has added a powerful new tool for snail control. A few years ago, niridazole was found to be a highly effective drug for treatment of the infection but its toxicity has discouraged its use. Recently hycan-thone, a metabolite of lucanthon, has shown promise. It is effective in a single dose. The results of further trials with the drug are awaited with great hope and interest.

The aims of the Organization's program on schistosomiasis are as follows: to encourage improvement and extension of national control programs; to improve procedures for evaluating the effectiveness of control programs; to assist in training of staff at all levels; and to promote research that can aid control programs.

The principal activities have included the following projects that deserve separate mention:

Continued efforts were made to assist national programs for control of the disease. In Brazil, consultants and staff worked closely with national authorities to prepare and start a series of pilot control projects. Later, progress in the projects was reviewed and evaluation procedures were revised. In the case of the pilot project in Bahia, a consultant considered the possibility of controlling the disease in one area in conjunction with revision of the irrigation system that would result in economy in control costs and extension of the irrigated area. Concerning the problem of water resources development in relation to the spread of the disease, two consultants studied the development schemes in the San Francisco River Basin. They pointed out the importance of considering health and social welfare when water resources schemes are planned.

In Surinam, assistance has been given in the formulation of a plan for a pilot control program.

In the Dominican Republic, the threat of the spread of the disease to developing agricultural areas has been reviewed and a national control plan has been discussed.

Sponsorship of the Schistosomiasis Snail Identification Center for the Americas, located in Brazil, was continued.

*The Guide for the Identification of the Snail Intermediate Hosts of Schistosomiasis in the Americas*, a 122-page manual intended for laboratory and field workers, was published in 1968. It is the result of a collaborative project involving six specialists.

A consultant was sent to Argentina to investigate the possibility that schistosomiasis was endemic in

northern Argentina. It was found that, although some persons gave a false positive reaction in the skin test, there were no proven infections. Since snails that are potential vectors exist in that area, vigilance was recommended. Two persons from Argentina were given fellowships to study diagnostic techniques and other procedures in Belo Horizonte, Brazil.

With assistance from the Organization, a specialist on the Kato thick-film technique for fecal examination went to Brazil to test and demonstrate the method for use in schistosomiasis. The method was found to be excellent, yet very simple, and it is now being recommended for routine detection of the eggs of schistosomes, *Ascaris*, hookworms, and *Trichuris*.

The program on schistosomiasis has produced significant but slow progress toward better control programs. The disease, though recognized to be a major cause of disability and death, has been attacked vigorously only in Puerto Rico and Venezuela. However, the other affected countries are moving toward more adequate programs. As was said earlier, the technical means to control the disease are available. Only the determination and the financial and human resources are lacking. For its part, PAHO/WHO, in compliance with the recommendation of the Ministers of Health, will continue to "assist countries to determine the magnitude of the problem of schistosomiasis, to collect the data necessary for a control program, and to plan a control program."

#### Onchocerciasis

A PAHO/WHO consultant reviewed the status of onchocerciasis in Colombia, Guatemala, and Venezuela. The principal conclusions were that the current programs reduced the severity of the disease but not transmission, and that steps should be taken to explore possibilities for vector control campaigns. It was speculated that vector species eradication might be possible in some foci.

### CHRONIC AND DEGENERATIVE DISEASES

Chronic diseases are beginning to emerge as an important health problem in the Americas. In Northern America they have been a matter of major concern to health officials for several decades. This is characteristic of an urban industrial society in the twentieth century. As more and more nations of the Hemisphere achieve urbanization and industrialization, the problems of health inevitably shift to concern with the chronic diseases such as cardiovascular disease, respiratory disease, diabetes, and rheumatic disease.

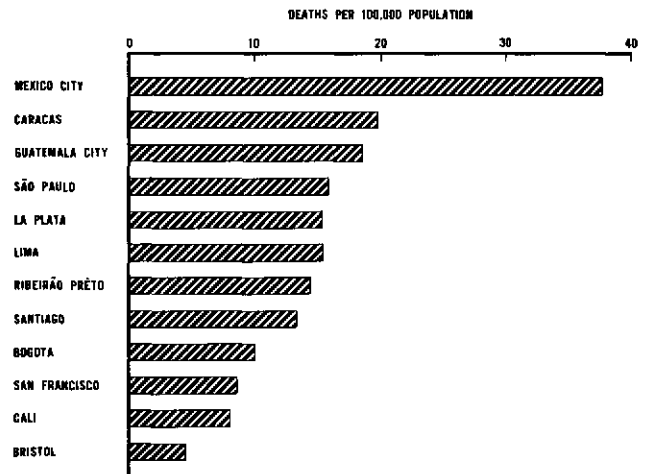


Fig. 31. Annual age-adjusted death rates from diabetes mellitus per 100,000 population at ages 15-74 years, by sex, in each city, 1962-1964.

The Organization recognized this phenomenon and began a program designed to diagnose the extent of the problem as a necessary first step to deal with it. In 1967 it published the results of the Inter-American Investigation of Mortality in the volume entitled *Patterns of Urban Mortality*, which clearly delineated the impact of the chronic diseases in a sample of 12 major cities. This report resulted from the collaborative efforts of many investigators in the Americas under the direction of the Department of Health Statistics.

In April 1969 a new Regional Adviser came on duty and renewed effort has been made to stimulate and assist in the development of programs. Consultation has been furnished to a number of countries and currently requests for assistance in program development are being responded to. Following initial visits to the field, an important aspect of program development was the preparation of material for incorporation in the PAHO/WHO Policy Guides Manual.

#### Cancer Control

The advances made in the control of communicable diseases, the rise in life expectancy and in the average age of the population, accelerated urbanization, and the appearance, persistence, or accentuation of harmful habits are factors which, to a greater or lesser extent, have helped to promote malignant neoplastic diseases to a very high rank among health and disease problems. The magnitude of the cancer problem varies widely in Latin America: from 1.5 to 21.0 per cent of the registered deaths are attributed to cancer of certain sites, while the crude mortality rates per 100,000 population range between 13.5 and 180.8 according to the countries concerned, in 16 of which cancer is already among

the four chief causes of death. The Inter-American Investigation of Mortality revealed that in 10 Latin American cities from 8.4 to 27.5 per cent of deaths in men between 15 and 74 years of age were due to malignant tumors, and that these figures varied between 17.8 and 31.0 per cent for women. Other investigations also show that in some places the incidence is even higher than in highly developed countries: the rate per 100,000 men was 253 in Cali (Colombia) and 225 in New York State, the figures for women being 313 and 215, respectively. When a health problem reaches the level indicated, it is obvious that its solution is beyond the capability of isolated action by medical services and limited use of community resources. For these reasons, the Organization established the Cancer Control Unit early in 1968.

The main activity in the initial stage has been to explore the magnitude of the problem, determine the human and material resources available for its solution, and promote central services for technical and operational programming and supervision in the national health administrations.

Special attention has been given to disseminating information on the control of cancer of the cervix uteri, the most frequent site in women, where both pre-malignant lesions (primary prevention) and incipient invasive cancers can be detected and effectively treated. Expansion of these programs has been limited by the lack of cytological technicians, a shortage which has motivated the continued support provided to the University of Chile Cytology Center, where 12 technicians have been trained since 1966. In the advisory services furnished to the countries emphasis was placed on the need to coordinate activities between all the sectors concerned in the control of cervico-uterine cancer, such as government health administrations, pathology and gynecology services, health insurance systems, programs for maternal and child health and family planning and welfare, cancer institutes, and community public welfare organizations (leagues against cancer). The significant advances made in this respect in the municipalities of Campinas (Brazil) and Cali (Colombia) are deserving of special mention.

To remedy the shortages of qualified radiotherapists and radiation physicists the Organization has provided fellowships and technical advisory services and, in collaboration with experts of WHO and the International Atomic Energy Agency, it completed in June 1969 the preparation of a basic manual on clinical radiation dosimetry, adapted to the specific requirements of Latin America. This manual, together with the establishment of the first laboratory of secondary standards in radiation dosimetry, sponsored by WHO in Buenos Aires at

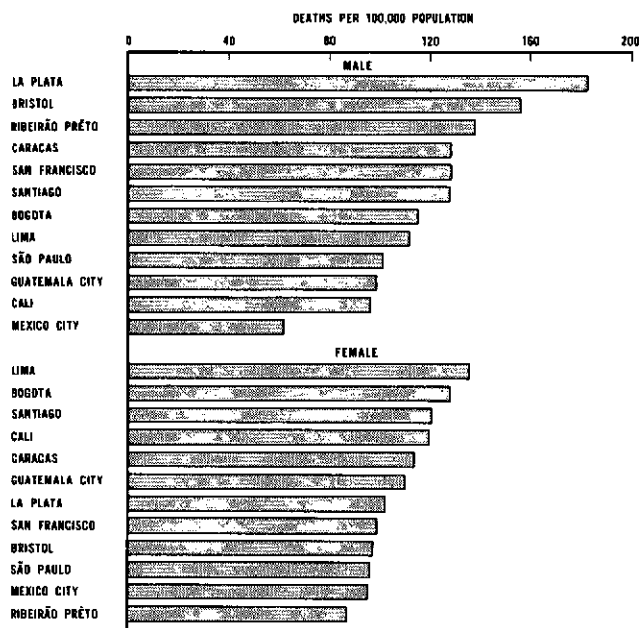


Fig. 32. Annual age-adjusted death rates from malignant neoplasms per 100,000 population at ages 15-74 years, by sex, in each city, 1962-1964.

the end of 1968, will undoubtedly contribute toward improved radiotherapy practices.

In response to the growing interest shown by the countries in setting up cancer registries, PAHO/WHO organized a seminar on this subject in Cali, Colombia, in September 1969. At this meeting, which was attended by more than 40 professionals from 20 countries of the Americas, the main aspects of the question were studied.

Several countries subsequently received advice on the organization of registries and incidence surveys, and considerable operational progress was made in Cartagena (Colombia), Lima (Peru), and São Paulo, Salvador, and Recife (Brazil). As regards epidemiological research, a study was carried out in Buenos Aires in 1967—in cooperation with the Argentine Government—on the relation between cancer of the lung, larynx, and bladder and the type of tobacco in cigarettes smoked.

At the XIX Meeting of the Directing Council it was recognized that cigarette smoking contributes significantly to premature death from lung cancer, coronary disease, bronchitis, and chronic respiratory insufficiency and it was recommended that the Organization undertake a study on the most advisable means for control of cigarette advertising and control of smoking in places of work or in public gatherings. The first steps have already been taken to conduct a study of the motivations and frequency of the smoking habit in the Ameri-



cas, and a survey on the present status of health education as regards cancer is under way.

General cancer control cannot be considered separately from the public health administration situation and the quality and coverage of the general medical care services. Consequently, the activities carried out by PAHO/WHO in the fields of professional training, health education, hospital administration, maternal and child health, and radiation control, among other programs, have been making a significant contribution to the campaign against cancer. The pathologists, radiotherapists, epidemiologists, hospital administrators, statisticians, and the many other specialists who have received training by means of the Organization's extensive program of fellowships and courses will undoubtedly help to make cancer control more effective.

As with other health programs, the main problems are: shortage of manpower, administrative deficiencies in medical care services, and lack of central services to lay down standards and supervise the application of a specific policy. The Organization has endeavored, during the period 1966-1969, and will continue in the future, to cooperate with the national health authorities in remedying these shortcomings.

## ZOONOSES

The zoonoses constitute major problems for human health both through the effect they have directly upon the affected individual and through the tremendous loss of animal proteins, essential for children and adults, which is caused by the disease in animals. On the other hand, the losses of the animal product have serious consequences on the national economy and livestock development.

The zoonoses are widely distributed throughout the Hemisphere and continue to be endemic in some areas, while achieving epidemic proportions in others. Their epidemiology is greatly diversified. Those that primarily attack livestock are found in areas where animal production is a major part of the national development programs; and in other areas, mainly around major cities, the zoonoses are principally attributed to small domestic animals and their contact with man.

The control of the zoonoses is progressing steadily through the programs undertaken by the countries. In these, the Governments have taken a dual approach: they are incorporating in their national health services veterinary public health sections whose primary responsibilities are to deal with the health aspects of the zoonoses; and concurrently, the ministries of agriculture are developing veterinary medical services for zoonoses control as an integral part of livestock development. Accordingly, the Organization is being requested

to provide technical advisory services for the establishment or strengthening of these services in the ministries and to assist in quickly training as many specialists as possible, so as to enable the countries to carry forward their zoonoses control programs and evaluate their effectiveness.

Many of the countries that have established veterinary medical services have made considerable progress. As these services and the national control programs have developed, there has also been considerable improvement in the diagnosis and reporting of the zoonotic diseases. Among the activities contributing to this improvement have been the training of personnel in epidemiology of the zoonoses and the standardization of biologicals used in diagnostic procedures.

## Rabies

Although several countries have established national programs for the control of rabies, the disease continues to be widespread in all parts of the Hemisphere and



Fig. 33. Ratio of reported cases of rabies in dogs and cats to human population and reported human cases, by country, 1968.



Vaccination clinics as a control for urban rabies.

causes about 210 human deaths each year. The major public health problem arises from the association of dogs and humans in the urban areas, principally the major cities. The mass migration of the population from the rural to urban environments has brought about large increases in the dog populations in the metropolitan areas, where the dog is allowed to run freely in search of food and reproduce without control. Canine population studies in many of the major cities of South America have revealed an average of approximately two dogs per family. This high density of the dog population contributes greatly to the frequency of animal bites and subsequent human cases of rabies.

In areas where adequate rabies control programs do not exist, it is not unusual for 25 per cent of the persons bitten to receive the antirabies treatment. The rabies control programs usually consist of three phases. The first is to conduct massive vaccination campaigns in order to immunize the majority of the owned dogs. The second is to capture and sacrifice as many of the stray dogs as possible with the aim of reducing their number to the level where transmission of the virus is greatly diminished. In the third phase, animals that have bitten persons are held for clinical observation to determine whether they have rabies.

One of the more significant programs in the control of canine rabies has been the project designed to control the disease in dogs in 12 cities on the Mexico-United States border. This project, initiated in January 1966, has set as its objective the progressive reduction of canine rabies in this border area over a five-year period, until it is eventually eliminated. An evaluation of the project in 1969 revealed some significant achieve-

ments. In the three years of its operation no human cases of rabies have been reported. Epidemics of canine rabies have been eliminated, and cases in dogs have been reduced to a negligible number. More than 80 per cent of the owned dogs have been vaccinated and about 30 per cent of the estimated number of unvaccinated dogs have been captured and sacrificed. One of the most outstanding results has been the tremendous reduction in the number of bitten persons receiving the antirabies treatment. In some cities this number has been reduced to well under 19 per cent, a fact which indicates the effectiveness of the capture and observation of the biting animals and the extent to which the need for indiscriminate use of the antirabies treatment has been reduced.

The second aspect of the rabies problem in the Americas is that concerned with wildlife, including bats and terrestrial mammals.

A major wildlife problem has existed in Grenada, where the mongoose is the principal reservoir and vector of rabies. The Organization has been providing assistance in Grenada's program since 1966 through the services of short-term consultants, training of personnel for field and laboratory services, and provision of supplies and equipment. With the implementation of recommendations made by the consultants, the rabies control program has been progressing satisfactorily. With respect to the public health aspects, no human cases of rabies have been reported and the cases in dogs have been virtually eliminated. A program of vaccination of dogs and elimination of stray dogs has been functioning properly. A rabies diagnostic service was established on the island, but the problem in wildlife

is still a major concern. Since the control of this situation requires constant and expensive efforts to keep the mongoose population down to a level where the disease will not be transmitted to domestic animals and to man, constant poison-bait programs have been in effect. Ecological studies of the mongoose have been undertaken to determine means for preventing transmission of the disease within this population.

Although there has been an increase in the number of national programs to control rabies, an expansion of diagnostic and reporting services, and a greater effort by health authorities to control the problem in urban areas, the incidence of rabies continues to rise in the Americas. During the four-year period, PAHO/WHO consultants assisted the health authorities of Argentina, Brazil, Grenada, Peru, Uruguay, and several Central American countries with the planning and development of control programs. The Organization also sponsored many courses on the epidemiology, diagnosis, and control of rabies in several countries and in the Pan American Zoonoses Center. In September 1967, the First International Seminar on Rabies in the Americas was held at the Center in Buenos Aires, under the joint sponsorship of the Argentine Government and the Organization. There were 102 participants from most of the countries of the Hemisphere and representatives from some European countries attended as observers. Through the cooperative efforts of the health authorities of the countries and the Pan American Zoonoses Center, the Rabies Surveillance System for the Americas has been established. The monthly report of the System is published by the Center and distributed to the Governments and interested agencies. To summarize the current situation, it can be said that, in general, programs for the immunization of owned dogs and the reduction of the stray dog population have not achieved the levels desired for protection or safety of human health, but rather are operated more on an emergency basis in response to an outbreak of the disease. Until continuity in the programs is achieved, the breaking of the transmission cycle can never be achieved.

### Brucellosis

Because of the human health problem to which it gives rise, the economic losses it causes, and its wide distribution in the various animal species, brucellosis is undoubtedly the most important zoonosis in the Americas. If accurate reports on brucellosis cases could be obtained in the countries, they would reveal tremendous losses to cattle production and productivity. For example, an estimate in only five countries reveals that

direct losses due to bovine brucellosis alone amount to about \$155 million each year.

### Human Brucellosis

During the period of this report, the highest occurrence of human cases of brucellosis was reported from Argentina, Mexico, and Peru, which together notified annually more than 5,000 cases.

In 1967 an outbreak occurred in the greater Lima area in Peru in which 2,286 cases were reported within a period of approximately four months, producing a case-rate for those sectors which reported the disease of 36.08/100,000. *Brucella melitensis* caused 97 per cent of the 360 cases studied in this epidemic, goats being the main source of infection; it was discovered that the principal means of transmission was through the consumption of fresh unpasteurized goat cheese. Following this epidemic, the Organization gave assistance to the Peruvian authorities by furnishing technical advisory services, equipment, and vaccine to control the disease in the goat population, the principal reservoir of the disease in that country.

The three countries reporting the highest incidence of human brucellosis also have a high prevalence of caprine brucellosis in their large goat herds. While much of the transmission to man is due to ingestion of contaminated milk and milk products, transmission also occurs by contact with the animals by persons working with them.

### Bovine Brucellosis

From the financial standpoint of losses in production and productivity and to livestock development, bovine brucellosis is undoubtedly the most important manifestation of this disease. Recent serologic surveys conducted in many of the South American countries have revealed the high incidence of reactors, predominantly in dairy cattle. Most of these dairy herds supply milk to the large metropolitan cities of South America, and in these areas the percentage of infected herds sometimes exceeds 60 per cent. However, in other parts of South and Central America and Panama low infection rates have been reported in both the herds and individual animals. Some countries are conducting serologic surveys in conjunction with calf vaccination programs to control the disease, but this is done only sporadically in South America. Wide-scale control campaigns are yet to be initiated.

Uruguay has had a national campaign to control brucellosis since 1964, and recently Argentina approved regulations making brucellosis vaccination compulsory, a measure that will serve as a basis for the

Animals being assembled for examination in a brucellosis control program.



national campaign to begin in 1970. Many of the countries have increased their requests for assistance from the Pan American Zoonoses Center in the planning, execution, evaluation, and coordination of the campaigns against the disease. These programs encompass diagnosis, production and control of diagnostic antigens and vaccines, and training of personnel in the epidemiology of brucellosis.

In several countries swine brucellosis is a major problem. Goat brucellosis represents a serious public health problem in Argentina, Mexico, and Peru.

#### Bovine Tuberculosis

A high prevalence of bovine tuberculosis is found in most of the South American countries, except Venezuela, and the highest infection rates are found in dairy cattle in the milk sheds of the major cities. Although the disease is also a problem in beef cattle, it affects them much less than it does the dairy herds that supply the milk for human consumption in the large metropolitan areas. On the basis of a recent sample survey conducted in 11 areas in Argentina, it was estimated that annual losses due to bovine tuberculosis amount to \$60,000,000.

While infection rates are high in most of South America, the prevalence of the disease in Central America and the West Indies is very low.

In the dairy herds around the large cities of Argentina, Brazil, Chile, Paraguay, Peru, and Uruguay bovine tuberculosis is one of the chief animal health problems. Control and eradication programs are directed primarily at these areas because of the public health implications and because the animals are maintained in the dairy herds for many years, unlike those used for meat production, which usually have a shorter economic life and where the turnover of new replaceable animals is more frequent. Although studies

have revealed that in some zones the infection rate is considerable in some of these meat-producing animals, they are discovered very easily in the slaughterhouse and subsequently destroyed. Insidious infection in the dairy cow, with constant transmission of the tuberculosis bacillus in the milk, is more difficult to control.

A very effective tuberculosis eradication campaign has been carried out in Venezuela, where animal disease reporting data indicate a reduction in the infection rate to only 0.11 per cent, with a simultaneous reduction in human cases caused by bovine tuberculosis bacillus.

Uruguay conducted a tuberculosis eradication campaign in the milk sheds around Montevideo; subsidies were paid to producers participating in the program, which reached 75 per cent of the dairies in the area. By this method, the rate of tuberculin positive animals was reduced to less than 1 per cent in those establishments participating in the program.

To summarize, as is the case with the other major zoonoses, effective programs are conducted by certain countries, but wide-scale campaigns to achieve the level of protection necessary to solve the public health problems do not exist in the Americas.

Total animal health programs, under the direction of government veterinary medical services, will be necessary in order to achieve the results required to control the economic and public health losses due to this disease.

#### Hydatidosis

This disease, which produces serious human health problems, also causes tremendous economic losses in both the public health sphere and in the livestock industry of the Americas. In South America, the high prevalence of hydatidosis is found in the countries that have large numbers of sheep, such as Argentina, Chile,

and Uruguay. The economic losses it causes in public health are very difficult to evaluate; however, it has been estimated that in these three countries alone the annual cost is approximately \$650,000. This figure does not include the subsistence or welfare payments to affected individuals or the loss of man-hours affecting the economy of these countries. For example, in Chile and Uruguay from 500 to 800 human cases are reported annually, with a mortality of about 7 per cent. Uruguay has reported that 995 patients required a total of 34,262 days of hospitalization because of the disease. Most of the patients are in the age group from 20 to 40 years, which is the most highly productive segment of the population, and they usually come from the sheep-raising areas. The agricultural losses due to hydatidosis in Argentina, Chile, and Uruguay are reported to be no less than \$10,000,000, but this figure is probably conservative since the exact losses are difficult to measure. For example, of the 13,000,000 head of cattle and 13,000,000 sheep slaughtered yearly in those three countries and in Rio Grande do Sul, Brazil, approximately 3,500,000 are condemned because of hydatidosis. In the national slaughterhouse of Montevideo, 205,122 bovine livers weighing almost 750 tons were condemned during one year. This destruction of animal tissue represents a serious loss of high-protein food destined for human consumption. Furthermore, in all of the slaughterhouses in Uruguay, more than 60 per cent of the livers processed are condemned for the same reason. Campaigns against the disease have thus far been largely unsuccessful. Control procedures aimed at breaking the transmission cycle between the dog and the sheep have been applied in association with concentrated health education efforts, but in the majority of cases these programs have

been ineffective. The legislative measures applied in an attempt to control the disease have had similar results. Basic knowledge of the epidemiology of the disease and of ecologic aspects of the parasite has been far from complete, and this has contributed to the lack of success in many of these programs.

#### Pan American Zoonoses Center

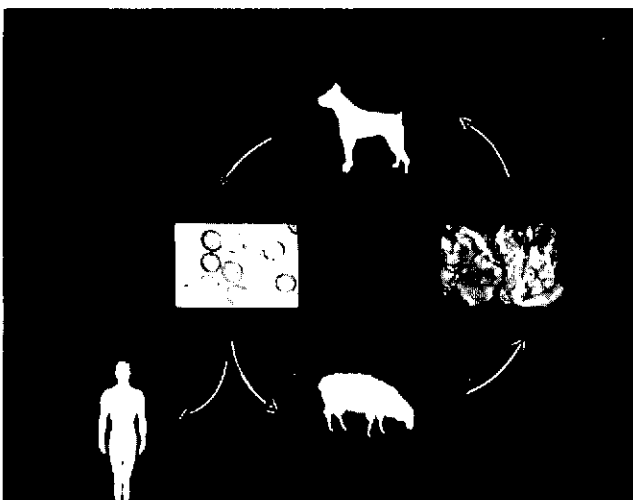
Since its establishment in 1956 under an agreement between the Government of Argentina and the Organization, the Pan American Zoonoses Center has continued to develop its services. The assistance extended by the United Nations Development Program for the strengthening of the Center has enabled it to achieve a full complement of scientific staff with which to undertake programs covering many of the major zoonoses in the Americas. The broadening of its activities and the development of new ones have led to an increase in the number and variety of requests from the Governments for the Center's assistance. It has thus come to occupy an important place as a regional institution.

During the period, the Center was transferred from its former location in Azul, Argentina, to new premises in the National Institutes of Health of Argentina in Ramos Mejía, Buenos Aires, where the facilities were remodeled to accommodate the staff and additional basic equipment was installed.

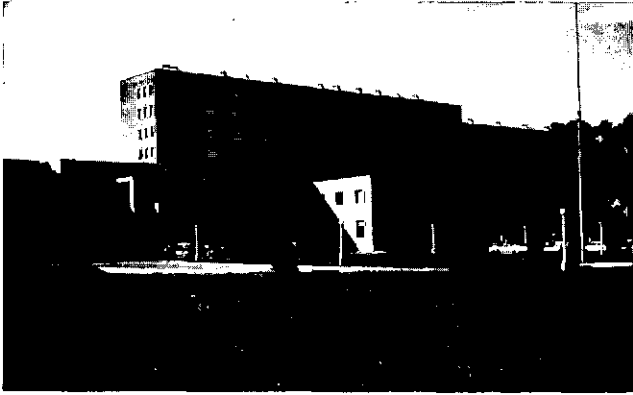
The principal activities of the Center in support of zoonoses control programs are:

- 1) Training of personnel in field and laboratory work.
- 2) Advice on the planning, execution, and evaluation of programs, standardization of reagents and diagnostic tests, reference tests on vaccines and sera, technical assistance in the supply of reference strains and reagents, and for the production of biologicals.
- 3) Research work to develop the most adequate diagnostic and control methods for the Hemisphere.

Significantly contributing to the increase in the Center's activities was the Final Report of the Special Meeting of the Ministers of Health of the Americas. In the recommendations concerning the zoonoses, emphasis was laid on the agricultural, economic, and public health significance of these diseases and the countries' responsibility for controlling them; and the role and objectives of the Center in its future programs of assistance to the countries were clearly defined. Subsequently, similar recommendations and resolutions were adopted by the Ministers of Agriculture of the Americas at the II Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control (Rio de Janeiro, Brazil, 14-17 May 1969).



Natural cycle of the parasite that causes hydatidosis.



Pan American Zoonoses Center.

During the quadrennium the authorities of the Government of Argentina expressed satisfaction with the expansion of activities achieved by the Center, which has led to a productive exchange of scientists and information and the development of new technology. They gave continuous support to the Center and made many requests to the Organization for increased assistance in training and field activities for existing and new programs in Argentina.

#### *Technical Services*

Technical advisory services were rendered to Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Panama, Paraguay, Peru, Uruguay, Venezuela, and the Central American countries on problems of the zoonoses and other aspects of veterinary public health related to brucellosis, rabies, hydatidosis, hemorrhagic fever, encephalitis, and laboratory animal care and management. Laboratory services were provided in connection with the production and distribution of standardized biologicals, control of vaccines and antigens, typing of strains of various microorganisms, and additional reference diagnostic services. For example, in 1966 the staff of the Center examined 35,158 specimens for diagnosis, 158 biological products for study and control, and 914 whole animals for diagnosis and taxonomic classification. Specialists of the Center visited several countries to provide assistance in rabies vaccine production; in Colombia they collaborated in the planning of control programs against goat brucellosis; in Peru, in the program against rabies; and in Uruguay and Argentina, in the bovine tuberculosis control programs. They also participated in many meetings on zoonoses control held in Argentina, Guatemala, Panama, Uruguay, and Venezuela.

The Center provided technical advice on rabies vaccine production and control and supplied standardized virus for the production of vaccines to institutions and

laboratories in Argentina, Brazil, Colombia, Cuba, Mexico, Peru, Uruguay, and Venezuela during 1967. Assistance was also given, in collaboration with the Argentine Government, in the implementation of national programs for the control of rabies, brucellosis, and bovine tuberculosis.

During the period, the Center established itself as a reference laboratory offering its services to the health authorities of Latin America in connection with rabies, brucellosis, hydatidosis, leptospirosis, hemorrhagic fever, and tuberculosis. A major contribution toward an understanding of the epidemiology of rabies was made with the establishment by the Center, in collaboration with the health and agricultural authorities of the countries, of the Rabies Surveillance System for the Americas. Each Government reports monthly to the Center on the cases of human and animal rabies in their respective territory and the Center compiles, analyzes, and reproduces this information for distribution to all the national health and agriculture authorities and other interested agencies. The basic information of the Surveillance System includes occurrence of human and animal cases, rabies diagnosis, antirabies treatment in man, and data on postvaccinal neuroparalytic reactions.

Studies were initiated by the staff of the Center in cooperation with the Argentinian animal health authorities to detect microbiological contaminations of meat for exportation. These are being conducted in slaughterhouses in the Buenos Aires area to determine the degree of infection by Salmonella and other enteric organisms in the animals before slaughter and contamination of the meat product following the slaughter process. The Center assisted Colombia's animal health authorities to design and prepare an investigation of the prevalence of hydatidosis in sheep-raising areas and to establish preventive measures for reducing the risk of its introduction into non-affected areas. Assistance was also given in the production of antigens and vaccines for control of brucellosis in that country.

In order to provide technical advisory services on a broad and diversified basis, new scientists were added to the professional staff, which reached full capacity by the end of 1969.

#### *The Scientific Advisory Committee*

Of great significance for the promotion, implementation, and evaluation of the programs of the Center was the establishment of this Committee, which held its first meeting from 20 to 25 November 1967 at the new site in Ramos Mejia. After a careful review and appraisal of the Center's programs and activities, the Committee made recommendations for improvement in the three basic areas of technical advisory services,

research, and training. This Committee, comprising a diversified group of medical scientists with the highest qualifications, has continued to play a role in the development of the Center's work.

### *Publications*

The Center continued to improve its quarterly bulletin entitled *Zoonoses*, which has achieved wider distribution and a position of prestige among the scientific publications in this field.

The activities of the Center in research and training are described in the section of this *Report* on research development and coordination and development of human resources.

### **Pan American Foot-and-Mouth Disease Center**

Foot-and-mouth disease is the most important animal disease in the countries that it affects, and is a constant threat to the other countries in the Hemisphere that are free of it. Its great economic significance and the difficulty and complex measures required for its control are the main reasons for the establishment of the Center. The chief factors to be considered in connection with foot-and-mouth disease may be summarized as follows:

- 1) The highly contagious nature of the disease and the rapidity with which it spreads among cattle, swine, sheep, and other cloven-hooved animals.
- 2) The financial losses suffered by agriculture as a result of the disease.
- 3) The damage it does to the production of animal protein and the relation between this and the severe problem of protein malnutrition in the growing human population of the Americas.
- 4) The losses suffered by national economies through the closing of export markets, since countries that are free of the disease cannot run the risk of importing animals and animal products from affected countries.

In the four-year period there has been a full recognition of the effect of the disease on the economies and development of countries that are in a large measure dependent upon livestock production, and of the urgent need to launch national and multinational campaigns for foot-and-mouth disease control.

The impact of the disease on economic development in the countries of the Hemisphere has been pointed out many times by the Governments and by scientists concerned with its control. The serious losses in terms of essential proteins necessary for human nutrition, the consequences for the agricultural economy, and the effects on animal production and productivity have all

been taken into consideration in the development of a unified approach to the control and prevention of foot-and-mouth disease. Of special importance to the increased efforts to bring the disease under control were two major events affecting the Center's future activities and its relationship to the Governments of affected countries in the execution of their control programs. The first was the transfer of complete administrative responsibility for the Center to the Organization, which has led to greater autonomy and proficiency in the development and conduct of the Center's activities and programs. The second was the decision by the Inter-American Development Bank to grant financial assistance to the countries in their campaigns against foot-and-mouth disease. With the cooperation of other agencies interested in the control of the disease, the Organization convened a working group to consider the problem in the Americas. This group developed a "Guide for the preparation of projects for the control of foot-and-mouth disease" and a special document on criteria for the analysis and evaluation of loan requests for such projects. Both of these documents have been used by many countries in preparing their applications to the Inter-American Development Bank. The Center has assisted several countries in the preparation of these requests.

The Center has greatly intensified its efforts to bring about more effective coordination among the countries in order to develop multinational activities for the control of the disease in affected areas. It has strongly recommended that stringent restrictions be adopted in connection with the movement of animals and has promoted the development of regulations and barriers against the entry of the disease into countries already free of it.

During the quadrennium the Center made important scientific contributions to the identification of the types and new subtypes of foot-and-mouth disease viruses. It also prepared inactivated vaccines derived from the modified live virus. Of great significance to the application of diagnostic procedures was the method developed for identification of carriers by a technique that is relatively easy to perform and is available to the countries. The Center developed a broader orientation and closer coordination in its program of education and advanced training for professional personnel who will specialize in the prevention and control of foot-and-mouth disease.

### *Field Advisory Services*

The staff travelled to all the countries of Latin America to review and offer assistance in the foot-and-mouth disease control programs. Discussions were held



Field and laboratory investigation of foot-and-mouth disease.

with the animal health authorities for the purpose of establishing the Inter-American Foot-and-Mouth Disease Epidemiological Surveillance System. Such a reporting system is essential in order to ascertain the status of the disease in the countries and to obtain more basic knowledge concerning its epidemiology. At the present time, no foot-and-mouth disease is found north of the Darién area in Panama, which in essence constitutes a "buffer zone" of protection between the affected areas of South America and the non-affected regions to the north.

In 1967 an outbreak of the disease was diagnosed for the first time in the Argentine portion of Tierra de Fuego, and northward into the Patagonia. In 1969 there was a small outbreak in the Punta Arenas area of Chile, for the first time since the 1920's. The occurrence of these two outbreaks in non-affected or disease-free areas underscores the need for constant surveillance against animal diseases, for epidemics of this kind could also occur in the disease-free area north of Panama where exportation of animals and animal products to other disease-free countries is of great economic importance.

Since 1968 Argentina, Chile, and Paraguay have received loans from the IDB for the financing of campaigns against foot-and-mouth disease and have already initiated programs for its control and possible eradication. Uruguay started its national campaign with the control of vaccines on a national scale and the application of compulsory vaccination in the northern districts bordering on Rio Grande do Sul in Brazil.

#### *Diagnostic and Reference Services*

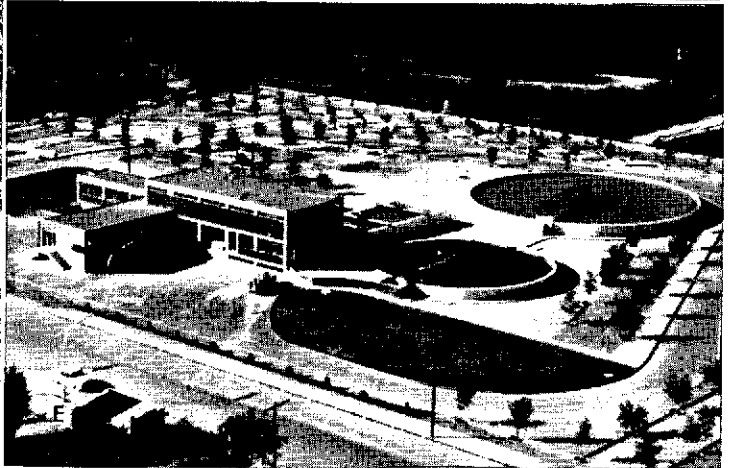
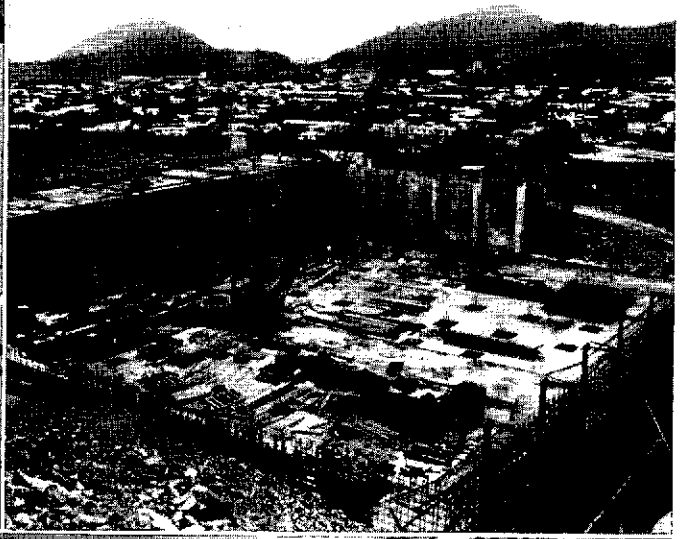
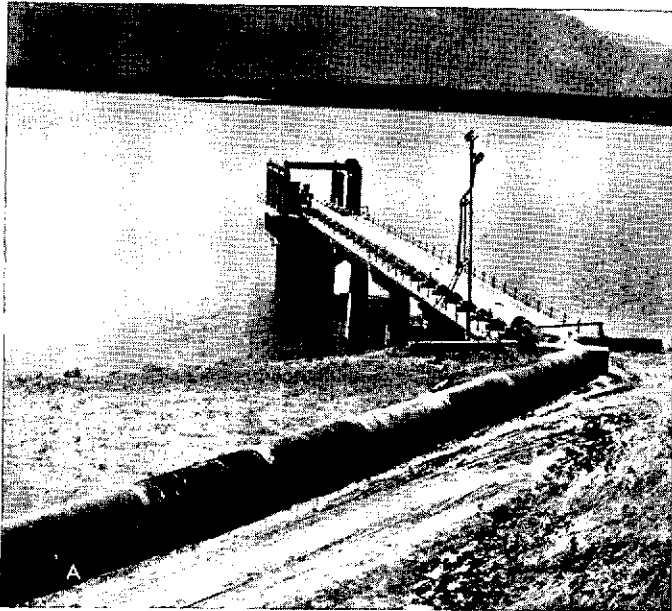
During the period 1966-1969 the Center studied and diagnosed 2,060 specimens of epithelial tissue, of which 1,748 were positive for foot-and-mouth disease. The type and subtype of each isolate was determined. Resultant new subtypes were prepared and sent to the World Reference Laboratory in Pirbright, England, for identification and taxonomic designation.

Through the characterization studies at the Center, it was determined that type C virus, which first appeared in Colombia in 1967 near Leticia on the Amazon River, raised a problem of special importance to the animal health authorities, since this new type could spread rapidly throughout the Region. However, control measures adopted by the Ministry of Agriculture, including application of slaughter techniques, vaccination measures, and continued quarantine and observation, brought the outbreak under control.

Studies conducted in 1969 on the typing and subtyping of virus isolates led to the identification of five new subtypes, which were subsequently submitted to the World Reference Laboratory.

Another major contribution by the Center's Diagnostic and Reference Section is the production of hyperimmune serum for use by the Center itself and by the national laboratories of the countries in their diagnostic and research work. For example in 1969, the Center produced 2,315 ml of hyperimmune serum, of which 822 ml were sent to 11 different countries for use in their laboratories. The Center also sent 102 ml to the World Reference Laboratory.





Different phases of a water supply system. A. Water intake in a reservoir. B. Construction of a new reservoir with a capacity of 20,000 cubic meters. C. Laying cast iron water pipe in the suburbs of a large city. D. Shipment of asbestos-cement pipe. E. Treatment plant of a large city.

To summarize, with the complete transfer of the Center to the Organization, the convening of annual meetings of Ministers of Agriculture or their representatives to examine its program and activities, and the broadening of the loan policies of both IDB and

the World Bank to include foot-and-mouth disease programs, the Center has embarked on a new era which will enable it to further increase its services to the Governments of the Americas.

## SANITARY ENGINEERING AND ENVIRONMENTAL SCIENCES

### ENVIRONMENTAL SANITATION

Transition was the most characteristic aspect of environmental activities in the quadrennium. Transition from primary emphasis on traditional activities such as water supply and sewerage to newer and emerging problems such as air pollution, industrial health hazards, solid wastes, water pollution, industrial wastes, and river basin development. Transition also from emphasis on improving undergraduate education to the development of graduate centers for education and research and to continuing professional education. These changes in emphasis required corresponding changes in the deployment and utilization of our resources—and, significantly, the establishment of a new resource, the Pan American Sanitary Engineering and Environmental Sciences Center (CEPIS).

Water supply activities continued to be the largest. During the latter part of the four-year period increased attention was devoted to sewerage, with the purpose of applying to this important field the organizational, administrative, financial, and technical methodology that has been so successful in the water supply field. At the same time we sought to decrease our traditional activities in these fields in view of the developed competence in the countries to maintain the momentum achieved. As the quadrennium closed our emphasis in water supply was focused on new technology, especially that related to water treatment; on pre-feasibility studies; on the securing of external financial assistance; on executive administration; and on design parameters and construction programming.

The Pan American Air Pollution Surveillance Network was established mid-way in the quadrennium and now includes 22 stations. Several of the cities have added a number of stations to the initial one established with the Organization's assistance. Reports covering the operation of the Network have been prepared for distribution. Increased interest in air pollution control was reflected also in the number of requests for technical assistance in developing new or strengthened programs. The First Regional Seminar on Air

Pollution was held under the Organization's sponsorship.

Other problems resulting from intensified urbanization and industrialization received increased attention. Short-term consultants were furnished to several countries to help in assessing solid wastes problems and working out solutions. Industrial hazards grew as industry expanded, and more countries requested evaluations of existing programs and aid in establishing new or improved ones. A First Regional Seminar on Silicosis was held and the proceedings were prepared for publication. The Institute of Occupational Health and Air Pollution Research in Chile concluded five years of operation with UNDP assistance, and was incorporated into the permanent health structure of that country.

Severe water pollution problems plagued several cities and the need for control programs became much more evident. Organization staff, supplemented by short-term consultants, responded to requests for assistance. Important new authorizations and organizations for water and air pollution activities emerged at both state and national levels. Several studies of the pollution of major important bodies of water were initiated. Sewage and industrial waste treatment received more attention in technical training courses and seminars as cities became more aware of the need to curb water pollution.

The hemisphere-wide attention to planning manifested itself in several environmental areas. Among the more important of these was river basin development planning. Sponsored jointly by the University of São Paulo and the Organization, the First Regional Symposium on River Basin Planning was held in that city. Two more symposia were held subsequently. The proceedings of these meetings contain valuable descriptions and discussions of the new concepts and new processes for solving river basin development problems.

With environment in a rapid stage of transition, there was need for a parallel transition in the training and utilization of manpower. Curricula modifications,

reflecting the newer problems and public concerns, were made. More emphasis was placed on quality and depth of teaching related to these more difficult problems. Graduate programs were extended and strengthened; research was accented. Programs of teaching and research, with UNDP-SF assistance, were expanded in Venezuela and Brazil.

The adjustments in the Organization's resources to meet the new requirements were substantial. Country, Zone, and Headquarters environmental sciences and engineering staff were reoriented to place greater emphasis not only on the newer problems, but also on national and regional planning, policy, and programming and on coordination with national and regional development plans—in both traditional areas of activity and new areas. Finally, in recognition of the need for improving capability to render expert technical assistance to Member Countries, a new resource was developed, largely by reshaping existing resources—the Pan American Sanitary Engineering and Environmental Sciences Center. This resource, established in 1968, is expected to render important assistance in the provision of technical information materials, expert consultant services, support for university-based teaching and research institutions, and ultimately, in research and technical training methodology.

## WATER SUPPLY

The Presidents of America, at their meeting in Punta del Este, and the Ministers of Health, at their meeting in Buenos Aires, again emphasized the need to continue assigning the highest priority to programs for water supply and sewerage systems in order to maintain the high level of progress achieved since 1961. The two meetings bore witness to the fact that, during the quadrennium, programs designed to provide the peoples of the Hemisphere with more and better sanitation services continued to receive maximum attention, as they had during the preceding four years. The period was one of effective and resolute progress on the part of the Governments, working with the collaboration of international lending and technical assistance agencies.

Several countries continued contributing to the Community Water Supply Fund, established in 1959 to support the Organization's program in this field. Table 28 shows the contributions made in the past four years. As can be seen, the countries have increased their contributions, except for the United States of America, as a result of the programs of technical assistance in the administration and management of water and sewerage services, assisted by loans from the

TABLE 28. CONTRIBUTIONS TO THE PAHO COMMUNITY WATER SUPPLY FUND.

*(In US dollars)*

COUNTRY	1966	1967	1968	1969
Bolivia				9,950
Brazil			3,000	4,698
Dominican Republic				25,000
Ecuador		12,000		
Jamaica			21,835	
Nicaragua		1,000		24,000
Peru			17,460	2,183
Trinidad and Tobago		20,235	25,000	
United States of America	300,894	115,000	1,906	
Uruguay			25,000	
Venezuela				4,721
Total	300,894	148,235	94,201	70,552

Inter-American Development Bank (*see also* Chapter III, p. 38).

One of the chief recommendations of the Governing Bodies with reference to water programs was the establishment by the countries of agencies or institutions able to plan, construct, manage, and direct water and sewerage services in an efficient and rational manner. This concept has gained much ground, and at the end of 1969 most of the countries had organizations of their own which could already look back on considerable achievements; the advances made warrant the expectation that in a few years' time highly efficient agencies will be operating in this field.

## Investments and Results

During the period 1966-1969, the international credit agencies and the Governments were very active in supporting programs for the construction or expansion of water services (Table 29). Investments by international credit agencies together with those of the countries totaled \$945.42 million, \$323.41 of which represented international loans and the remaining \$622.01 million were national funds. These figures reflect an increase in investment compared with the preceding four-year period. Table 30 presents the funds allocated from January 1966 through December 1969, broken down by country and by international agency. It is estimated that both national and international investments made through December 1969 will benefit a total of 70 million persons, an increase of 26 million over the corresponding figure at the end of 1965.

Figure 34 shows that at the end of the period covered by this *Report* the countries reported that 72 per cent of the urban population had access to water supplies through house connections or public hydrants and that 16 per cent of the rural population had adequate water

TABLE 29. NATIONAL FUNDS AND INTERNATIONAL LOANS ALLOCATED FOR CONSTRUCTION OF URBAN AND RURAL WATER SUPPLY AND SEWERAGE SYSTEMS IN LATIN AMERICA, 1961-1969.

(Millions of US dollars)

SOURCE	1961 to 1965	1966	1967	1968	1969	1966 to 1969
International loans	313.22	115.66	86.62	54.44	66.69	323.41
Inter-American Development Bank	229.09	73.42	76.86	37.65	45.35	233.28
Agency for International Development	49.61	20.94	10.77	2.79	16.34	50.84
International Bank for Reconstruction and Development	3.00	21.30	—	14.00	5.00	40.30
Export-Import Bank	31.52	—	-1.01 <sup>a</sup>	—	—	-1.01 <sup>a</sup>
National funds	430.02	145.18	136.63	151.41	188.79	622.01
Total	743.24	260.84	223.25	205.85	255.48	945.42

<sup>a</sup> Loan made in 1965 reduced by \$1.01 million in 1967.

supplies, also through house connections or easy access to public hydrants. It is very satisfying to report that, by the end of 1969, 21 countries had reached or passed the goal set in the Charter of Punta del Este for urban areas; however, only five countries and the eastern Caribbean area had met the targets for rural areas.

#### Technical Assistance

The Organization continued to provide technical assistance in practically all fields of public water supply. This assistance required 230 man-months of short-term consultant services. At the end of 1969, there were 10 engineers assisting full time on water supply programs, while a further 32 sanitary engineers who were collaborating on sanitary engineering

programs were also devoting much of their time to activities connected with water supply projects. The services of these permanent advisers and short-term consultants enabled the Organization to meet the requests for assistance made by the countries in various technical and administrative sectors of this program. Everything seems to indicate that this demand will continue during the next four years and there is a further possibility that it will extend to other sectors, such as new water treatment methods and more economical approaches to the design and construction of water systems. In the first of these sectors research work was started in 1969 in the treatment plants of Cúcuta (Colombia) and Rio de Janeiro (Brazil); in addition, two short courses on the subject were held in Brazil.

As a result of the increasing participation of the international lending agencies, especially the IDB, in water supply programs, the Organization maintained close contact with those agencies. At the same time, it increased its assistance to the countries in the preparation of loan applications, and extended its technical assistance activities, particularly with regard to the administration and management of services, which will be dealt with later.

An agreement was reached with the IDB for the development of training and research activities in matters relating to water supply in which the Bank was particularly interested. Under this agreement, a series of short intensive courses were organized, together with a regional seminar on water rates and an interesting project on the use of water meters in Latin America. PAHO/WHO also participated in water programs aided by the World Bank in certain countries. Assistance was provided to missions sent by the Bank to Colombia and Brazil, and at the Bank's request an analysis was made of the structure of the water supply services in Palmira, Colombia.

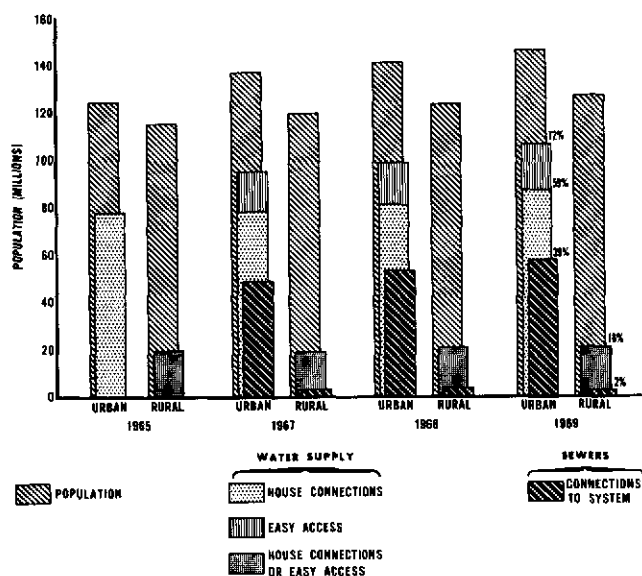


Fig. 34. Urban and rural population served by water supply and sewerage systems, 1965-1969.

TABLE 30. FUNDS ALLOCATED FOR CONSTRUCTION OF WATER SUPPLY AND SEWERAGE SYSTEMS IN LATIN AMERICA, JANUARY 1966-DECEMBER 1969.

(US dollars)<sup>a</sup>

COUNTRY	INTERNATIONAL LOANS							ESTIMATED NATIONAL MATCHING FUNDS
	IDB		IBRD	AID		EXIMBANK		
	WATER	SEWERAGE	WATER	WATER	SEWERAGE	WATER	SEWERAGE	
Argentina	23,230,000	2,270,000	—	1,400,000	—	—	—	29,230,000
Bolivia	8,000,000	4,800,000	—	625,000	—	—	—	8,615,000
Brazil	57,950,000	—	—	12,395,000	2,500,000	—	—	110,850,000
Chile	15,500,000	—	—	—	—	—	—	10,500,000
Colombia	9,000,000	—	14,000,000	—	5,000,000	-1,014,000 <sup>b</sup>	—	29,800,000
Costa Rica	—	—	—	—	—	—	—	—
Dominican Republic	3,810,000	1,090,000	—	—	—	—	—	2,250,000
Ecuador	12,000,000	—	—	—	—	—	—	5,500,000
El Salvador	—	—	—	75,000	—	—	—	—
Guatemala	19,020,000	800,000	—	1,369,000	—	—	—	11,438,000
Guyana	—	—	—	2,650,000	—	—	—	1,200,000
Haiti	50,000	—	—	—	—	—	—	—
Honduras	—	—	—	—	—	—	—	—
Jamaica	—	—	5,000,000	—	—	—	—	4,100,000
Mexico	12,500,000	—	—	—	—	—	—	9,000,000
Nicaragua	2,000,000	—	—	143,000	—	—	—	1,330,000
Panama	3,080,000	370,000	—	17,139,600	7,551,000	—	—	9,834,000
Paraguay	3,630,000	4,670,000	—	—	—	—	—	3,550,000
Peru	19,035,000	8,565,000	—	—	—	—	—	33,840,000
Trinidad and Tobago	300,000	—	—	—	—	—	—	200,000
Uruguay	3,600,000	800,000	—	—	—	—	—	2,711,000
Venezuela	10,000,000	7,200,000	21,300,000	—	—	—	—	66,533,000
<b>Total</b>	<b>202,705,000</b>	<b>30,565,000</b>	<b>40,300,000</b>	<b>35,796,600</b>	<b>15,051,000</b>	<b>-1,014,000<sup>b</sup></b>	<b>—</b>	<b>340,481,000</b>

International loans.....	323,403,600
Water.....	277,787,600
Sewerage.....	45,616,000
National funds.....	622,001,000
Matching.....	340,481,000
Other.....	281,520,000
<b>Total funds.....</b>	<b>\$945,404,600</b>

<sup>a</sup> Loans are included in year of approval until signed, when they are included in year of signature.

<sup>b</sup> Loan made in 1965 reduced by \$1,014,000 in 1967.

### Projections

Early in 1968, in collaboration with the governmental water and sewerage authorities, the Organization prepared four-year projections for the remainder of the Alliance Decade (1968-1971). According to these 1968 projections, the countries were to allocate \$1.3 billion during the last four years of the decade to provide water supply services to 70 per cent of the urban population through house connections. All but three of the countries planned to supply more than 60 per cent of the urban population and 18 planned to reach or surpass the goal of 70 per cent established in the Charter. The results achieved by the end of 1969 show that the countries are fairly close to realizing the projections made in 1968 to supply urban areas with drinking water through house connections.

It became increasingly evident during the period

under review that the collection and analysis of data would have to be improved in order to evaluate the

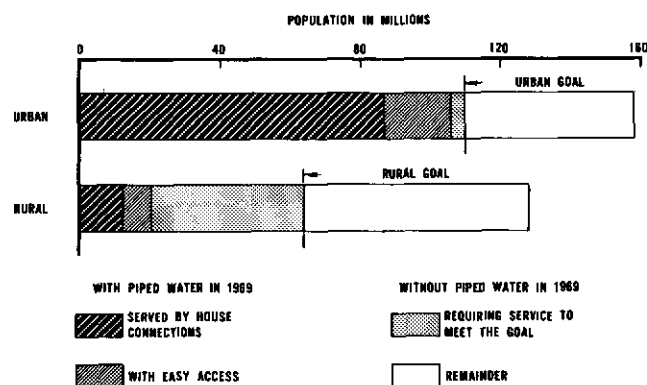


Fig. 35. Estimated urban and rural population in 1971 by type of water service in 1969 and requirements to meet goals of Charter of Punta del Este.

progress being made in public water supply and sewerage programs and provide an adequate basis for expanding those programs. The Organization consequently prepared a manual on methodology of data collection programs for community water and sewerage systems in Latin America and assisted in analyzing the data-collection procedures in Argentina, Brazil, Costa Rica, and Mexico as a preliminary step for providing increased advisory services in this field in coming years.

#### Program for Surinam

In 1969 the UNDP-SF approved a project for a national water supply and sewerage program in Surinam. By the year's end exploratory drilling operations had started, together with the compilation of hydrologic data, in the lower part of the Surinam River Basin. This project is the first of its kind to be financed by the United Nations in the Americas, and contains practical elements for providing water and sewerage services to communities in which it is expected that the Government will undertake major economic development activities.

### WATER SUPPLY IN RURAL AREAS

In April 1967 the goal of supplying potable water and sewerage to 50 per cent of the rural population was reaffirmed by the American Chiefs of State at Punta del Este. In October 1968 the Ministers of Health, in their final Declaration, stated: "We have given special attention to the problems of populations living in rural areas, because of their seriousness and because of the need to bring these people into the mainstream of modern life and economic progress." They went on to say: "We propose to encourage the modernization of rural life. . . ." Thus it can be seen that this quadrennium has been one in which there has been a growing awareness of the rural community, and an increasing desire to further accelerate the modernization of rural life that was started in prior years.

To assist the countries in meeting this challenge, the Organization has strongly supported the development, expansion, and strengthening of national and local water and sanitation programs in the rural areas. These efforts have been based on the concept that while strong viable water and sanitation programs constitute an important measure for the protection and improvement of health, they can also serve as the focal point for the development of a host of related health services and programs.

The driving philosophy behind the development of these programs has been to assist the countries to ap-



proach the goals of: (1) providing the inhabitants of the rural areas with adequate quantities of potable water—piped, where possible, into the house; and (2) providing basic sanitation programs that will ensure a safe and sanitary environment. To this end, the Organization has sought to promote national institutions that would furnish administrative, technical, and financial support to viable, long-range and locally-based programs.

PAHO/WHO has rendered technical, administrative, and financial advice in these activities. In addition to the traditional methods, it has sought to assist the countries to promote, demonstrate, and establish such concepts as:

Maximum community participation in the establishment and operation of the required systems.

Use of revolving funds to strengthen program financing.

Use of simplified design, construction, and management techniques to reduce program time and costs while increasing program coverage.

To give assistance in organizing and obtaining the maximum utilization of the resources available to the countries, the Organization has supplied staff members, short-term consultants, and fellowships to the various programs. In addition, it has actively collaborated with the various international organizations such as UNICEF, the World Food Program, the Canadian International Development Agency (CIDA), the Organization of American States, and CARE for the supply of funds and materials to the countries of the Americas.

While it appears that not all the countries will

reach the goals set forth at the first and second meetings in Punta del Este—supplying potable water and sewerage to at least 50 per cent of the rural population—at least seven countries will approach or exceed this goal. By the end of 1969, all countries of the Americas had rural water and/or sanitation programs, and at least 10 countries reported having rural communities connected to sewerage systems. The countries reported that 16 per cent of their rural population was served with potable water through house connections or easy access, and that 2 per cent of the rural population was connected to a sewerage system. While the effort in this field was less successful than expected, it has demonstrated and established many fundamental concepts that will serve as sound bases from which to accelerate the present programs.

To carry forward this effort, the countries allotted from national sources about \$234 million between 1961 and 1969. Five countries obtained loans totaling \$10 million from the IDB and AID (Table 31). These loans, plus previous ones, raised the total allotted for these programs to \$281 million by the end of 1969.

Throughout the period the concept of community participation in the planning, financing, organizing, constructing, and managing of these programs has been repeatedly demonstrated, and is now a firmly established principle in most programs. For the most part, the communities regularly contribute between 5 to 10 per cent of the total cost of water projects, and in most cases pay water rates that help to cover the cost of operation and maintenance. In a number of instances they also pay part of the capital and amortization cost. Community participation in this area is usually carried out through local organizations which are advised and supervised by the national or regional programs. As these organizations grow they can be used as the focal point for other health services such as sanitation programs.

The goal of developing long-range national financing for these programs has been sought by most countries. To assist them to achieve this goal, the concept of the revolving fund technique has been promoted. This technique implies the establishment of a fund, on a region-

TABLE 31. LOANS OBTAINED FROM IDB AND AID FOR RURAL WATER PROJECTS, 1966-1969.

COUNTRY	LENDING AGENCY	YEAR	LOAN	NATIONAL MATCHING FUND
Bolivia	IDB	1968	1,800,000	1,675,000
Dominican Republic	IDB	1968	1,950,000	1,050,000
Guyana	AID	1968	600,000	400,000
Nicaragua	IDB	1968	2,000,000	1,330,000
Peru	IDB	1967	3,135,000	4,044,000

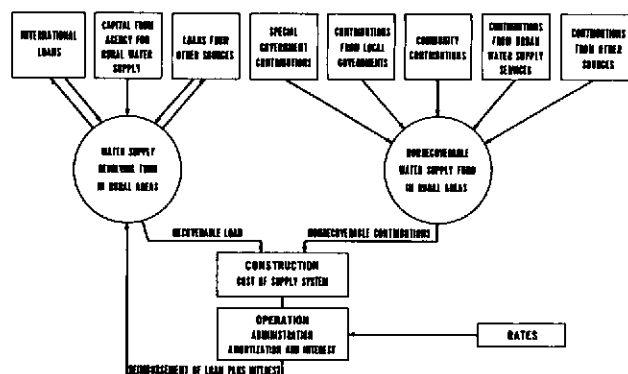


Fig. 36. Model of special fund for water supply systems in rural areas.

wide or national level, to finance the construction of community water projects. The fund makes loans to the various communities needing facilities and the loans are recovered by having the benefited community make repayments to the revolving fund. As the repayments come in, they are reloaned to build new projects. The methods of obtaining the original financing, the terms of loans to the community, and the terms of repayment are determined by local socioeconomic conditions (Figure 36). To assist the countries in setting up these funds, a manual entitled *The Establishment and Operation of Revolving Funds* (Document No. ES-1) was prepared and widely distributed. By the end of 1969 five countries had funds in operation, one country was in process of establishing a fund, and five had the plan under consideration (Table 32). To date, this flexible financing concept has been applied to rural water supplies in Argentina, Bolivia, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, Paraguay, and to house connections in Peru. It is currently being considered for the financing of rural sanitation (latrine) programs in Bolivia, Dominican Republic, Ecuador, Haiti, and Paraguay.

The problem of assisting the countries to reduce the cost of, and time required to complete, individual projects has been a major concern of PAHO/WHO. In spite of all the efforts that have been made in this field, much remains to be done in order to develop a satisfactory model for the planning, installation, management, and financing of the systems on a mass or large-scale basis. To achieve this end, the concept of the mass approach was promoted and stimulated. Its objectives are as follows: engineering design should be reduced to the simplest basis; specialized equipment should be reduced to a minimum; and installation and management of the systems should be accomplished by the local community resources with a limited amount of outside help. The Organization has provided experts, consultants, and technical advice to assist with the tech-

TABLE 32. STATUS OF REVOLVING FUND PROGRAMS, 1969.

COUNTRY	STATUS OF FUND	DATE	FUND DATA (US dollars)			PURPOSE OF FUNDS
			SOURCE OF FUNDS	NATIONAL	LOAN	
Argentina	In operation	1965	National/IDB	5,000,000	5,000,000	Rural water systems
Brazil	In operation	1965	National/AID	4,300,000	2,200,000	Rural water systems
Costa Rica	In operation	1965	National/IDB	1,300,000	1,000,000	Rural water systems
Dominican Republic	In operation	—	National/IDB	1,000,000	2,000,000	Rural water systems
Peru	In operation	1966	National	75,000	—	House connections
Colombia	Under study	—	—	—	—	Rural water systems
Bolivia	Under consideration	—	National/PAHO	—	500	Rural water and sanitation programs
Dominican Republic	Under consideration	—	National/PAHO	200,000	100,000	Rural sanitation programs
Ecuador	Under consideration	—	National	—	—	Rural water and sanitation programs
Haiti	Under consideration	—	National/PAHO	50,000	50,000	Rural sanitation programs
Paraguay	Under consideration	—	National/IDB	—	—	Rural water and sanitation programs

— None.

nical, administrative, and financial aspects of this problem.

The need has been recognized for establishing sound national and local institutions and organizations of a permanent character, on a long-range planning basis, in order to ensure continuous progress in this area. To cooperate with the countries in developing and strengthening such institutions, the Organization has provided assistance in the traditional areas as well as in the drafting of program documents, preparation of loan requests, improvement of management procedures, and adaptation of simplified designs and construction and management procedures to the local conditions in the countries.

The progress made in the last four years, although limited in scope, has laid a foundation for the fulfillment of the policy of modernization of rural life, as set forth by the Ministers of Health in Buenos Aires.

#### ADMINISTRATION AND MANAGEMENT OF WATER SERVICES

The advances previously described are due in large measure to the resolute actions of the water supply and sewerage agencies in improving their organizational structures and rationalizing their administrative procedures. In line with these actions, and in order to respond to the numerous requests for technical assistance in the administration and management of community services, PAHO/WHO established a special program and devised a new methodology in order to improve the advisory services and accelerate the process of change, which is the basis of administrative reform.

This methodology has required the adoption of certain criteria which differ from those previously followed

by the Organization in providing technical advisory services. It has resulted from study and observation of the work of numerous private enterprises in the Hemisphere, as well as of PAHO/WHO's own operations. The studies have demonstrated the need to make maximum use of the experience and great store of knowledge accumulated by the agencies that are assisted, and to avoid isolated contacts through vertical advisory services, concentrating efforts instead on in-depth operations carried out on many fronts simultaneously by teams of specialist advisers.

This joint approach, combining teams of officials and of advisers, has made it possible to study each specialized area separately, analyze its effects and its relationship with other areas, and coordinate activities in such a way as to ensure efficient management. Thus the action is centered on the operational levels in order to develop appropriate practices and procedures and familiarize the largest possible number of officials with the new systems. Although this has been the primary objective, higher-echelon levels have not been disregarded: an attempt has been made at those levels to develop and establish appropriate administrative policies and criteria to bring about a change in attitudes in line with the institutional reforms.

The dynamism of this new approach, and the impact produced by combining within a single team both national officials and specialist consultants, has had a decisive effect in bringing about not only the desired structural and procedural changes but also the changes in attitude required to implement the institutional reform.

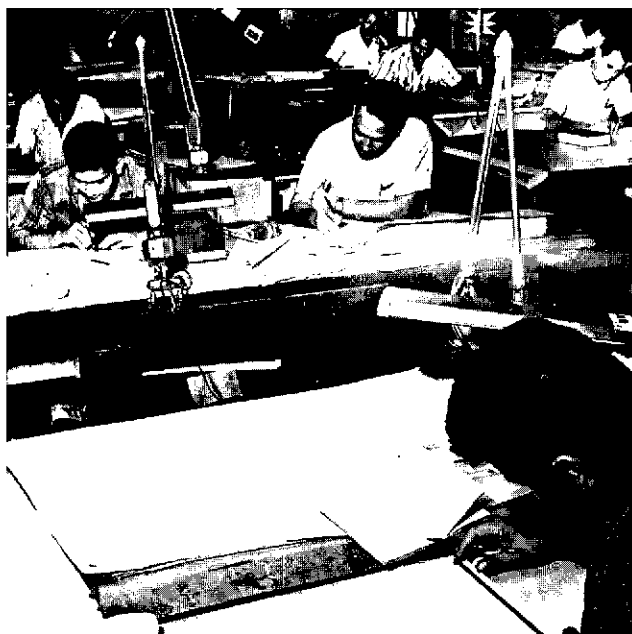
It has been found, nonetheless, that most efforts in the technical assistance field are weakened by lack of continuity in the aid given to the institutions for the



application of recommendations and the solution of problems that arise. Therefore, an essential feature of the new approach is to continue our services for a sufficient length of time to bring about the changes proposed. Furthermore, assistance programs with no provision for personnel training have proved ineffectual. Consequently, the greatest concern of the teams has been to prepare personnel to use and handle the operational machinery established during the period of assistance.

The collaboration of the Organization in the past has included the provision of teams of two to three advisers, in successive stages, to cover a series of closely interrelated aspects, such as rates, billing and collection, and public relations. Countries whose institutions were larger and had more staff have also received, in successive stages, groups of five to 10 consultants for periods of six to eight weeks each. During these periods, operational manuals were prepared to serve as guides for the daily operations of the institution; at the same time, a basic document was prepared for programming the application of recommendations and gradually implementing improvements in the system according to the absorptive capacity of the institution.

Among the sectors commonly covered by advisory programs of the type mentioned are: organizational structure; organization and methods; staff planning and administration; budgets, accounting, auditing, supplies administration, billing and collecting; public relations; transportation and workshops; meters; operation and



Planning and drafting office in a national waterworks and sewerage institute.

maintenance; construction planning and control; and other factors required to promote improved management, build up a cadre of executives, and introduce economic criteria in the development of water and sewerage projects.

The Organization's efforts have proved insufficient to attain its objective; consequently it has turned to the multiplying effect of training public service officials to serve as advisers in other countries. The results thus obtained have widened the scope of assistance and the application of reforms and improvements.

The advances achieved by the countries in applying the recommendations are expressly reflected in the statistics for the past four years. Group missions were sent to 13 countries (Bolivia, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Peru, Trinidad and Tobago, and Uruguay); 22 countries received other forms of technical assistance; 118 manuals were prepared for the agencies receiving assistance; and an annual average of 90 consultant-months were provided both in the form of consultant teams and for supplementary and follow-up work; approximately 200 officials of water and sewerage agencies were trained each year in management and administration; and a sum of \$939,813 was received to defray the costs of the technical assistance provided during the period 1965-1969.

The improvements made by the water and sewerage organizations throughout the Hemisphere show clearly that the administrative reform has taken firm root and that this has made possible the investment of \$945.42 million over the past four years.

The interest of the Governments has been maintained on an unprecedented level. For 1970 and 1971, PAHO/WHO has received requests from 18 institutions that wish to carry out programs for institutional improvements and administrative reform and have offered cash contributions to finance a large part of the total cost of these projects.

## SEWERAGE AND WATER POLLUTION

The countries continued to work toward the targets set in the Charter of Punta del Este for sewerage programs. The results obtained, particularly in rural areas, still fall far short of the goals. The available data show that only 22 per cent of the total population (urban and rural) of the countries of the Americas are served by sewerage systems. In urban areas, 39 per cent of the population have such services, whereas in rural areas only 2 per cent are estimated to have proper sewerage services or individual disposal systems.



Digging of trench for installation of sewerage for a town of 10,000 inhabitants.

#### Loans and Technical Assistance

The international credit agencies assisted the countries in this program through the granting of loans. Loans granted during the period 1966-1969 totaled \$45.6 million, the major portion of which came from the Inter-American Development Bank, which provided approximately \$30.5 million, representing 67 per cent of the total funds from banks and credit agencies. Loans were granted to Argentina, Bolivia, Brazil, Colombia, Dominican Republic, Guatemala, Panama, Paraguay, Peru, Uruguay, and Venezuela. National counterpart funds are estimated to have matched or equaled the amount of the loans. Most of the works financed with these funds were designed to extend or improve existing sewerage services in cities and communities of some size.

The Organization continued to collaborate with the countries in solving certain specific problems relating to sewerage and pollution of water bodies. Assistance of this type was furnished by the permanent staff of engineers or by short-term consultants to the following

countries and localities: Brazil, Brasília and São Paulo; Colombia, Bogotá; Ecuador, Guayas River Basin; Jamaica, Montego Bay; Mexico, Acapulco and Lerma River Basin; Uruguay, Montevideo; Peru, Lima; Haiti, Port-au-Prince. In Cuba, assistance was given with experimental studies on oxidation ponds for the primary treatment of sewage, and a considerable number of these were successfully developed.

A major educational effort was made in the fields of sewerage, treatment of sewage and industrial wastes, and water pollution through the organization of a large number of short intensive courses. Similarly, seven university research projects on matters relating to treatment of liquid wastes of household or industrial origin were completed or were under way. A detailed account of these various activities is given in the sections dealing with manpower development and research.

#### Projections

As with water supply systems, four-year projections for the period 1968-1971 were drawn up in 1968 in conjunction with the national authorities. The goal of serving 42 per cent of the urban population through proper sewerage systems in 1971 is reasonably close to being achieved if one takes into account that, at the end of 1969, 40 per cent of the urban population already had access to such systems. The projections for rural areas, on the other hand, are rather modest, in line with the results obtained during this period.

#### COLLECTION AND DISPOSAL OF SOLID WASTES

PAHO/WHO continued its policy of cooperating with and providing technical assistance to countries for the organization and operation of national or municipal agencies responsible for the collection and disposal of garbage and solid wastes. The importance of public cleaning services for environmental health has been recognized ever more clearly. A series of highly complex factors are aggravating the problems in this area: growing urbanization and industrialization, rural migration to the cities, a vast increase in the quantities of waste materials produced, and the difficulty of finding proper sites for waste disposal facilities.

Short-term consultants gave assistance in a number of cities—Buenos Aires, Caracas, Panama City, Lima, Santiago, and Tegucigalpa and San Pedro Sula in Honduras—in various aspects of the problem, from the selection of sites for incinerators to the use of sanitary landfills and the establishment of specifications for refuse-collecting vehicles and equipment. Most of the countries were assisted in studying and solving problems relating to the collection and disposal of solid

wastes, and in many cases considerable progress was made in improving the quality of the services.

Training and educational activities in subjects connected with this field received special attention. Eight short intensive courses were organized and were attended by more than 250 officials, professional workers, and university professors. During these courses, excellent manuals were written which will serve as reference texts in the countries.

#### PAN AMERICAN SANITARY ENGINEERING AND ENVIRONMENTAL SCIENCES CENTER

The principal purpose of the Center, which became operational early in 1968, is to render expert technical and scientific assistance to the countries, especially in connection with the new environmental problems arising from increased urbanization, industrialization, and technological development. It also serves as an international reference and information agency. The preparation and distribution of technical information materials is an important function and serves to extend and multiply the technical assistance services which can be provided by the limited staff of expert consultants serving on a Regional basis. In addition to these functions, it is expected that, when the necessary resources become available, the Center will play a key role in the support of training and research activities.

The current staff provides expert assistance in the fields of air pollution, water supply, water pollution, housing, urbanization, physical planning, industrial hygiene, and rural community development. A library has been established and the preparation of technical information has begun. Equipment for printing and reproduction has been installed and is in use.

Administrative and operational guides for the Center were prepared and issued.

During the first year of operation, advisory services in the fields of specialization covered by the Center were rendered to 14 countries of the Region.

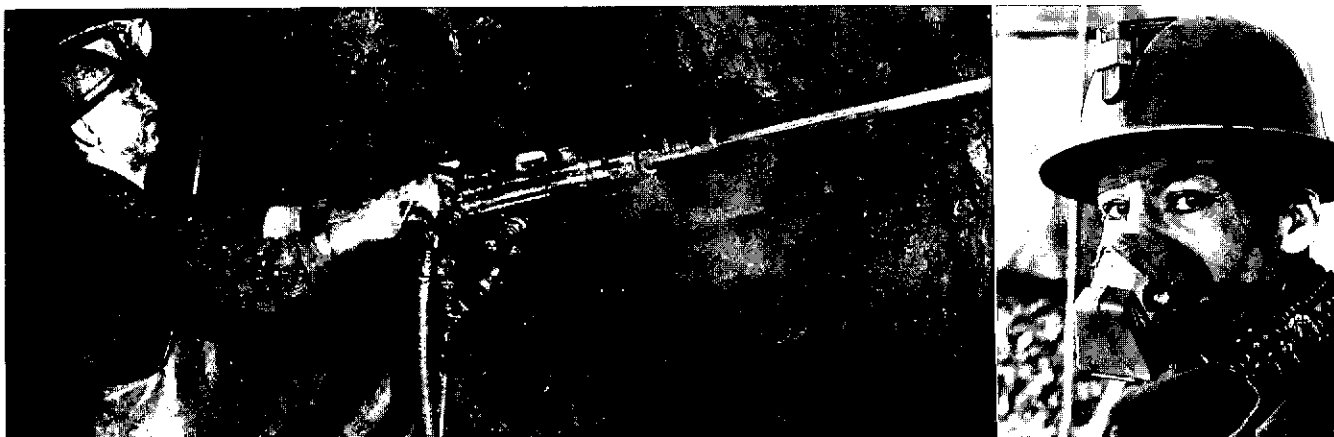
#### Air Pollution and Industrial Hygiene

Development of the Pan American Air Pollution Surveillance Network continued under the auspices of the Center. At the end of the quadrennium 22 stations situated in Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay, and Venezuela were in normal operation. The first report of the Network was distributed in March 1969.

Evaluations of the air pollution programs were made in Argentina, Colombia, and Cuba. Assistance was given to Peru in conducting a course on air pollution, and to the Institute of Occupational Health and Air Pollution Research of Chile, where classes were given on the same subject. Seven fellowships were granted to professionals from four countries for the study of air pollution.

The final report of the UNDP project on the Institute of Occupational Health and Air Pollution Research was prepared by the Center staff. It covers the organization and development of the Institute, the objectives attained, an evaluation of the project, and sets forth recommendations and conclusions.

Assistance was given to El Salvador in the selection and briefing of a short-term consultant for the study of industrial hygiene legislation in the country. The Center also helped to conduct the following short courses: mine ventilation (University of Oruro, Bolivia); (University of Nuevo León, Mexico); and industrial hygiene (National University of Colombia). The following countries were visited one or more times in connection with industrial hygiene studies: Argentina, Bolivia, Colombia, Chile, Cuba, El Salvador, and Mexico.



Industrial hygiene. Left: A miner (suffering from silicosis) uses wet drill to damp down dust. Right: Example of a mask used against dust in a crusher mill.

Chile was assisted in conducting a seminar held at the Institute of Occupational Health for 70 industrial hygiene workers of the National Health Service. This seminar, which included conferences, round tables, and short courses, should make an important contribution to upgrading the activities in this field both in Chile and in other Latin American countries, since the Institute serves as a training center for the Hemisphere. Advisory services were rendered to the Government of Cuba in connection with its program of industrial hygiene, and in particular the problems arising from the massive use of pesticides, which are applied to rice and sugarcane fields by airplane. A consultant from the Organization spent a month in the country advising the national officials on the pesticide problem and on laboratory techniques employed for pesticide analysis. The Government was also given advice on the planning of a short industrial hygiene course to be presented in 1970 and on the training of professional staff in this field.

The programs in occupational health in Argentina and Colombia were reviewed at the request of these countries, since both programs are undergoing major changes.

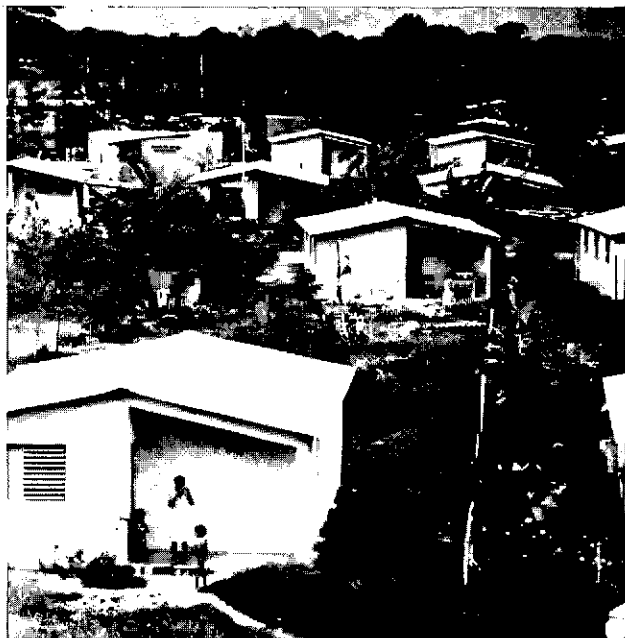
## Housing

The general housing situation in Latin America has tended to worsen in spite of all the efforts made by the countries to overcome the existing deficiencies. It is apparent that the designs, systems, and procedures currently employed are not properly adjusted to the social and economic conditions prevailing in most of the areas.

Housing programs in general still suffer from a basic defect: they do not provide an adequate proportion of solutions for low-income families, and existing projects concentrate principally on construction in the larger cities. Small towns and villages, as well as rural areas, receive only scant help.

Consequently, low-cost housing development schemes in Latin America, both official and private, cover less than 10 per cent of the housing needs. Most of the population continues to build traditionally by self-help. However, lacking the necessary programming, technical assistance, or orientation through adequate minimum standards, this tremendous effort often culminates in precarious dwellings like those which form the notorious shanty-towns of the big cities. These difficult conditions may continue for years to come, or as long as the present approach to the problem remains unchanged.

The determining influence of the environment on man's physical and mental health is an undisputed and



A modern housing project in Venezuela.

universally accepted fact. Housing is part of this environment and consequently affects the health and welfare of the whole population. A case in point in Latin America is the connection between Chagas' disease and housing. The disease, whose transmission is intimately associated with the structural design of dwellings, occurs in almost all countries of the Region and perhaps as many as 10 million people are infected by it (*see also pp. 79-81*).

The establishment of the Pan American Sanitary Engineering and Environmental Sciences Center, whose field of activity includes housing in its broader context, has enabled the Organization to intensify its work in regard to the residential environment and has led to higher efficiency in the programs related to this field.

The Organization's participation in housing, originally limited to the purely sanitation aspects, has been extended in recent years to cover a wide range of related problems, such as urban development, community facilities, and physical planning, all of which have become of vital interest to health authorities. This has been accompanied by an increased demand for specialized advisory services from the Organization.

Activities in which the Center is participating include the pilot projects in rural housing organized by the OAS Inter-Agency Committee on Housing and Urban Development and to be carried out in Colombia, Ecuador, and Venezuela; the publishing of minimum standards of urbanization in collaboration with the Inter-American Housing and Planning Center (CINVA), and the experimental housing project (PREVI) in Lima, Peru.

Advisory services in rural housing and physical planning were also given to the FAO/UNDP-SF project for the development of the Huallaga River Basin in Peru.

#### Other Activities

During the first year of its operations three meetings were held at the Center: one of the Executive Board of the Inter-American Association of Sanitary Engineering (AIDIS); a meeting of PAHO staff to discuss housing; and a meeting of PAHO Zone engineers and departmental staff. Reports covering these two last meetings were prepared by the Center.

In addition to collaboration in matters concerning

fellowships, assistance was given in training programs for professionals working in specialized fields of interest to the Center.

The Center was designated by the World Health Organization as a WHO Reference Center on wastes disposal. This will enable it to participate in a worldwide network of collaborating institutions which exchange information and consider solutions to technical problems in this field.

A water supply specialist was added to the staff at the close of the period. The Center will thus be able to provide expert services in relation to the newest developments, especially in water treatment technology.

## PROMOTION OF HEALTH

### GENERAL HEALTH SERVICES

The countries' determination to improve and expand their national health services as instruments for health promotion, protection, restoration, and rehabilitation within the framework of national development was unequivocally incorporated in the Punta del Este resolutions relating to the Hemisphere as a whole.

One of the factors leading up to this decision was an awareness of the deficiencies of the health services at different levels of national administration, as regards both organization in general and their main components—human resources, installed capacity, investments, and expenditures—and also their functional aspect and operational effectiveness. Added to this was the stimulus provided by demonstration projects, many of which were still in progress.

The 1962 Annual Report included the following statement: "As a continuation of past efforts, assistance was given in 1962 to 21 demonstration projects in 19 countries. The purpose of these projects both at the national and at the local level was to apply approved standards for preventive and curative activities and for health promotion." In that same year, eight of the 21 projects outlined specific objectives and action for establishing and implementing national health plans. In 1966 this figure went up to 15 out of 38, and in 1968 to 23 out of 48.

Thus health-service development projects passed in this way from the demonstration to the general application stage. This led the Governments to promote the development of a process placing emphasis on systematic planning in the socioeconomic sectors and on action considered necessary in order to accomplish the

established objectives and goals. Ministries of health, as the leaders in their sector, began to formulate national analyses and plans of action in collaboration with other sectors, aiming, on the one hand, to increase the output of goods and services and, on the other, to make these accessible to the majority of the population.

At this stage of expansion, with efforts being made to speed up the process and broaden its scope, the shortcomings of the health service system were made all the more evident—some already well known and others still under investigation. These have been and will continue to be a field for action in the health service projects.

The variety and complexity of these deficiencies were the main factors that prompted ministries to continue developing these projects. An examination of the projects shows how each different situation has been tackled with different approaches and different emphases, while at the same time they have maintained the basic objectives and principles of health service organization and administration that continued to govern their structure and functioning and which had been proved valid in the earlier demonstration stage.

During the period 1966-1969 the number of health-

TABLE 33. NUMBER OF COUNTRIES AND TERRITORIES RECEIVING ADVISORY SERVICES THROUGH PROJECTS FOR DEVELOPMENT OF GENERAL HEALTH SERVICES, 1966-1969.

YEAR	NO. OF PROJECTS	COUNTRIES AND TERRITORIES		
		COUNTRIES	TERRITORIES	TOTAL
1966	38	23	4	27
1967	41	23	4	27
1968	45	26	6	32
1969	48	26	11	37

service development projects rose from 38 to 48, and the number of countries and territories where they were in progress rose from 27 to 37, as can be seen from Table 33.

The most steady progress is to be seen in those projects where the improvement and expansion of the health system was based on a health plan which, even if not national or general, at least operated on a ministerial level and provided basic services. A good example of this was the obvious improvement in the statistics units of health ministries or services in a number of countries, such as El Salvador, northeast Brazil, Chile, Colombia, Peru, and Panama, where the systems and forms of organization employed were being adapted to the needs of the established plans.

Another noteworthy example was the progress made in the regionalization of health services, introduced as a result of certain regional development plans, as in the case of Paraguay, which established a VI Region in order to provide health services in a new settlement area; Brazil, which had projects in the northeast, southern, and Amazon regions; Argentina, which set up eight health regions to serve the eight principal socioeconomic development areas; and Honduras, which established the III Health District in the San Pedro Sula region, among others.

Thus it has been possible to institute or strengthen an entire regional technical and administrative system designed to serve the needs of the plan and provided with the necessary budgetary and legal support and with the authority to take decisions, the absence of which has been and continues to be one of the difficulties facing the regional health service system.

This tendency to "regionalize development" in the countries is also reflected in the scope of the health service projects receiving assistance from the Organization, as can be seen in Table 34.

At the beginning of the quadrennium, 11 out of 38 projects (29 per cent) were operating on a regional scale and in 1969, 18 out of 48 (37 per cent). In some cases these projects also received assistance from other international agencies such as UNDP, UNICEF, FAO, UNESCO, and ILO, thus resulting in multidisciplinary

TABLE 34. DISTRIBUTION OF PROJECTS ACCORDING TO TYPE, 1966-1969.

YEAR	TOTAL	NATIONAL	REGIONAL	INTERCOUNTRY (AMRO)
1966	38	27	11	—
1967	41	19	20	2
1968	45	30	14	1
1969	48	28	18	2

advisory services, no longer of a demonstration and vertical nature but integral in character.

At the same time, projects on a national scale, while stressing their health promotion, protection, and recovery activities, improved or undertook studies on other components of the system at a central level, including organization of technical and administrative departments, standards for program activities, operational methods and procedures, present and future needs as regards funds and fund sources, legal bases, relationships with other agencies within and outside the sector, and plans for programs under way or scheduled for execution.

The Organization's assistance in these projects, which encompass such a wide variety of activities, has been reflected in the make-up of the advisory services to meet the countries' needs in increasingly specialized health fields. This diversification of advisory services has in some cases been achieved by means of permanent staff members, but more often by short-term advisers. In terms of budgetary expenditures, PAHO/WHO's assistance is shown in Table 35.

The relative importance of general health services projects within the Organization's total budget is partially reflected in the more or less constant proportion of 11 per cent, which was maintained during the four-year period. Although this was the proportion maintained in budgetary terms, the number of projects increased in 1969 by 26 per cent, as compared with 1966.

The progress made in terms of intra-, extra-, and parasectoral coordination, as regards both its acceptance as a means for obtaining more rational utilization of funds and the measures taken to achieve it, has helped to strengthen health services at all levels of administration. The action taken to make health planning a part of the over-all development process facilitated contact among institutions that organized groups to study and assess health needs and high-level committees to give guidance on matters affecting health policy. Projects in 14 countries concentrated on the methods of coordination, from the action taken by different sectoral agencies to identify common aims and

TABLE 35. BUDGET FOR GENERAL HEALTH SERVICES PROJECTS (No. 3100), 1966 to 1969.

*(In thousands)*

YEAR	TOTAL PAHO/WHO		TOTAL 3100 PROJECTS	
	DOLLARS	%	DOLLARS	%
1966	19,690	100.0	2,317	11.8
1967	22,099	100.0	2,475	11.2
1968	24,033	100.0	2,494	10.4
1969	24,780	100.0	2,787	11.2

TABLE 36. NUMBER OF OFFICERS TRAINED AT THE LOCAL LEVEL, AVERAGES PER PROJECT AND PER CENT INCREASE.

YEAR	NO. OF PROJECTS <sup>a</sup>	NO. OF OFFICERS TRAINED	OFFICERS PER PROJECT	
			AVERAGE	PER CENT INCREASE
1966	19	4,061	213.7	—
1967	24	11,123	463.5	117
1968	15	6,568	437.9	105
1969	19	11,597	610.4	186

<sup>a</sup> This information does not include all the projects.

objectives for preventive and curative medical care, to the adoption of legal measures for the almost complete integration of health and care services under the administration of the ministry of health.

The ministries have thus been strengthened by this regionalization and coordination process. If to this progress one adds the work done in training personnel at the local level through the health services projects—this being another field in which advances were made—satisfaction is warranted regarding the over-all activities of the countries, although there is still much to be done to expand the coverage of basic health services, especially in the rural areas, and this therefore remains a goal for future years.

It should be noted that the average number of personnel trained locally, per project reporting, rose from 213.7 in 1966 to 610.4 in 1969 (Table 36). The emphasis placed on training is therefore clearly evident.

To sum up, the Governments, with the support of

the Organization's advisory services, have continued to make progress in the development of general health services projects, in keeping with the principle that health is a unified whole and health activities should be integrated.

## MEDICAL CARE AND REHABILITATION

In the previous four-year period the Organization defined a medical care policy that had been progressively formulated at a series of meetings convened for that purpose.

The field of action of medical care is linked with related activities in other sectors of economic and social development, so that medical care policy has to be considered in conjunction, and in close coordination, with other interested groups. Medical care, in fact, uses human and other resources ranging far beyond the sphere of action of the health sector, and it therefore must establish relations with other sectors, such as social security, whose close administrative and financial connection with medical care cannot be denied. On the other hand, the setting up of a system of medical care requires the simultaneous implementation of an infrastructure program together with the installation of highly specialized equipment, all of which necessitates investments that affect the availability of funds for other social and economic development projects. Lastly, but no less important, the decisive role to be played by the organized medical profession and other related professional groups in the provision of medical services to the

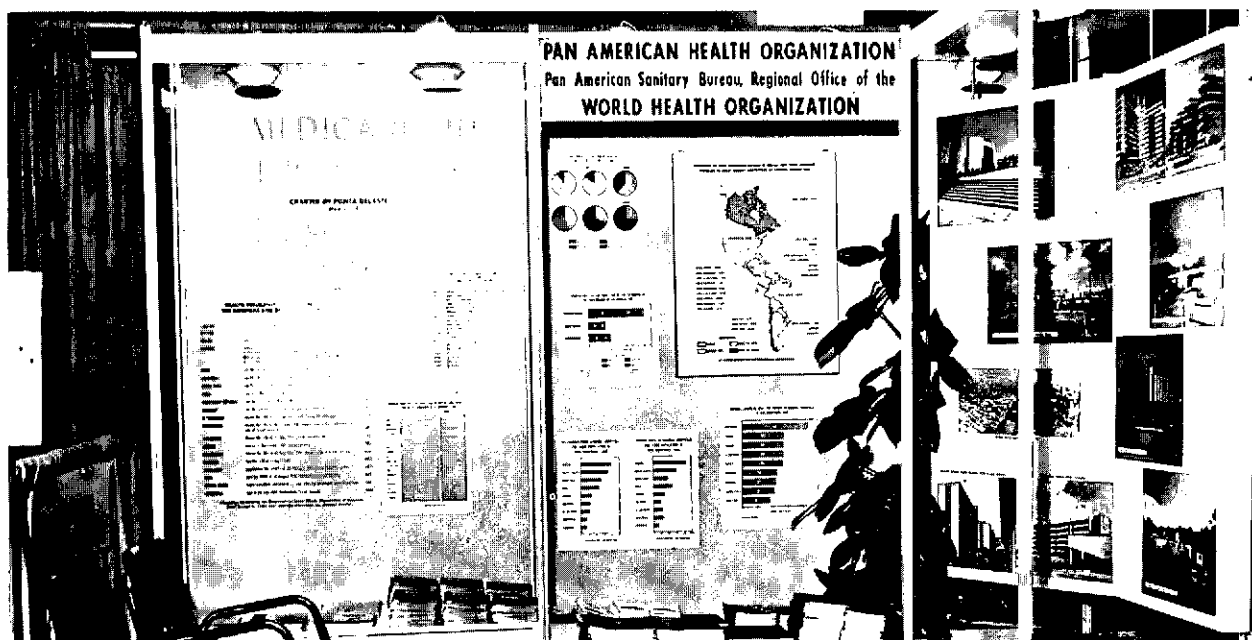


Exhibit on medical care in the Americas.

community must be taken into account. The medical care program therefore has to be adapted to the requirements and characteristics of all these groups and sectors if it is to prove successful.

In the 1966-1969 period the Organization's medical care policy, as defined by the Governing Bodies, received the support of other organizations of the Inter-American System. In fact, the Inter-American Economic and Social Council (IA-ECOSOC), at its Fourth Annual Meeting at the Ministerial Level, adopted resolutions which, in essence, recommended to the Governments that the "social security plans and programs for medical services be improved and coordinated with development plans, and particularly with the health plans in each country," and also that the Governments "incorporate activities relating to the prevention and cure of diseases in the development efforts, particularly in the land settlement, city planning, and industrial development programs."

The Permanent Inter-American Social Security Committee, the Pan American Medical Conference, and the VIII Conference of the American States Members of the International Labour Organisation passed resolutions which, in one form or another, supported those adopted by PAHO/WHO. By virtue of these recommendations, organizations representing the social security institutions, the organized medical profession, and labor groups showed themselves to be in favor of an integral medical care policy as an essential element of national health plans.

This action at the international level culminated at the Special Meeting of Ministers of Health of the Americas, at which "there was general agreement that the coordination of health resources is essential and that it would be pointless to continue to talk about health planning unless there is mutual understanding among institutions in the health sector to coordinate their resources."

### Medical Care Policy

By drawing on the experience gained and taking into account the opinions and interests of all the groups involved, the Organization has brought up-to-date its medical care policy, which can now be summarized in the following points:

a) Intrasectoral coordination of the institutions providing health services, whether preventive or curative, as an essential step toward the integral planning of health services.

b) Adaptation of the hospital system to meet the requirements of integrated health programs and cooperate effectively in the training of professional and technical health personnel.

c) Improvement of hospital administration to raise the quality of the medical care provided and increase the productivity of the hospital-bed resources available.

d) Development of a progressive program of training in health service administration designed to incorporate instruction in the basic principles of administration in the curricula for medical students and trainees for the paramedical professions, to provide inservice training for professional staff holding senior positions, and to train future specialists in health service administration and, most particularly, future instructors and researchers in administration.

### Coordination of Medical Care Services

The Organization has been fostering the policy of institutional and intrasectoral coordination since 1962. Regarding this subject, the Ministers of Health declared that "coordination will make it possible to raise the level of medical care, expand coverage as much as possible, and promote the active participation of the local community in the planning and administration of services." They further pointed out: "Systems should be set up in each country without delay for the effective coordination of the health services of ministries of health with those of social security institutions, universities, and other private and public bodies. To assure that coordination is effective, it should be a permanent activity of all those who participate in the process of planning, administration, and provision of services under the guidance of the health ministries or the corresponding agencies. In this way, closer institutional links will be forged at the central level, regionalization will be achieved at the intermediate level, and integration of curative and preventive services at the local level."

This recommendation introduced a new element into the coordination process: participation by the universities in the planning, administration, and execution of health programs. There are two reasons which fully justify this. Not only do the universities train health professionals—their basic and essential function—but they also own and administer, on an ever-growing scale, hospitals and other health establishments which, of necessity, have to be included in the process of coordination of regional health programs.

In accordance with the recommendation of the Ministers' Meeting and in implementation, moreover, of another formulated by the XVII Meeting of the Directing Council, the Organization, in cooperation with the OAS, organized a Study Group on the Coordination of Medical Care Services, composed of five experts from ministries of health, five from social security institutions, and five from schools of medicine. It was also



attended by observers from the ILO, the International Social Security Association, the Permanent Inter-American Social Security Committee, and the Pan American Federation of Associations of Medical Schools. The Group, so constituted, included ample representation of national and international institutions concerned with the administration and financing of health services and the training of the personnel needed to provide such services.

The Group discussed in detail the mechanisms through which intrasectoral coordination of health institutions could be achieved in order to define a common health policy, and administrative methods for increasing the utilization and productivity of available resources and for making the services accessible to those who need them.

From the point of view of manpower development, the Group analyzed the need to utilize general hospitals, including outpatient clinics, suburban and rural services, and even home services, for teaching purposes, thus bringing medical students into contact with the medico-social reality of the environment in which they will have to exercise their profession. Special emphasis was laid on using the installed capacity of social security hospitals for teaching, since these hospitals usually have the best buildings, equipment, and installations.

As regards financing, the Group made a study of the operational costs of medical care and of capital investments for medical care services. It decided in favor of multilateral financing and the mobilization of national and international resources for the remodeling and adaptation of health establishments, with technical—and probably financial—assistance from organizations of the Inter-American System. It recognized that “if the whole range of preventive, curative, and social services necessary for maintaining health is to be made available, and considering the high level attained by the cost of health care, it cannot be expected for the time being that any single institution or body will be in a position to finance them in their entirety, and it will, therefore, be necessary in the meantime to have recourse to multilateral financing and to coordinated administration under a national health system.”

Continuing its policy of coordination in the international field and with a view to ensuring the widest possible dissemination of the principles and thinking behind it, the Organization participated in a large number of national and international meetings dealing with coordination of medical care services, among which the following were of special importance:

VIII Conference of American States Members of the ILO (Ottawa, Canada, September 1966)

IX Medico-Social Congress of the Pan American Medical Confederation (Lima, Peru, April 1966)

XV Conference on Social Security in the Americas (Lima, Peru, September 1967)

First Salvadorean Social Security Congress (San Salvador, El Salvador, December 1967)

First Venezuelan Seminar on Hospitals (Caracas, Venezuela, August 1968)

XXXVII Costa Rican National Medical Congress (San José, Costa Rica, November 1968)

Second Regional Conference of Hospitals of the International Hospital Federation (San José, Costa Rica, November 1968)

First American Congress on Social Security Medicine (Mexico City, January 1969)

World Round-Table Conference on the Contribution of Social Security Systems to Public Health Programs (Oaxtepec, Mexico, January 1969)

Greater Colombian Seminar on Social Security and Medical Education (Quito, Ecuador, November 1969).

Annual courses on the organization and operation of medical services of social security institutions, organized by the Inter-American Center for Social Security Studies, in Mexico City.

Technical assistance was rendered to countries requesting it in the fields of hospital regionalization, coordination of preventive and curative services at the local level, plans for establishing integrated health services, and study and collection of basic data needed for setting up national health insurance schemes. Argentina, Brazil, Cuba, the Dominican Republic, Guatemala, Guyana, Panama, Peru, Trinidad and Tobago, Uruguay, and Venezuela all received assistance in one or more of these fields.

#### Hospital Planning and Administration

The hospital—a key component of the medical care system, because of its administrative complexity, the variety of services it provides, and its high operating cost—has had high priority in the Organization's programs during the four-year period.

The Special Meeting of Ministers of Health defined the problem in the following terms.

The regionalization and coordination of programs for the building of hospitals and other health facilities is even more important when such programs are covered by the investment plan which, in turn, is one of the components of the national health plan and of the economic and social development plan. The enormous capital investment necessary to implement a construction program has a major impact on the distribution of financial resources, and its effect on the national economy is such that it must reflect a strictly functional and economic standpoint, since the capital invested in hospitals could, as an alternative, be invested in schools, roads, or industrial machinery,

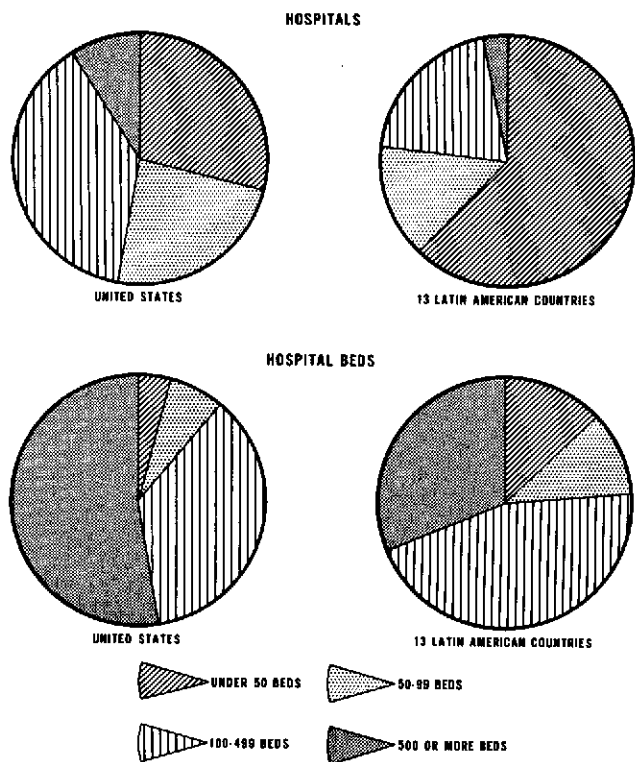


Fig. 37. Distribution of hospitals and hospital beds by size of hospital in United States and 13 Latin American countries, 1968.

and thereby benefit other areas of economic and social development.

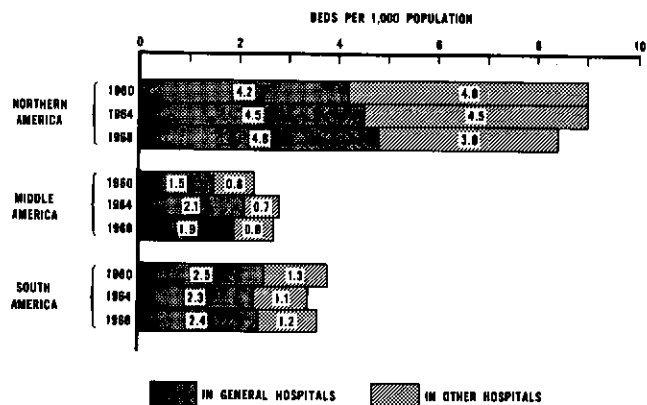
In accordance with this recommendation, the Organization has given special assistance to the Ministry of Public Health and Social Welfare of Honduras in the operational and architectural planning of the Tegucigalpa Teaching Hospital, for the construction of which the Government enlisted the support of the Inter-American Development Bank.

As for hospital administration, there are certain problems such as shortage of beds and funds which are common to the hospitals of most of the countries. These problems occur in varying degrees and lead to inefficient utilization of the means available, with a consequent adverse effect on the productivity and effectiveness of the services. The situation is a complex one, and its solution will require careful programming of activities that will have to be carried out over a long period of time.

The Organization has given assistance to the countries by means of general advisory programs and the execution of specific projects.

#### General Advisory Programs

The various advisory programs on hospital planning and administration, undertaken at the request of the



NUMBERS OF HOSPITAL BEDS, TOTAL AND GENERAL, WITH RATIOS PER 1,000 POPULATION IN THE THREE REGIONS OF THE AMERICAS, 1960, 1964 AND 1968

	1960		1964		1968	
	TOTAL NUMBER	GENERAL RATE	TOTAL NUMBER	GENERAL RATE	TOTAL NUMBER	GENERAL RATE
NORTHERN AMERICA	1,702,839	4.2	1,962,094	4.3	1,672,915	4.0
MIDDLE AMERICA	151,062	2.3	156,000	2.3	184,204	2.8
SOUTH AMERICA	927,653	2.7	959,022	2.4	492,879	1.3

Fig. 38. Hospital beds, total and general, per 1,000 population in the three regions of the Americas, 1960, 1964, and 1968.

Governments, have covered: design of hospital regionalization systems; programming for the modernization and expansion of existing hospitals or construction of new ones; reorganization of administrative structures, design of administrative systems and procedures for raising the productivity and effectiveness of the services; guidance and advice on financial management, accounting systems, cost analysis, and internal auditing; establishment of new clinical services or improvement of existing ones. The majority of the establishments included in these general programs are teaching hospitals.

In 1966 direct advisory services were rendered to hospitals in Argentina, Barbados, Brazil, El Salvador, and Trinidad and Tobago. In 1967 advice was furnished to hospitals in Brazil, the Dominican Republic, El Salvador, Guatemala, Honduras, Jamaica, Mexico, and Nicaragua. In 1968 further services were rendered to hospitals in Brazil, Ecuador, El Salvador, Guatemala, Honduras, Mexico, and Nicaragua, and in 1969 the Organization collaborated with hospitals in Bolivia, Colombia, Ecuador, Honduras, Mexico, and Panama.

The Organization participated actively in both international and national meetings on hospital services, presenting working papers on the subjects discussed. It also prepared or assisted with publications dealing with matters of interest in the hospital field.

#### Specific Projects

A project to promote and implement the concept of *progressive patient care* was undertaken in 1967. This

project has received financial support from the W. K. Kellogg Foundation and it is under way in six Latin American university medical centers. The first phase included the planning and setting up of six *intensive care units* in teaching hospitals in Brazil, Chile, Colombia, Peru, Uruguay, and Venezuela. Four of these units were put into operation in 1968 and 1969 and two more will be ready in the first half of 1970. After completing this first phase of the progressive care project, the participating hospitals have given proof of the excellent results achieved in terms of care of critical patients, improvement of medical and nursing education programs, and lowering of mortality for a large group of diseases. It is to be hoped that once the intensive care units are operating on a full scale, it will be possible to extend the project to other phases of progressive care, in order to derive the maximum benefits from the application of this concept to the organization of hospital services.

One of the problems common to the large majority of Latin American hospitals is the deterioration of buildings, installations, and equipment owing to lack of adequate maintenance programs. The establishment of *maintenance programs for buildings, installations, and equipment* was accordingly given high priority. An adviser in this field, appointed in 1967, has rendered assistance to the countries requesting it. In view of the importance of preparing specialists in hospital maintenance and engineering, a *Hospital Maintenance and Engineering Center* was established in 1967, thus making possible the development of training programs in

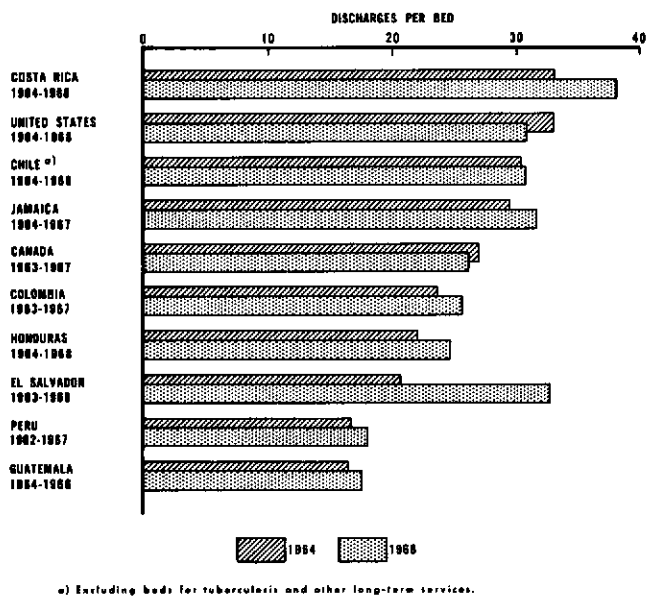


Fig. 39. Discharges per hospital bed in general hospitals in 10 countries around 1964 and 1968.

this specialty. The Government of Venezuela expressed interest in the project and PAHO/WHO approached the UNDP regarding the possibility of financial assistance. By virtue of an agreement between the Government of Venezuela, UNDP, and WHO, the Center was able to begin its activities in January 1970. In addition, advisory services on hospital maintenance and engineering matters have been extended to Argentina, Barbados, Brazil, Colombia, Costa Rica, Guatemala, Jamaica, Mexico, Nicaragua, Peru, Trinidad and Tobago, and the West Indies. Technical publications have been sent to the countries and the Organization has actively assisted with orientation courses.

### Projections

The hospital system, as an important part of a country's health services, should be made consistent with the country's level of educational, social, economic, and political development. How this should be done is something that each country must determine for itself, and the expansion and modification of its hospital system must be in line with the country's requirements. However, it is possible to formulate certain strategies of a general nature that could be applicable in all countries.

In this respect the teaching hospital exercises a determining influence on the health conditions of each country, so that it merits special consideration in national health programs. Consequently, the teaching

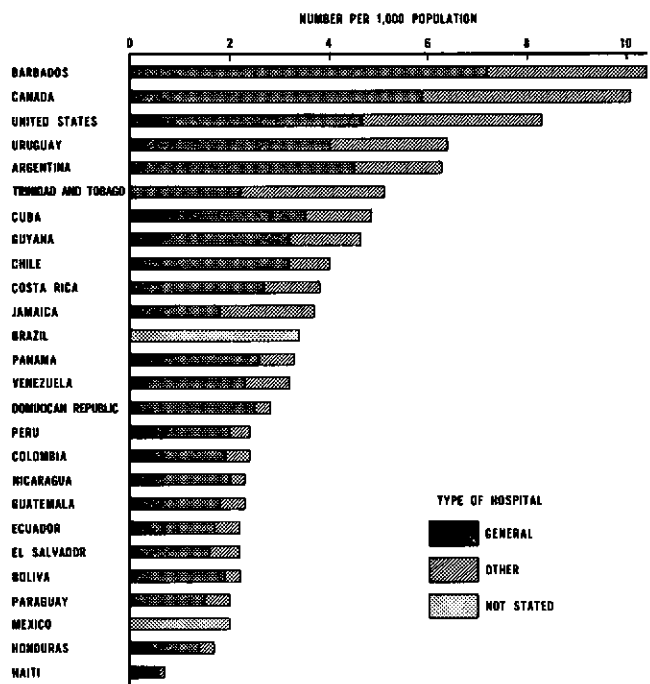


Fig. 40. Total and general hospital beds per 1,000 population, by country, 1968.

hospital almost always has, or should have, excellent medical staff who are responsible for the development of both the medical care and the teaching programs. The teaching hospital creates an image for the student who tomorrow may possibly be in charge of setting up or directing new hospital services. This multiplication factor alone would be sufficient justification for the priority accorded advisory programs to assist teaching hospitals. Notwithstanding this priority, Governments may of course designate nonteaching hospitals for advisory assistance.

Among the projects that could be undertaken are the following:

1. In agreement with each Government concerned, selection of one or more hospitals, teaching or nonteaching, with a view to converting them into pilot or model hospitals in each country, both for the care of patients and for the development of teaching programs, and all operated under the most efficient administration principles.

2. Carrying out of a census of teaching hospitals, to be continued and updated at regular intervals.

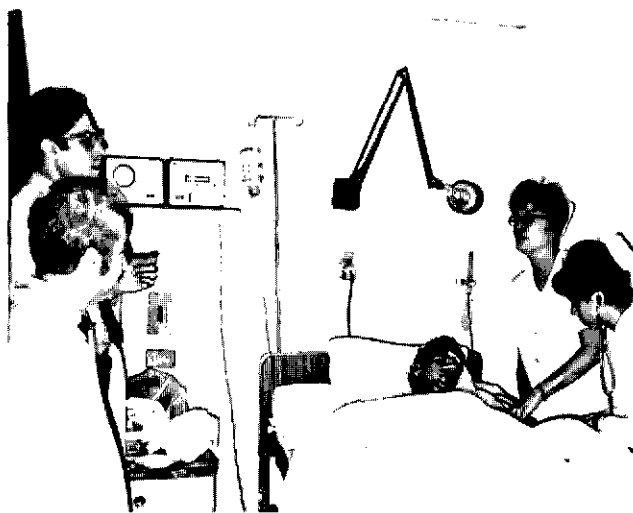
3. Evaluations of architectural features and of the efficiency of installations and equipment in hospitals which each Government considered to be of national importance, in order to assess the requirements in terms of modernization, expansion, or replacement by new buildings. Only in this way will it be possible to obtain a quantitative idea of the investments in buildings and equipment needed for hospitals of national importance in the countries of the Hemisphere.

4. Once the needs were known, and with the active interest of the Government concerned, continuation and expansion of the Organization's cooperation in connection with the channeling of national and international funds to finance improvement programs for hospital buildings, installations, and equipment.

5. Continuation of the project to apply the progressive patient care concept to other phases in hospitals which have already made a start with the establishment of intensive care units. Extension of this project to other hospitals in countries where this type of service has not yet been established.

6. Cooperation with hospital maintenance programs through the training of specialist personnel at the Hospital Maintenance and Engineering Center in Caracas, and the provision of direct advisory services by consultants.

7. Improvement of hospital administration through the application of operating procedures and systems designed to increase productivity. Work systems and schemes should be based on analysis of the results of



Intensive care unit in the San Juan de Dios Hospital in Bogotá, Colombia.

time and activity studies conducted in each of the hospitals participating in this type of project.

#### *Education and Training of Personnel*

During the four-year period, the varied and complex problems faced by the hospital establishments—which in Latin America and the Caribbean area number almost 13,000—posed a major difficulty for education and training designed to produce a rational administration system, and they will continue to do so in the future. The importance of the administrative function is increasing from day to day, especially as regards the adoption and implementation of decisions leading to improvement in the efficiency and productivity of hospitals and health establishments.

The Organization has carried out extensive activities for education and training in medical care and hospital administration in the Americas; these have included:

1. Determination of the need for training in health administration.

2. Planning of education and training courses to meet that need.

3. Training of teachers and instructors capable of instilling attitudes conducive to effective learning.

4. Evaluation of training programs, basically from the threefold angle of (a) curriculum evaluation, (b) evaluation of the instruction process, and (c) evaluation of the product of the instruction, i.e., the impact of course graduates on their environment, in terms of their ability to change the existing situation.

Activities in this field included the First Symposium on the Teaching of Administration of Medical Services, organized in 1967 by PAHO/WHO with the coopera-

tion of the School of Public Health of Antioquia University, Colombia. This meeting, attended by professors of medical care administration from the eight projects existing at the time, together with hospital directors who acted as tutors during the Symposium, outlined a training policy that stressed the urgent need not only for training specialists in medical care and hospital administration, together with intermediate-level staff, but also for incorporating the principles of public health administration and hospital administration in the curricula of medical students. The latter is considered fundamental, in order to make the clinical physician aware of the need for his active participation in the administration of the health institution in which he works.

Also in 1967, the Fifth Conference of Directors of Schools of Public Health of Latin America was held in Buenos Aires, Argentina. This Conference endorsed the recommendations of the Symposium in their entirety.

The Organization cooperated closely, through the ministries of health, with the institutions responsible for the education and training of medical care administration personnel. This cooperation was extended primarily to the regular public health administration and medical care and hospital administration courses of the Schools of Public Health of the Universities of Buenos Aires, Argentina, and of São Paulo, Brazil; the Foundation for Specialized Teaching in Public Health in Rio de Janeiro, and the Health Ministry of the State of Minas Gerais, Brazil; the University of Chile; the University of Antioquia, Colombia; the Ministry of Health and Welfare of Mexico; the Ministry of Public Health of Peru; the Central University of Venezuela; and the National Department of Higher Education of Cuba.

Assistance was rendered to all these institutions in connection with the formulation of aims and objectives, program content, teaching methods, and evaluation of the training courses and plans.

Similar assistance was given in the medical care and hospital administration programs of the Catholic University in Rio de Janeiro, the Hospital Fund of Cundinamarca Department in Bogotá, Colombia, the Inter-American Center for Social Security Studies (CIESS) in Mexico, and the Cayetano Heredia University in Lima, Peru.

The number of regular medical care and hospital administration programs in Latin America rose from eight to 17 during the four-year period. The programs are not all the same as regards duration, attendance and entrance requirements, type of degree awarded, course content, and teaching-learning methodology.

To improve the practice stage of the training in ad-

ministration for medical directors, the First Venezuelan Symposium on Residencies in Hospital Administration was held in 1969. The 25 participants were professors from the School of Public Health, directors of the major hospitals in the country who acted as course tutors, and officials of the Ministry of Health and Social Welfare. They made an in-depth study of the objectives, duration, and purpose of residencies and also the responsibilities of the instructor, the resident, the School of Public Health, and the Ministry.

In order to assist with the inclusion of educational programs on health service and hospital administration in the curricula of medical schools, advisory services were rendered to several schools, in close cooperation with the respective associations of schools of medicine. In addition, the first seminar for teachers of preventive and social medicine, directors of university hospitals, and teachers responsible for clinical services was held in November 1969 at the Latin American Center for Medical Administration (CLAM), with 15 participants from the universities in Buenos Aires and Rosario (Argentina), Santiago and Concepción (Chile), Asunción (Paraguay), and Montevideo (Uruguay).

The graduate courses in health and hospital administration have become the main source of training for directors and senior administrative staff of hospitals and health and medical care establishments in Latin America. As the importance of effective administration of health programs and hospitals has come to be recognized in recent years, attention has been focused on the responsibilities of training programs for administrators. The chief responsibility of graduate programs is that they should constantly review their objectives, principles, content, and role in such a way as to provide the students with training that will make them best suited to contribute toward the improvement of health in the countries of the Americas.

The need for research and advanced training in the particular fields of medical care and hospital administration has become increasingly apparent in Latin America. The Latin American Center for Medical Administration was set up in Buenos Aires, Argentina, in 1967 to meet this need. CLAM was established as a study and advanced training institution as the outcome of a joint effort by the Secretariat for Health of Argentina, the University of Buenos Aires, and the Organization. It therefore plays an important role in the exchange and training of senior staff, with special emphasis on research into the medical care problems which health institutions and hospitals are faced with today.

Among CLAM's activities special attention should be drawn to its course on hospital maintenance and

engineering and its participation in the teaching of the hospital administration course at the School of Public Health. During 1969 CLAM laid the groundwork for the execution of four teaching and two research programs in the course of 1970. One of the research programs relates to the financing and cost of medical care in Argentina, and the other to the quality of the medical care provided in the Buenos Aires hospitals.

A point worthy of special mention is the growing participation by teaching hospitals in community medical care programs. Teaching hospitals (owned by universities or affiliated with schools of medicine) have considerable, effective influence. They make up 4 per cent of all hospitals, with 20 per cent of the beds available in Latin America. Through being located in the most populous cities and taking in a high proportion of the most complicated cases, they account for more than 50 per cent of the operating cost of all hospital beds. They are moreover usually large, with more than 300 beds as a rule. Their placement between the medical school with its research laboratories, on the one hand, and the community with its resources, on the other, means that they are able to translate the results of research and medical education into new and better techniques of medical care.

The medical schools' greater awareness of the need to create suitable fields for pregraduate and postgraduate training in medicine makes the teaching hospital the keystone of the medical care systems of the future. It must therefore be presumed that every effort made to improve the human resources involved, and especially their organization and rational administration, will have a significant impact and could conceivably bring about a profound change in medical care in the Hemisphere. It is accordingly incumbent upon those in charge of medical education and responsible for administering that key resource known as the "teaching hospital" to establish a dynamic relationship between the university and its school of medicine—the peak of professional and academic authority—and the Governments—the highest political authority of the community and of the people.

### Rehabilitation

During recent years, the health authorities have come to recognize that rehabilitation forms an essential part of good medical care. It has also been increasingly understood that rehabilitation services in some form or another may be required by any patient, with the possible exception of the short-term, acute case.

Thus there is a growing demand for appropriate services for cardiac and respiratory problems, problems of communication, mental problems, and many others.

It is no longer satisfactory to think of rehabilitation as being synonymous with the physical restoration of locomotor cases; the concept has come to mean that all long-term patients should be returned to society as physically, socially, and economically independent as possible.

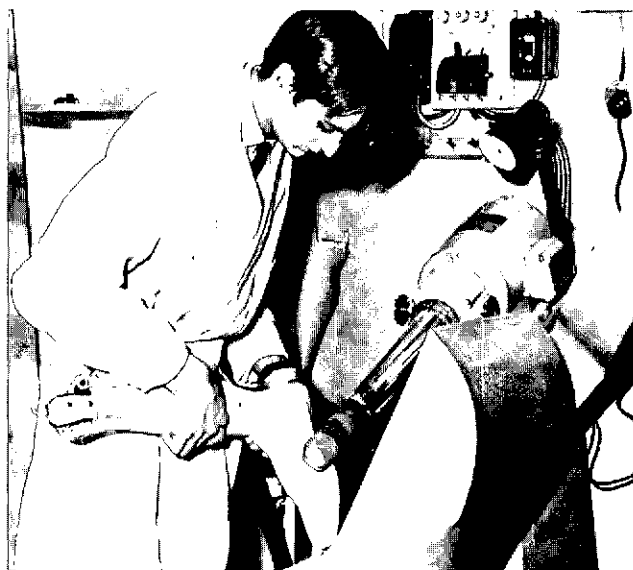
In accordance with this concept, progress has been made in two directions:

- 1) Integration of rehabilitation services into programs of public health.
- 2) Training of personnel in the specific techniques needed to provide these services. This personnel includes medical rehabilitation specialists, physical and occupational therapists, prosthetists, psychologists, social workers, and workers in vocational rehabilitation.

During the years under review, PAHO/WHO has assisted with both these aspects. Consultations, seminars, and meetings have been organized for the purpose of giving orientation to administrators and health personnel on the purpose of rehabilitation services, and also specific training courses have been arranged.

Perhaps the most important activity of the first type was the meeting of a study group in 1969 to discuss the training of medical specialists in physical medicine and rehabilitation.

It had been apparent for some time that there were in Latin America many different approaches as to the way in which physicians should be prepared to provide or supervise rehabilitation services. Some were only



A technician in prosthesis.

receiving traditional training in orthopedics, some were being trained exclusively in physical medicine, some were being trained abroad, while others were not receiving any specific training. At the request of several leading rehabilitation specialists, it was decided to set up a study group to investigate these points and make appropriate recommendations.

Nine experts were invited (five from South America, four from North and Central America) to discuss what they considered should be the type of postgraduate training that a physician should receive in order to prepare him to give services as a specialist in physical medicine and also to advise upon and coordinate such other rehabilitation services as patients might require (occupational therapy, prosthetics services, services of social or vocational rehabilitation, etc.).

The group produced a report which was later submitted to a meeting attended by about 40 Latin American physicians specializing in this field, who unanimously accepted the recommendations made. It is now therefore hoped that this document will provide a guideline to all health authorities in the Hemisphere wishing to prepare suitably trained physicians to execute and supervise rehabilitation services.

With regard to specific training, PAHO/WHO cooperated with several programs. The occupational therapy training course in São Paulo, Brazil, has continued its activities. Two special six-week courses were given in Pôrto Alegre and Recife for the training of local physicians. Training of occupational therapists and prosthetic technicians was continued in Santiago, Chile, and a special course was given to nurses in rehabilitation techniques. In Caracas, Venezuela, the training school for physical therapists, established in 1965, graduated its first 13 students and the training of occupational therapists was added by the school. A school of prosthetics was established in Buenos Aires, Argentina. The training of teachers for deafmute children was started in Santiago. Special short-term training for auxiliary emergency physical therapists was carried out in Guayaquil, Ecuador, following a poliomyelitis epidemic there. A survey was conducted at the request of the Central American Public Health Council to establish the feasibility of organizing the training of medical and paramedical rehabilitation personnel on a regional basis in Central America.

During 1969 the first course was given in this area to train paramedical personnel as teachers. In the nine-month course, given in Mexico City, 19 physical therapists from physical therapy schools in eight countries (Argentina, Brazil, Chile, Colombia, Guatemala, Mexico, Uruguay, and Venezuela) were prepared in modern teaching techniques as they apply to physical therapy.

During the course, all students were required to prepare two monographs, one on the administrative aspects of schools of physical therapy and one giving an outline for the teaching schedule of a given scientific aspect of the subject. The monographs were then produced as two volumes, one administrative and one scientific, which it is felt will be of considerable assistance to health authorities wishing to train this type of personnel.

Countries to which consultant services were provided during these years (other than those in which there were established projects) included: Bolivia, Cuba, the Dominican Republic, Ecuador, Haiti, and Peru. Close cooperation was maintained with other international agencies in this field, such as the Rehabilitation Unit of the United Nations, the International Labour Organisation, Rehabilitation International, and the World Rehabilitation Fund.

With regard to future activities, it is anticipated that public health authorities will continue to become increasingly aware of the need for automatically ensuring that rehabilitation services are provided within their programs so that the mentally and physically disabled patients may systematically complete their therapy and return to a productive economic and social life. This in turn will probably entail increasing need for consultative services and the preparation of personnel.

#### *Forecasts for the Coming Decade*

The trend shown by medical services in Latin America as well as in other regions of the world makes it possible to predict the direction in which these services will develop during the decade starting in 1970. The need to institute national health systems, the complexities of medical diagnosis and treatment, and the need to step up the training of health professionals and technicians are together forcing an urgent reorganization of hospital structures to adapt to recent advances in medicine and public health.

As a result of scientific progress and social change, hospitals will have to modify the structure of their internal and external services in order to perform fully their tasks in preventive and curative medicine, rehabilitation of the disabled, and medical teaching. These functions, which are inherent in every hospital, will be developed to a greater or lesser extent depending on the size, location, and degree of specialization of each particular hospital. It is, nonetheless, to be hoped that every hospital will participate, each to the extent it is able, in providing comprehensive services to the community, particularly through outpatient departments and home care services, and in giving comprehensive instruction in medicine to physicians and other health professionals and technicians.

The countries should thus study their own hospital problems in the light of the scientific, social, and educational developments mentioned in the preceding paragraphs. Operations research, systems analysis, quantification of actions, and cost-benefit studies are all factors which, with the help of computers, will make it possible to improve operational programming, the efficiency of the services offered, and the productivity of the vast amounts of capital and human resources which together form the input of hospital services. It is in this direction that the actions of the Governments of the Americas will have to move in coming years.

## NURSING

Nursing in Latin America is confronted with the problem of adequately staffing the health services, which range from the most complex in teaching hospitals to the most simple in rural areas. The problem is further compounded by the economic limitations which restrict the number and type of positions that can be created not only in nursing services but in others as well. This has

resulted in insufficient staffing and poor utilization of nursing personnel, who are used to substitute for other staff or to perform other services that further limit the nursing time available for patient care.

During the quadrennium the countries became increasingly aware of the need to design their system of nursing in accordance with health plan needs and social, cultural, and economic factors. Many countries are building up their active nursing work force at a rate greater than population growth (Table 37).

The Dominican Republic has increased the number of graduate nurses by 75 per cent and the number of auxiliaries by 60 per cent since 1962. Many countries, such as Guatemala, have undertaken studies to identify the actual functions of nursing personnel in order to determine exactly what type of staff the services require. Two countries, Brazil and Mexico, have decided to introduce a level of worker whose preparation is between that of the professional nurse and that of the nursing auxiliary, with primary education and six months of training.

TABLE 37. NUMBER OF NURSES AND NURSING AUXILIARIES WITH RATIOS PER 10,000 POPULATION IN COUNTRIES OF THE AMERICAS AT TWO PERIODS OF TIME.

COUNTRY	YEAR	NURSES		NURSING AUXILIARIES		YEAR	NURSES		NURSING AUXILIARIES	
		NUMBER	RATIO	NUMBER	RATIO		NUMBER	RATIO	NUMBER	RATIO
Argentina <sup>a</sup>	1964	22,903	10.3	7,429	3.3	1969	13,737	5.7	24,444	10.2
Barbados	1964	393	16.3	420	17.4	1968	429	17.0	172	6.8
Bolivia	1964	411	1.0	1,148	2.7	1969	612	1.3	1,549	3.2
Brazil	1963	6,684	0.9	55,664	7.3	1966	8,212	1.0	55,664 <sup>b</sup>	7.3
Canada	1961	61,699	33.8	62,553	34.2	1968	80,975	39.0	37,705	18.2
Chile	1963	1,656	2.0	13,260 <sup>c</sup>	15.2	1968	2,325	2.5	16,891	18.1
Colombia	1965	1,259	0.7	10,818	6.0	1967	1,840	1.0	20,307	10.6
Costa Rica	1965	616	4.1	2,000	13.4	1969	974	5.7	2,400	14.2
Cuba	1965	3,917	5.1	4,544	6.0	1968	4,373	5.4	7,650	9.5
Dominican Republic	1965	146	0.4	1,792	4.9	1967	183	0.5	2,172	5.6
Ecuador	1965	364	0.7	1,849	3.6	1969	511	0.9	2,429	4.1
El Salvador	1965	715	2.4	1,680	5.7	1968	783	2.4	1,645	5.0
Guatemala	1965	491	1.1	2,289	5.2	1969	686	1.4	3,004	6.0
Guyana	1963	353	5.7	217	3.5	1969	744	10.0	227	3.1
Haiti	1965	315	0.7	553	1.3	1967	415	0.9	806	1.8
Honduras	1965	179	0.8	1,253	5.7	1968	318	1.3	1,417	5.9
Jamaica	1964	3,799	21.8	611	3.5	1967	4,869	26.0	959	5.1
Mexico	1965	8,252	1.9	40,000	9.4	1967	9,000	2.0	40,000	8.8
Nicaragua	1965	353	2.1	1,047	6.3	1969	447	2.3	2,132	11.1
Panama	1965	808	6.5	1,113	8.9	1969	1,028	7.3	1,700 <sup>d</sup>	12.4
Paraguay	1965	134	0.7	1,471	7.2	1968	286	1.3	1,518	6.8
Peru	1965	3,600	3.1	5,783	5.0	1969	4,110	3.1	9,965	7.8 <sup>d</sup>
Trinidad and Tobago	1965	1,227	12.6	356	3.7	1969	1,440	13.8	657	6.3
United States of America	1962	550,000	29.5	638,900	34.2	1967	659,000	33.1	1,095,000	55.0
Uruguay	1964	496	1.8	3,756	14.0	1967	755	2.7	3,905	14.0
Venezuela	1963	3,498	4.3	12,088	14.8	1969	5,714	5.7	14,105	14.1
Northern America		611,699	29.8	701,453	34.2		739,975	33.7	1,132,705	51.5
Middle America		21,211	2.8	57,658	7.7		24,945	3.1	64,714	8.0
South America		41,358	2.6	113,483	7.1		38,846	2.2	151,004	9.0

<sup>a</sup> Differing definitions of nurses and nursing auxiliaries in the two years.

<sup>b</sup> Year 1963.

<sup>c</sup> Year 1965.

<sup>d</sup> Year 1968.





A committee studies standards for levels of nursing care.



In a surgical pediatric ward two nurses discuss care to be given to a recently admitted young patient.

In some countries such as Brazil, El Salvador, Panama, and Paraguay nursing has had an active role in the planning process, but in most countries progress in incorporating the nurse into the team has been slow.

Brazil, Chile, and Peru, through short courses, have prepared several nurses in the methodology of planning, but considering the Region as a whole and the role the nurse should play, the number of nurses trained in this specialty is wholly insufficient.

There is an increasing consciousness of the need to use nursing resources more efficiently and effectively. To identify the problem, studies on the activities of nursing personnel have been carried out in Brazil, Cuba, the Dominican Republic, Guatemala, Guyana, Jamaica, and Peru. The findings indicate that from 40 to 60 per cent of nursing personnel time is spent on non-nursing activities. Figure 41 shows the classification of activities of nursing personnel.

The amount of nursing time spent on non-nursing

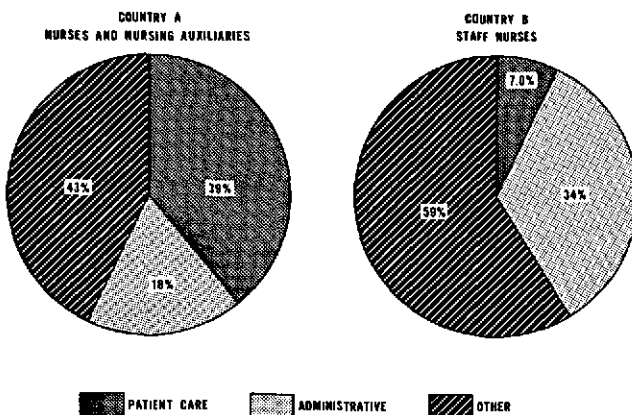


Fig. 41. Classification of activities of nursing personnel.

activities can be diminished only through the improvement of both over-all administration and nursing service administration. Increased emphasis has been placed on the training of nursing auxiliaries working in the services who have not had formal preparation. Table 38 indicates the progress made in some countries of Latin America.

The organization of continuing education programs for nurses in the services was stepped up during the four-year period. In these programs major emphasis was given to nursing service administration, special courses having been organized for all countries of Central America and for Bolivia, the Dominican Republic, Ecuador, and Peru with the Organization's assistance. In 1969 64 per cent of nursing personnel in the Dominican Republic received some type of inservice or continuing education.

There has been an increasing interest in the improvement of the nursing-midwifery component of maternal and child health services. Nursing care for prematures was improved in Córdoba, Argentina, and pediatric nursing as well as over-all nursing-midwifery care were strengthened in Brazil, Costa Rica, the Dominican

TABLE 38. PERCENTAGE OF NURSING AUXILIARIES WITH TRAINING WORKING IN HEALTH SERVICES IN CENTRAL AMERICA AND PANAMA, 1965 AND 1969.

COUNTRY	1965	1969
Costa Rica	55	78
El Salvador	67	79
Guatemala	56	72
Honduras	91	93
Nicaragua	91	73
Panama	11	70

Republic, Nicaragua, and Paraguay concentrated efforts on the supervision and preparation of empirical midwives. There was a growing trend toward transfer of the function of prenatal and perinatal care of the normal mother and child to the nurse or nurse-midwife. Preparation of nursing and midwifery personnel in the area of family planning was initiated in the Americas during the quadrennium.

The fact that, in 1969, 22 projects gave some assistance in the hospital nursing field is an indication of the growing concern of the Governments over the need to improve these services. The organization of intensive care units was initiated during the quadrennium, one project nurse having been permanently assigned to this area of activity (*see also* p. 110).

While the number of full-time nursing consultants remained more or less constant (an average of 44), there was greater diversification as to the area or field in which advisory services were being given (Table 39), and this too was indicative of the progress being made in the field of nursing in the Americas.

### MATERNAL AND CHILD HEALTH

Among the programs that have attracted most attention on the part of national health authorities and international organizations are those relating to maternal and child health. The reason for this lies in the fact that the risks to the health of mothers during the reproductive cycle and to that of children during the development stage—two groups which together make up almost

half of the population—continue to be high in the major part of the Region.

It was therefore natural that this problem should not escape the attention of the Presidents of America; in their Declaration of Punta del Este, they emphasized the need to promote intensive mother and child welfare programs and educational programs on over-all family guidance methods (*see also* pp. 9-11).

The Special Meeting of Ministers of Health also stressed this objective, both to promote proper coordination of activities in the maternal and child health, nutrition, and family guidance fields and to intensify the training process involved. The XIII Meeting of Ministers of Public Health of Central America and Panama adopted a similar resolution in 1968.

### Seriousness of the Problem

In 1968, 1,000,000 deaths were recorded in the age group under 5 years; 77 per cent of these deaths were avoidable, that is to say, there were 768,000 excess deaths (*see also* pp. 11 and 47).

While it is true that mortality rates during infancy and childhood have been reduced in the course of the past decade, it is no less true that progress has been limited; by the middle of the period, the goals of the Charter of Punta del Este had been partially met: in Middle and South America, respectively, for infant mortality 30 and 43 per cent of the goal had been

TABLE 39. NUMBER OF PAHO/WHO NURSING ADVISERS AND SHORT-TERM CONSULTANTS, ACCORDING TO SPECIALTY OF ASSIGNMENT, 1966-1969.

FIELD	1966		1967		1968		1969				
	WITHIN COUNTRY	INTER-COUNTRY	WITHIN COUNTRY	INTER-COUNTRY	WITHIN COUNTRY	INTER-COUNTRY	WITHIN COUNTRY	INTER-COUNTRY			
	FT ST	FT	FT ST	FT	FT ST	FT	FT ST	FT			
Over-all nursing	—	—	6	1	—	6	2	—	3	—	4
Health services	13	2	—	16	5	—	17	18	—	15	2
Hospital services	5	13	1	5	18	1	—	1	—	2	7
Midwifery and maternal-child health	1	2	1	—	2	1	1	1	1	3	1
Nursing education	14	10	—	12	10	—	8	14	—	9	15
Training auxiliaries	3	1	1	1	—	1	1	—	—	1	—
Rehabilitation nursing	—	1	—	—	3	—	—	—	—	—	—
Premature care	—	1	—	—	1	—	—	—	—	—	—
Studies-research	—	1	—	—	8	—	—	1	—	—	2
Operating room	—	2	—	—	—	—	—	—	—	1	—
Intensive care	—	1	—	—	—	1	—	—	1	—	—
Psychiatry	—	—	—	2	4	—	2	—	—	2	2
Tuberculosis	—	—	—	—	—	1	—	—	1	—	1
Family planning	—	—	—	—	—	—	—	—	—	5	—
Planning	—	—	—	—	—	—	—	—	—	1	—
Total	36	34	9	37	51	11	31	35	9	33	39

FT = Full time.

ST = Short term.

reached, and for deaths among preschool-age children 71 and 83 per cent of the goal.

These facts are all the more serious since they do not take into account the underregistration of deaths, nor do they reflect the risks to the health of the children that survive.

The Inter-American Investigation of Mortality in Childhood, which the Organization is carrying out in collaboration with nine countries in the Americas, is helping to establish the true facts of the problems mentioned and is providing valuable information on the role of malnutrition and of measles, among other diseases, as factors in the deaths of children under 5 years; in certain areas these two factors are together responsible for half of such deaths.

As for maternal health, the mortality rates in some Latin American countries are as much as nine times higher than those recorded in Northern America. Induced abortions, which are rising steadily in the Region, are partially responsible for this situation; in some countries they account for as many as one-third of maternal deaths and one-fifth of the hospitalized obstetrical cases.

The problems mentioned are linked to the limited progress that has been made in implementing both health programs of adequate coverage and over-all development plans that would allow the execution of these health programs and in addition help to control the environmental hazards that particularly threaten the biologically and economically vulnerable sectors of the population, whose rapid growth is raising new problems.

At the request of the Governments concerned, the Organization has provided assistance in the formulation of comprehensive and systematic programs for maternal and child protection, through the services of consultants assigned in recent years to Zones I, III, and VI, and through direct advisory services to various countries, among which we would mention Colombia, Costa Rica, El Salvador, Honduras, Nicaragua, and Panama.

### Programs

There has been a trend toward progressive strengthening of maternal and child care services. In both Guatemala and Uruguay, departments of maternal and child care were set up, while in Chile, Colombia, Costa Rica, El Salvador, and Panama existing programs were implemented more efficiently, and regulation of fertility was included among the activities carried out.

The coverage of the services has gradually been extended, the geographic distribution of resources has been improved, and greater responsibilities have been delegated to ancillary staff. The experience that has been gained in Chile and Venezuela with health auxilia-



In the maternal care field, advances have been made in education on human reproduction and family guidance.

ries and in Colombia with "community promoters" is very instructive on this point.

One of the critical elements of the programs continues to be attendance at childbirth and early follow-up care in the postnatal period. A special effort has therefore been made in many countries, with the support of the Organization, to develop the specialized resources required; in this connection we would mention the expansion of training programs for nurse-midwives in Brazil, Colombia, Costa Rica, Jamaica, Panama, and Trinidad and Tobago, and those for midwives in Chile.

### Recent Advances

In many countries nutrition education and supplementary feeding for mothers and children were extended and coordinated more effectively with other maternal and child health activities. In Costa Rica nutrition centers were being integrated with the health services; in Chile the coverage was considerably increased; and in Colombia an ambitious plan was formulated for the supply of protective foods, to be carried out within the framework of the maternal and child care services and under the responsibility of the recently created Family Welfare Institute.

Activities for the training of personnel were stepped up during the period under review, and 43 fellowships were awarded in maternal and child health. The greatest progress was made in pediatrics education, following the recommendations made by the ad hoc Advisory Committee that met in Washington in May 1966.

The teaching programs that have been given in Santiago, Chile, and Medellín, Colombia, since 1962 and 1965, respectively, were considerably strengthened through courses on clinical and social pediatrics; a total of 174 professionals attended these courses during the four-year period, 109 of whom received fellowships from the Organization.

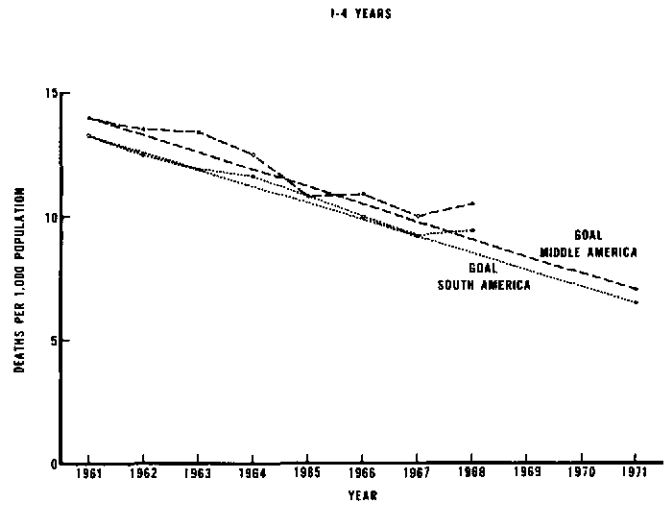
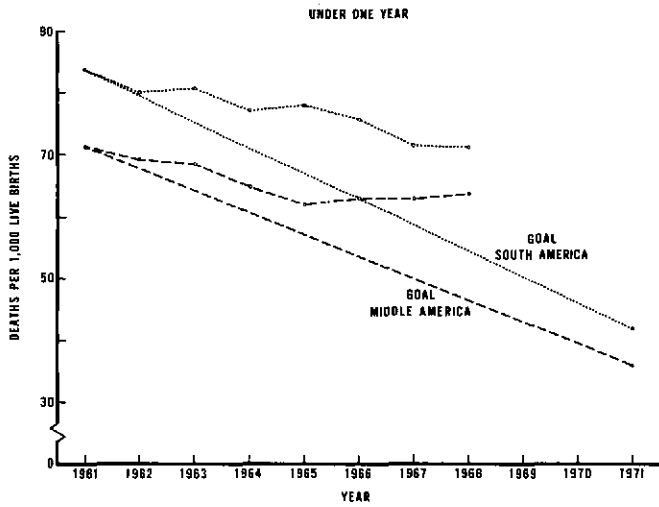


Fig. 42. Reductions in death rates under 5 years of age, 1961-1968, compared with goals for the decade 1961-1971.

Progress was made also in the pediatrics residency programs. The Organization provided assistance, in the form of advice and grants, in programs of this kind in Santiago, Chile, and at the Federal University of Pernambuco in Recife, Brazil.

will promote the development of similar activities in their own countries.

In Uruguay the Obstetrical Physiology Service and the Obstetrical Clinic in Montevideo has since 1968, with the Organization's assistance, conducted inter-

### Courses

Regional courses on the administration of maternal and child health services were conducted in Santiago in 1968 and in Buenos Aires in 1969; they were attended by a total of 50 professional workers, who it is hoped

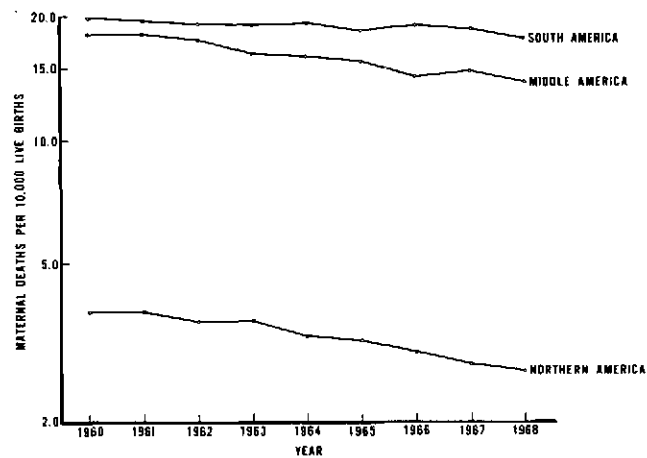


Fig. 43. Maternal deaths per 10,000 live births in the three regions of the Americas, 1960-1968.

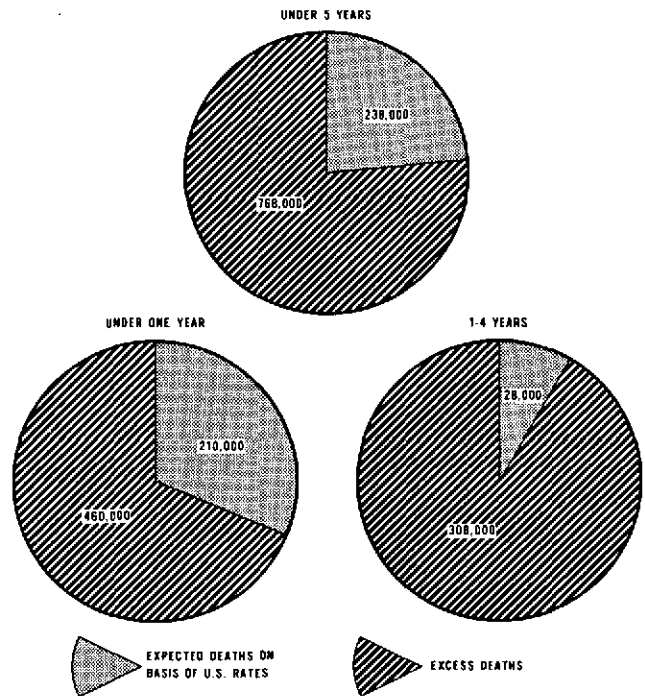


Fig. 44. Estimated deaths occurring in Latin America under 5 years of age and excess deaths on basis of rates of the United States of America, 1968.

national courses to provide advanced training in medical techniques for care of the mother, the fetus, and the newborn child. In 1969 these activities were strengthened by the establishment of the Latin American Center for Perinatology and Human Development. In addition to its teaching function, the Center will carry out research on the physiopathology, prevention, and timely treatment of maternal and fetal disorders.

The teaching activities in the field of child and family protection which are conducted by the International Children's Center of Paris and the Inter-American Children's Institute in cooperation with the countries of the Americas were continued. With assistance from the Organization in the form of advice and fellowships, interdisciplinary seminars were held to discuss understanding of the child (São Paulo and Quito), tuberculosis in children (Panama), problems of adolescence (San Salvador), and early stimulation in cases of mental retardation (Montevideo).

## NUTRITION

### General Situation

The health and nutrition surveys that have been carried out in Latin America during the past 10 years with the assistance of the Organization, the Institute of Nutrition of Central America and Panama (INCAP), the U.S. Interdepartmental Committee on Nutrition for National Defense (ICNND), and several groups of specialists from the countries of the Region indicate that protein-calorie malnutrition, anemias due to deficiency in iron, vitamin B<sub>12</sub>, and folic acid, endemic goiter and cretinism, hypovitaminosis A, ariboflavinosis, and dental caries are among the main public health problems in the Americas.

### Protein-Calorie Malnutrition

This form of malnutrition aggravates existing health problems and contributes to the high rates of mortality and morbidity among children under 5 years. In some countries infant mortality is still above 100 per 1,000, and mortality in the age group 1-4 years, which is more directly linked with protein-calorie malnutrition, is 10 to 30 times higher than in the industrialized countries. The preliminary findings of the Inter-American Investigation of Mortality in Childhood indicate that protein-calorie malnutrition is an underlying or associated cause in a high proportion of deaths of children under 5 (*see also pp. 47-48*).

Protein-calorie malnutrition retards growth, as its victims are unable to develop their genetic potential through lack of basic nutrients. Studies carried out in

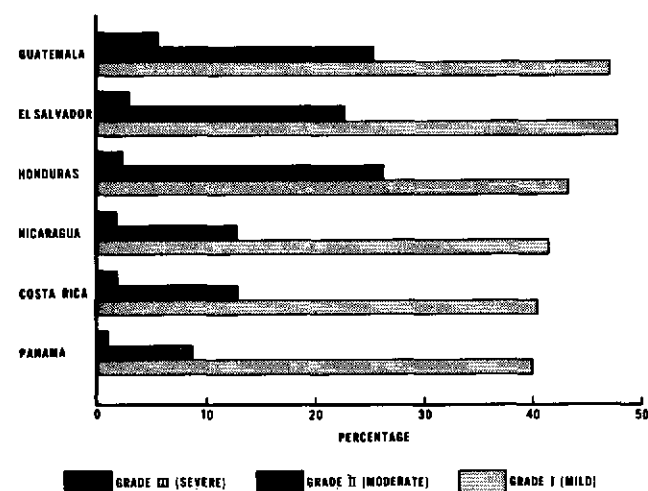
various Latin American countries indicate that between 20 and 85 per cent of preschool-age children suffer to some extent from malnutrition. Furthermore, it was found that among hospitalized children the prevalence of at least some degree of malnutrition ranged between 77 and 97 per cent. Studies conducted by researchers in Brazil, Chile, Colombia, Guatemala, Mexico, and Venezuela have revealed that children in an advanced state of malnutrition also show varying degrees of mental retardation.

### Nutritional Anemias

These also constitute a health problem in the Region. PAHO/WHO sponsored a Joint Collaborative Study on Nutritional Anemias in Latin America and the Caribbean, which revealed a high prevalence of anemia among the various groups studied. Among pregnant women it ranged between 29 and 63 per cent; for the women in the control group the range was between 14 and 30 per cent, and for the men, between 3 and 5 per cent. The prevalence of iron deficiency among the three groups was 44, 22, and 3 per cent, respectively; that of vitamin B<sub>12</sub> deficiency was 15, 0.3, and 1 per cent, respectively; and in all three groups the prevalence of folic acid deficiency was 10 per cent.

### Endemic Goiter

Endemic goiter is highly prevalent in the Andes and in low-lying areas scattered throughout the rest of the Region. Its prevalence ranges between 12 and 75 per cent in the various countries.



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. 45. 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.

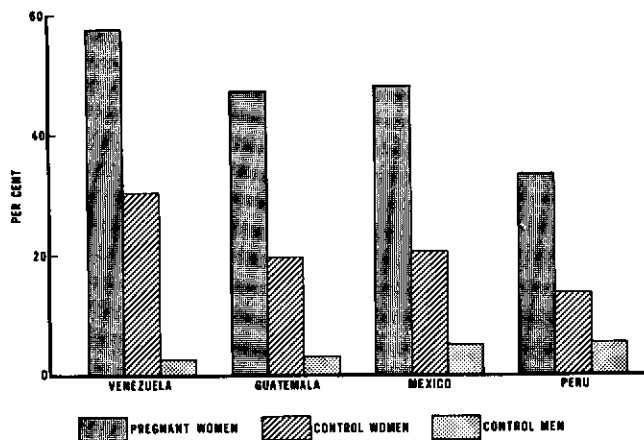


Fig. 46. Percentage with nutritional deficiency anemia in samples of pregnant women and in control samples of men and women.

### Hypovitaminosis A

This is one of the nutritional deficiencies most frequently associated with protein-calorie malnutrition. Studies carried out in the Caribbean area and in El Salvador have shown 10 and 13 per cent, respectively, of the undernourished children to be suffering from xerophthalmia. Surveys conducted by the ICNND in collaboration with the Governments have likewise shown low vitamin-A intake levels.

### Other Problems

The nutrition surveys conducted in the countries have also shown a prevalence of ariboflavinosis accompanied by low intake levels of riboflavin.

Finally, dental caries also present a health problem, according to the survey findings. These have shown that more than 50 per cent of the teeth of 8-year-old children have already been attacked by dental caries; at the age of 12, the percentage rises to 60 per cent of their permanent dentition.

### Nutrition Programs

The Organization continued to give high priority to activities aimed at solving nutrition problems, since these are among the principal obstacles to social and economic development in the countries of the Americas. As the solution to these problems depends on joint action by various sectors (the economic, agricultural, health, and education sectors in particular), special emphasis has been placed on the need to formulate and implement national food and nutrition policies and to develop nutrition programs as an integral part of the health services.

The basic objective of the nutrition programs which

PAHO/WHO promotes and assists in the Region is to achieve an optimum nutritional status for the entire population of Latin America, through the prevention and treatment of nutritional diseases. For the attainment of this objective, seven specific goals have been set: (1) development of the human resources required for nutrition programs; (2) introduction of nutrition activities into the local health services as a regular and complementary part of those already being carried out by the members of the health team; (3) promotion of applied nutrition programs which conduct coordinated and simultaneous multisectoral activities designed to increase the local availability of protein foods and promote nutrition education of the family; (4) supplementary feeding for the groups most susceptible to malnutrition (expectant and nursing mothers, children under 5 years, and schoolchildren); (5) rehabilitation of children suffering from advanced malnutrition; (6) conduct of a series of applied research projects designed to provide guidelines for the execution of programs and practical bases for increasing their effectiveness (these projects are concerned with the development and use of new protein foods, formulation of new types of programs for the prevention and treatment of nutritional diseases, improvement of operational systems for such programs); (7) establishment and development of national food and nutrition policies in each country of the Hemisphere.

### Advisory Services

In order to meet the growing demand for advisory services, a medical nutritionist was added to the Head-



Groups meet to discuss planning of nutrition programs.

quarters staff (1968); a medical nutritionist and five nutritionists-dietitians were recruited to assist with applied nutrition programs in the countries; a medical nutritionist and a biochemist were assigned to the Institute of Nutrition in Recife, Brazil; and a medical nutritionist was appointed to assist with the nutrition training programs at the University of Puerto Rico.

Also strengthened were the short-term missions to provide assistance and obtain information in various fields of research, teaching, and service, such as hypovitaminosis A, endemic goiter, nutritional anemias, malnutrition and mental development, fish protein, textbooks and a bibliography on nutrition, evaluation of applied nutrition programs, nutrition in local health services, nutrition and maternal and child health, guidelines for the planning and evaluation of PAHO/WHO nutrition programs, and nutrition and chronic diseases.

A joint mission of the Organization and FAO assisted the Argentine Government in preparing a preliminary description of a Nutrition Data Retrieval and Analysis Center for Latin America. This description will serve as a basis for an application which the Government will submit to the UNDP in 1970. The Center will play an important role in the promotion and implementation of national food and nutrition policies in the countries of the Hemisphere.

PAHO/WHO has given special attention to the incorporation of nutrition into the national health planning process, and to this end convened a meeting of a technical group in 1968, which issued specific recommendations on this subject. In addition, nutrition was included in the courses of the Pan American Health Planning Program, which is conducted by PAHO/WHO in Santiago, Chile. The Second Meeting of the Technical Advisory Committee on Nutrition also met in 1968, to review the nutrition program in the Region and draw up guidelines for its future development.

The Organization, jointly with FAO, the Williams-Waterman Fund (Research Corporation), the University of the West Indies, and the Governments of Jamaica and of Trinidad and Tobago, completed the arrangements for the establishment of the Caribbean Food and Nutrition Institute (CFNI). This Institute, which began its activities in early 1967, serves 15 English-speaking countries and territories in the Caribbean area.

#### Technical Meetings

During the quadrennium the Organization sponsored a series of technical meetings to analyze various aspects of nutrition programs in the Americas and published the proceedings for wide distribution, in order to give support to national nutrition programs. The following

Scientific Publications dealing with meetings of technical groups were issued: No. 153, containing the report and working documents of the Conference on the Training of Public Health Nutritionists-Dietitians; No. 160, containing the report of the Latin American Seminar on the Planning and Evaluation of Applied Nutrition Programs; No. 174, Bibliography of nutrition, food, public health, and related sciences for use in schools of nutrition and dietetics in Latin America; No. 179, Nutrition activities at the local level in a general health service; No. 192, Books on nutrition for the health sciences; No. 193, Endemic goiter—Report of the meeting of the PAHO Scientific Group on Research in Endemic Goiter; No. 194, Elements of a food and nutrition policy in Latin America; and No. 198, Hypovitaminosis A in the Americas. The reports covering the meetings on nutritional anemias in Latin America and in the Caribbean area, and on maternal nutrition and family planning in the Americas were being prepared for publication.

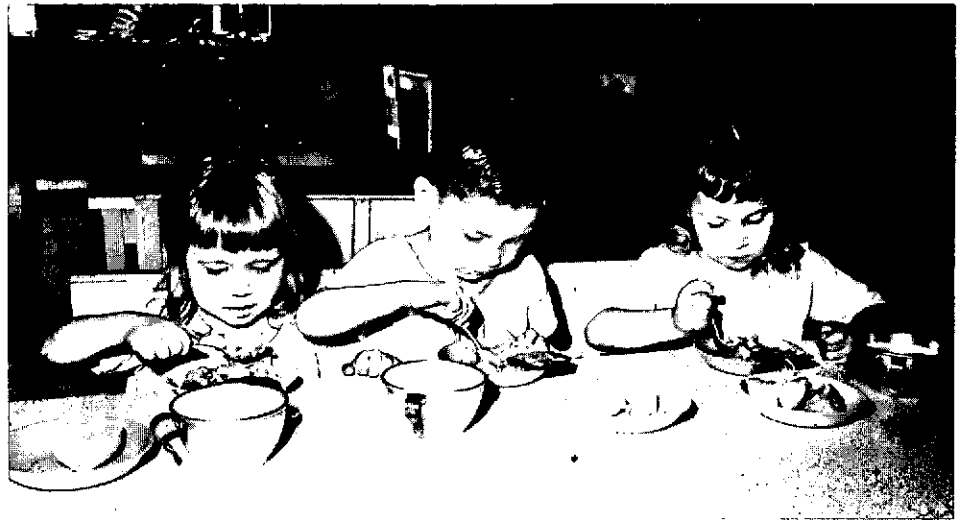
#### Applied Nutrition Programs (FAO, PAHO/WHO, UNICEF)

Fourteen of the 17 countries which initiated pilot programs in the Hemisphere continued their projects through 1969.

During the quadrennium particular attention was directed toward a critical self-analysis of the programs by the participating countries in order to determine the progress made and the effectiveness of the projects, or the need for some reorientation. In 1965, following a review of programs in the countries, a small multidisciplinary technical committee was convened by the Organization and FAO to identify some practical indicators which the countries might use in assessing their own programs.

An evaluation schedule developed during the Seminar on the Planning and Evaluation of Applied Nutrition Programs (Popayán, Colombia, 1966) provided for annual recording of activities and measurements of progress, using criteria agreed upon by all the countries. In 1968 the countries were again asked to assess their programs using the schedule designed during the Seminar. A report on the analysis of the programs during the four-year period was prepared and distributed, in 1969, to countries that had applied nutrition programs. Fifteen recommendations were made for the consideration of the Director of PASB, the countries, and the international agencies involved. Essentially, the recommendations recognized that the pilot stage of the programs had been concluded and that the need for reorientation of objectives and procedures better adapted to future development should be considered.

Preschool-age children receive supplementary food in a nutrition center as part of an applied nutrition program.



PAHO/WHO continued to promote and assist with the incorporation of nutrition activities into the local health services, both through the multisectoral applied nutrition programs and other programs conducted separately by the health sector. Special attention was given to the utilization of the resources of the World Food Program (WFP) in food supplementation projects undertaken by the health services to assist the most vulnerable population groups (mothers and children under 5 years). For this purpose, PAHO/WHO has established liaison with the WFP and the bases have been laid for considerably increasing the use of this food assistance both in health services and hospital food services.

The nutrition rehabilitation services represent another activity complementary to the regular health services to which special attention has been given. Notable progress in the organization of such services has been made in Central America and in Brazil, Colombia, Ecuador, Peru, and Venezuela.

#### Institute of Nutrition of Central America and Panama

Nutritional deficiencies are among the most serious health problems confronting the peoples of the Central American Isthmus and of other countries that have similar ecologic conditions. Although there has been a decided increase in the incidence of severe forms of malnutrition in recent years, the light or moderate forms, which frequently pass unnoticed, continue to affect large segments of the population, principally small children. The reduction of the severe forms is considered to be due primarily to the prevention and recuperation programs undertaken by the health services. The reduction of the chronic, subclinical forms, however, requires

coordinated action by other sectors involved in the problem, such as agriculture, economy, and education. These subclinical forms constitute a serious obstacle because, directly or indirectly, they bring about retardation of the growth and physical and mental development of children and low productivity of the adult working population. Thus they represent an important limiting factor in the efforts being made by the Governments to speed up the process of social and economic development.

In fulfillment of its general purpose of assisting the member countries in the study of their nutrition problems and in the search for and application of practical measures for solving them, INCAP continued to develop its activities in the three phases of its work program: research, education, and advisory services. The following is a summary of the most important work carried out in the 1966-1969 period in the last of these areas; the other two are discussed under the sections dealing with research and development of human resources.

#### *Nutrition and Public Health*

At the beginning of the period, a seminar attended by officials from the Central American countries and Panama made a study of the nutrition situation in order to determine the order of priorities for the action to be taken. On basis of the magnitude and seriousness of the various problems, the availability and effectiveness of control measures, and the resources available for their implementation, two activities of the health sector were singled out as being of the highest priority from a nutrition point of view: (a) control of endemic goiter, and (b) adequate and timely treatment of children suffering from protein-calorie malnutrition.

INCAP accordingly redoubled its efforts to assist the



Governments to achieve effective application of salt iodization as a means of controlling endemic goiter. In 1966 only Guatemala had enacted legislation making salt iodization compulsory. The spectacular results obtained in that country, where the average prevalence for the total population was reduced from 38 to 5 per cent in a period of 10 years, and the experience which that measure brought with it, were largely responsible for its application in other countries. Thus, between 1966 and 1969 salt iodization was established in El Salvador and Honduras, and the necessary legal, administrative, and technical groundwork was laid for the application of similar laws within a very short period in the other three INCAP member countries: Costa Rica, Nicaragua, and Panama.

With regard to the treatment of protein-calorie malnutrition, it was judged that the groups requiring the most attention were children with second degree malnutrition or with uncomplicated forms of third degree malnutrition who do not require hospitalization but whose recovery is very difficult and sometimes impossible to achieve through the activities normally carried on by the health services. Costa Rica and Guatemala already had some favorable experience with services offering various types of treatment, on the basis of partial hospitalization or short periods of internment in specialized centers, but in all cases with special emphasis given to education of the mothers, using the recovery of the child to reinforce this education. Special efforts were made to profit by this experience and to extend services of this kind in order to achieve better coverage in countries which had already initiated them and to promote their establishment in the others. These services have been considerably expanded in Guatemala

and Costa Rica, with variations appropriate for each country, and in El Salvador, Honduras, and Nicaragua nutrition rehabilitation and education programs are already under way as an integral part of the health programs.

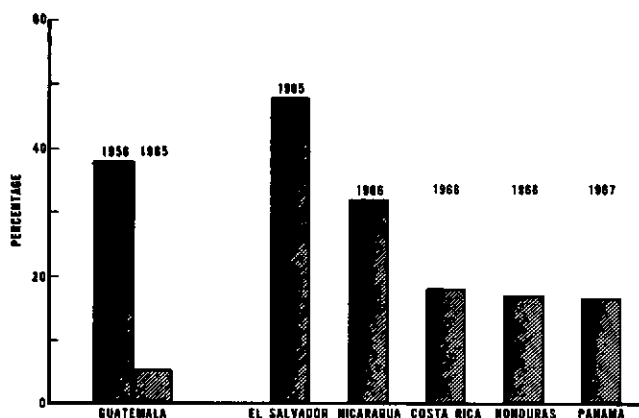
#### *National Food and Nutrition Policy*

It is considered essential that the countries endeavor to define a national food and nutrition policy as one of the fundamental components of their national development policy. INCAP, being fully aware of the planning efforts undertaken by the countries of the Isthmus to accelerate social and economic development, is convinced that improvement of the nutritional status of the population is one of the elements necessary for the achievement of this objective, and that the solution of nutrition problems requires coordinated multisectoral action.

INCAP has sought to assist the member countries in establishing bases for the definition of this policy and the formulation of programs for its implementation. One of these bases was the need for a current diagnosis of the situation at a national level, which would include an analysis of the principal factors responsible for existing nutritional deficiencies. To this end, the nutritional surveys in the six countries were completed in collaboration with the Governments and with the Office of International Research (OIR) of the U.S. National Institutes of Health. These in-depth surveys achieved their objective completely, providing not only a precise diagnosis of the nutrition problems of the Central American Isthmus, but also suggestions for a wide series of preventive and corrective activities.

Detailed reports of the surveys were prepared and submitted to the ministries of health, through which they reached the appropriate authorities in other sectors and agencies responsible for or interested in the solution of nutrition problems in the area. As a result of the reports, there has been increased awareness at the national level of the need for coordinated multisectoral action, and the measures needed to define the national food and nutrition policy in the six member countries of INCAP have been outlined.

It is hoped that these efforts will soon crystallize; meanwhile the Institute is making maximum use of the survey results to redefine its program priorities and determine the data or experience which will be required to develop the activities derived from a definition of national policy. Some of these activities are described in the section dealing with the INCAP research programs.



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. 47. 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.

### Marketing of Incaparina

As has been pointed out on many occasions, the limited availability and the high cost of adequate dietary sources of protein, particularly for small children, are the principal factors responsible for malnutrition. To help solve this problem, INCAP developed low-cost vegetable mixtures of high nutritive value, adapted to the eating habits of the potential user communities and made of locally available raw products. These mixtures are already produced commercially under the name of Incaparina and have served as the basis for the formulation of many others in various parts of the world.

The market for Incaparina was strengthened in Guatemala and Colombia, where it has been accepted by the population and where its production and commercial distribution have been proved feasible and economically sound, at the low price to consumers which was the original intention when these mixtures were developed. The gradual securing of the market is reflected in Figure 48, which shows the total sales of Incaparina in Guatemala from the time it was introduced commercially in 1961.

Additional advances made in this field were the acceptability and market studies carried out prior to commercial distribution of the product in other countries, including El Salvador, Honduras, Nicaragua, and Panama. These studies, which among other factors seek to determine whether the formulas require certain modifications to adjust them to local food habits, and to ascertain the availability and cost of raw materials,

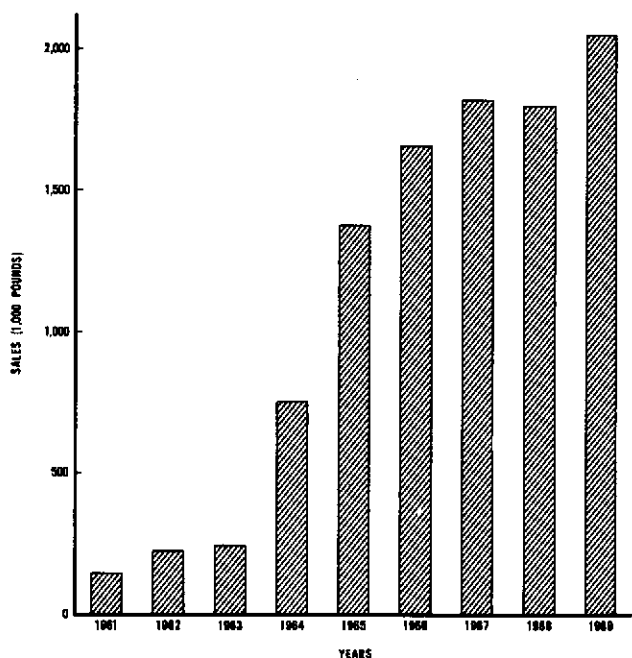


Fig. 48. Sale of Incaparina in Guatemala 1961-1969.

have laid a solid foundation for the opening up of markets for this product in these countries in the near future.

### Increase in Products of Animal Origin

With further reference to the problem of limited availability and high cost of dietary sources of protein, the conclusion has been reached that it is feasible to increase the supplies of products of animal origin and also possible to reduce their cost by achieving more effective utilization of the local resources of the cattle industry.

Among the efforts made by INCAP to contribute toward this objective, two projects are deserving of special mention. The first is the development of substitutes for milk in the feeding of calves, which would not only provide an economical means of raising these animals and avoid the slaughter of many calves, as is currently practiced, but would also allow all milk produced by cows to be used for human consumption. These products, the urgent need for which first became evident in Costa Rica, but which are also very much needed in the other countries of the area, will both help to increase the sources of meat and milk, and lead to economic advantages for the six countries.

The result of this research, which had financial support from a group of private industrialists in Costa Rica, was the development of suitable formulas for these milk substitutes, based on local products and capable of being produced economically. A private company in Costa Rica has already begun industrial production and commercial distribution of the formula under the name of "Termerina." It is to be hoped that Costa Rica's experience, after the formula has been marketed for a sufficient time, will enable other countries of Central America, or of other areas, to make use of this product.

The Institute's other contribution in this field was the publication of the Composition Table for Fodders, Forages, and Other Animal Feeds of Central America and Panama. This first edition includes data on the chemical and nutritional composition of 4,000 samples of more than 153 different products, that is, the majority of fodders and forages, industrial by-products, and other feeds native to the Central American area which can be used for the cattle industry. In addition, it gives examples of dietary rations for various species of breed animals based on the products included in the table. These valuable data will fill a deeply felt need, helping to stimulate more efficient production of foods of this type. They will also make possible the more rational use of raw products available in the area and the standardization of concentrates for animals and of products used in their manufacture. The result, in the long run, will be the promotion and strengthening of stock-raising, with the resultant nutritional and economic gains.



Young steers that have been fed on a diet of Ternerina.

### Caribbean Food and Nutrition Institute

The Caribbean Food and Nutrition Institute (CFNI) began its activities early in 1967 as a collaborative undertaking of PAHO/WHO, FAO, the Williams-Waterman Fund (Research Corporation), the University of the West Indies, and the Governments of Jamaica and Trinidad and Tobago. The Institute initially serves 15 countries and territories in the English-speaking Caribbean area and has two centers, one in Jamaica and the other in Trinidad, both situated on campuses of the University of the West Indies. Its activities are guided by a Policy Committee, composed of representatives of contributing Governments and agencies, and by a Technical Advisory Committee, whose members are drawn from the Caribbean area and elsewhere. Both committees meet annually.

The basic philosophy of the Institute is that the community nutrition level in the Caribbean area, including the highly vulnerable young child population; as anywhere, is determined by complex interacting ecologic forces. Its main role plainly has to be one of bridging between geographically separated islands, between traditionally compartmentalized disciplines, and between centers of advanced knowledge, spanning the "application gap" which separates them from less well-to-do families in the community.

The interdisciplinary approach to solutions is interwoven into all CFNI activities, including field investigations. It is attested to by the joint international sponsorship of the Institute, by the range of training and professional backgrounds of the staff (including pediatrics, agriculture, public health, food policy, home economics, nursing, and nutrition education), and still more in the programs envisaged for the future.

The ultimate objectives are to assist, support, and catalyze interdisciplinary collaborative activities and programs aimed at practical, economical, and realistic

solutions to food and nutrition problems in the Caribbean community. Special attention will be paid to the problems of young children.

The Institute endeavors to achieve its over-all goals by means of three overlapping activities: dissemination of information, field investigation, and training.

Dissemination of technical information among the 15 separately governed and widely separated islands is a fundamental activity, especially in view of the range of disciplines involved and the diversity of governmental, university, international, and voluntary bodies concerned.

CFNI attempts to facilitate the information-coordination process in three ways: staff travel, area-wide seminars, and publication of a newsletter.

Movement of staff through the area, usually as an interdisciplinary group, enables a wide-spectrum image of food and nutrition to be promoted and projected, and information to be relayed between groups.

Seminars and conferences play a major role in various types of coordination. Four area-wide meetings of this type have been held under CFNI sponsorship.

Since February 1968, the CFNI newsletter, *Cajanus*, has appeared bimonthly and some 2,000 free copies are distributed to persons working in food and nutrition in the Caribbean area. It contains news and opinions from the area, including reports of CFNI activities, articles on world and local nutrition problems, book reviews, questions, and most important, letters and comments from readers. In addition, CFNI published the proceedings of the Conference on Protein Foods for the Caribbean.

### MENTAL HEALTH

Mental health problems are becoming ever more important in present-day society. To underscore the social

significance of situations in which mental balance is disturbed, we need mention only psychoses and psychosomatic diseases, neuroses and emotional disorders, disturbances in the development period and among adults and the elderly, alcoholism, and the use of drugs. Traditional indicators, particularly mortality rates, reveal only a small fraction of the problem, since most mental diseases are not the direct cause of death, although they do produce varying degrees of disability. The nature of these diseases, the lack of effective registration systems, and the shortage of services make it likely that the majority of cases are never recorded and so render it impossible to arrive at a true quantitative appreciation of the losses involved.

The four-year period 1966-1969 shows relatively high rates of mortality due to homicide, suicide, and accidents, and this is in itself alarming because of what it tells us about the state of mental health of the community. Deaths from cirrhosis of the liver, an indirect indicator of alcoholism, were also high.

The use of drugs—particularly barbiturates, amphetamines, and cannabis—is a problem that has grown enormously in major urban centers, although no figures are available showing just how serious the situation has become.

The activities of the Organization have been directed toward improving both the quality and the quantity of psychiatric services, as it is an established fact that psychiatric hospitals have the worst services and reveal a lack of humanity in the treatment of the mentally ill; in addition, their administrative organization is often faulty and requires attention and improvement. Furthermore, efforts have been made to promote the incorpora-

tion of mental health fully in public health, both from the administrative point of view and from that of the provision of services. This policy is in agreement with the recommendation made by the Special Meeting of Ministers of Health to set up mental health units in the health ministries, extend mental health programs to the community, improve the quality of care in psychiatric hospitals, build psychiatric units in general hospitals, and organize and extend occupational therapy to assist the recuperation and rehabilitation of mental patients. The quality of the care extended to the mentally ill has improved in a number of countries, but in most cases the situation is still deplorable.

### Alcoholism

Epidemiological studies on alcoholism have revealed the seriousness of this problem in the Americas. In collaboration with the Government of Costa Rica, the Organization convened a study group on the epidemiology of alcoholism in 1966, which produced a report setting forth systematically the epidemiological techniques that can be applied to the study of this disease in Latin America. PAHO/WHO also sponsored short courses on the organization of advisory and preventive services and on the epidemiology of alcoholism; these courses were held in Lima, Peru (1967), and Bogotá, Colombia (1968), in cooperation with the local authorities. It also rendered assistance to the International Symposium on Alcoholism (Santiago, Chile, 1966) and to the 28th International Congress on Alcoholism (Washington, D.C., 1968).

### Shortage of Human Resources

This is one of the major obstacles to the provision of effective services to the population. The number of psychiatrists is very limited and those available are poorly distributed within the countries. The general practitioner is the person who establishes the first contact with the patient, and he is in most cases the only person available. For this reason, the Organization has endeavored to promote the better training of the general practitioner in mental health. To this end, jointly with the Government of Peru, it organized a Seminar on the Teaching of Psychiatry and Mental Health in Schools of Medicine in Latin America, which made a series of recommendations concerning the objectives and content of this teaching.

Special attention has been paid to training staff in psychiatric nursing, and technical assistance was provided in planning teaching programs and giving instruction, both academic and inservice, in seven countries of the Americas. In one country a start was made on a

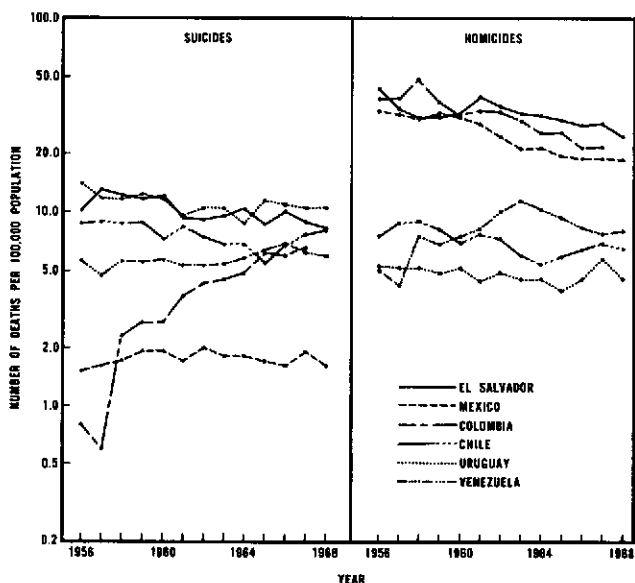


Fig. 49. Suicides and homicides per 100,000 population in selected countries, 1956-1968.

project for training health inspectors in basic mental health tasks.

### Directory of Psychiatrists

A *Directory of Psychiatrists in Latin America*, containing more than 3,000 names, was published in 1968. It clearly shows the shortage and poor distribution of professional mental health specialists and bears out the need to enlist the services of general practitioners in identifying and treating certain mental illnesses, and particularly in referring mental patients to specialists.

### Other Activities

A Working Group on the Administration of Psychiatric and Mental Health Services, which met in Viña del Mar, Chile, in April 1969, approved recommendations on the establishment of priorities, formulation of objectives, and definition of a strategy for the treatment of the patient within the community and his early rehabilitation.

The Organization rendered technical assistance to 15 countries during the period 1966-1969, and 21 consultants were sent out on missions. The assistance covered planning of services, training of staff, evaluation of programs, and research.

Long-range projects were started in four countries on subjects as varied as an epidemiological investigation of mental diseases in urban and rural areas, the setting up of a therapeutic community and a center for community psychiatry, and support to a national training program for psychiatric nurses.

### Information Center

This center began to operate in Washington in 1966. It collected valuable background information on the resources and services available in the field of mental diseases, which is being kept up to date and used in connection with the advisory program aimed at raising the quality and quantity of services. The Center devoted part of its work to the dissemination of scientific information and an investigation into legal aspects of epilepsy.

At the end of the four-year period, the balance was positive, despite the fact that the situation was far from optimum, human resources were in short supply, and the problems of mental health still innumerable. In many countries, a policy for mental health has been established, a number of care centers have been improved, and support has been given to programs for training professional and nursing staff and for determining objectives for the short and medium term.

## DENTAL HEALTH

Dental disease is extensive in the populations of the countries in the Hemisphere. The problems most frequently encountered are caries and periodontal disease, both of which have been shown to commence at an early age and are highly prevalent. However, few countries, if any, have adequate manpower or facilities with which to provide basic dental services to large sectors of the population. Although the problem is not unique to the Americas, it is accentuated in this Region because of the demographic and developmental situation of the areas involved. Few national programs exist which incorporate the provision of curative and preventive services on a wide scale.

The Organization is collaborating with the Governments in programs to assist them to define their dental health problems and identify available dental resources in order to develop national plans for the provision of dental care within over-all health programs.

Current objectives, directed toward the extension of coverage of existing dental services, include the development and implementation of efficient practice patterns, methods to increase dental productivity, and simplification of equipment and materials, together with the application of programs to prevent dental disease, such as fluoridation. A factor essential to such programs is the coordination of activities within the dental field between



Dental treatment being provided by a mobile dental clinic to schoolchildren in Trinidad.

national Governments, the dental profession, and dental training institutions.

In the period 1966-1969 the programs in dental health continued the activities initiated in the previous periods but placed emphasis on the following areas:

- 1) Assistance to ministries of health in the development of dental programs.
- 2) Initiation of a program of dental prevention for countries of the Hemisphere.
- 3) Assistance to countries in order to overcome certain specific problems associated with the provision of dental care services.
- 4) Investigations into improved methods for the delivery of dental care services and the prevention of dental disease.

Programs of assistance to ministries of health resulted in the initiation of a program in Venezuela in 1967 destined to provide basic dental epidemiological and sociological data together with a methodological basis for the effective planning of a national dental program. In 1969 the field survey and collection of data were completed under this project, which is a cooperative program between the Venezuelan Government, the Venezuelan Dental Association, and the three dental schools of the country. Assistance was also rendered to the Division of Dental Health in Nicaragua (1966) for the coordination of its programs with those of the National School of Dentistry, and an agreement was signed to provide assistance to the Social Security Administration in Venezuela.

In Colombia the Organization collaborated in the study on the availability of human resources in dentistry, and in Argentina in the initial planning of a program of manpower development. During 1967-1968 local health authorities were assisted in Chile (Concepción), Colombia (Medellín), and Venezuela (Zulia) in the design and operation of community facilities and the provision of dental treatment.

The Organization commenced a program for the fluoridation of public water supplies in 1967, with the cooperation of the W.K. Kellogg Foundation. During the period 1967-1969 this program, which is designed to train personnel and speed up the incorporation of this preventive dental health measure into national health plans and local water programs, conducted 10 courses for a total of 314 sanitary engineers from 24 countries and territories of the Hemisphere.

Technical assistance in the development of water fluoridation was furnished to Misiones and Santa Fe (Argentina); Bogotá, Medellín, Cúcuta, Santa Marta, Barranquilla, and Cartagena (Colombia); San José (Costa Rica); Quito, Cuenca, and Guayaquil (Ecuador); Mexico City; Lima and Arequipa (Peru); and

Caracas (Venezuela). Equipment to assist in the analysis of the fluoride content of water supplies was made available to the Government of Chile and to the Regional School for Sanitary Engineering in Guatemala.

Two international seminars were held: one designed for ministerial-level personnel responsible for water supplies in the countries and territories of the Caribbean, and the other a travelling seminar in the United States of America involving the additional training of six engineers from Colombia, Costa Rica, and Venezuela who were to work on fluoridation programs within their respective countries.

In 1968 the first fluoridation census of the Hemisphere was conducted. It indicated that 98 million persons were consuming fluoridated water, including 12 million in Latin America.

Apart from the problems associated with the development and availability of professional dental manpower, the Organization has directed its attention to other aspects of dental practice needing improvement and assistance in order to achieve more effective utilization of existing resources.

#### Dental Materials

A program for the development of a center for dental materials was initiated in 1966. Its basic objects were:

1. To encourage the improvement of the quality of dental materials used by public institutions and private practitioners.
2. To control quality of imported and local dental materials.
3. To establish national requirements for dental products.
4. To prepare teaching and research personnel in dental materials.

TABLE 40. PROGRESS OF CONTROLLED FLUORIDATION IN LATIN AMERICA, 1963-1968.

COUNTRY OR TERRITORY	NO. OF COMMUNITIES WITH WATER FLUORIDATION	
	1963	1968
Brazil	69	86
Chile	27	62
Colombia	7	5
Ecuador	2	2
El Salvador	1	1
Guatemala	1	—
Mexico	5	4
Panama	2	8
Paraguay	1	1
Peru	1	—
Venezuela	—	22
Netherlands Antilles	—	2
Total	116	193

5. To initiate applied research in dental materials, especially as related to large population groups.

The plan for the center was developed in conjunction with the W.K. Kellogg Foundation, the Dental Health Center of the United States Public Health Service, and the Ministry of Public Health and Social Welfare and the dental schools of Venezuela. The \$500,000 project, with a contribution of \$153,000 from the Kellogg Foundation, was dedicated at the Central University in Caracas in 1969. In conjunction with this project a survey of the utilization of dental materials and the teaching of this subject in dental schools of Latin America was also begun in 1969.

The development of auxiliary dental manpower continues to be of prime interest, and in 1967-1968 the Organization conducted a survey on the availability and utilization of such personnel in Latin America. The Government of Jamaica was completing the construction of a school, the first of its kind in the Americas, to train dental auxiliaries to provide dental services to school-children. This joint project has had the cooperation of UNICEF, which provided dental equipment for the school. The Organization also gave assistance in programs for the training of dental auxiliaries at the Universities of Zulia in Venezuela and Antioquia in Colombia.

Since Latin America does not produce dental equipment on an extensive scale, many countries have to import such equipment. In an effort to facilitate the acquisition of equipment and introduce modern concepts in regard to its specifications and use, the Organization gave assistance to the Municipality of Medellín and the University of Antioquia in the design and demonstration of simplified dental equipment. Such equipment has been subsequently tried out in Colombia and Venezuela. Assistance was also given in the setting up of a clinic in Argentina designed to increase the productivity of dental services. In conjunction with this project, a training course was held for some 10 auxiliary workers from all parts of the Province of Buenos Aires.

#### Research

The research on the effectiveness of salt as a vehicle of fluoride, initiated in the period 1962-1966 in cooperation with the U.S. Public Health Service and the Government of Colombia, was continued during the quadrennium. To date the studies have demonstrated that salt can serve as a vehicle for fluoride compounds; it has proved acceptable in a community preventive dental program involving four communities (some 28,000 persons) in Antioquia, Colombia.

In conjunction with the dental epidemiology program in Brazil, studies were initiated in 1967 on the effectiveness of certain self-applied topical fluoride agents in

the prevention of dental caries. This project has been conducted in collaboration with the Dental Health Center of the U.S. Public Health Service, for the purpose of investigating the efficacy of such agents as an adjunct to the fluoridation of water supplies or for use in areas where the fluoridation of water supplies is impractical.

Investigations have been started in connection with the program on dental materials. These investigations involve four studies, and a new concept in the prevention of dental caries—utilizing pit and fissure sealants—which in cooperation with the University of Zulia will be tested in the first community experience in the world. Protocols and final arrangements for the project have been completed. An additional project to test the application of intermediate simple dental materials, utilizing auxiliary personnel, at the University of Zulia and in Medellín, Colombia, was prepared in 1969 for initiation in 1970. Both investigations are being conducted in conjunction with the Division of Dental Health of the U.S. Public Health Service.

To summarize, PAHO/WHO activities in dental health have developed at a satisfactory pace, if available manpower is taken into account, and they will be carried forward in the future in collaboration with the Governments, in an attempt to solve the problems of dental disease in the Hemisphere.

#### VETERINARY PUBLIC HEALTH

The development of veterinary public health services within the ministries of health of many countries of the Hemisphere has brought about significant changes in this specialty. These services have generated increased requests from the countries for the Organization's technical advisory services, consultation on the design, preparation, and implementation of zoonoses control programs, and specifically, the organization of programs for training veterinarians as specialists in zoonoses control, food hygiene, and other aspects of veterinary public health.

Of outstanding importance to the activities of these services were the recommendations of the Special Meeting of Ministers of Health, which recognized the impact of the zoonoses on the economy and on food production in the Americas and the measures that should be taken by the Governments to organize programs for the control of these diseases. Subsequently, the Ministers of Agriculture, at their II Meeting, adopted resolutions concerning the zoonoses and the execution of national programs for their control, and also proposals for the long-term financing of the Pan American Zoonoses Center so as to cooperate in the activities being carried out by the countries.

The requests from the Governments have been met through the assignment of consultants to the different

Zone Offices. Veterinary public health consultants are currently attached to the Zone II, III, IV, and V Offices and the Field Office in El Paso, Texas. Consultation in Zone VI is provided by the professional staff of the Pan American Zoonoses Center. Since the assignment of these Zone consultants, broad programs of assistance in veterinary public health and veterinary medical education have been developed in many of the countries. As these programs progress, the countries recognize the need for greater expansion of veterinary medical services within their ministries of health and agriculture, and accordingly request assistance on a more extensive scale from the Organization.

Considerable progress has been made in many of the national rabies control programs with the help of these consultants, who have also provided advisory services and training assistance in the areas of brucellosis and bovine tuberculosis control and the epidemiology of zoonoses. Advances have also been made in understanding the problems of food hygiene and in the preparation and development of national and local programs to solve some of these problems. As part of its activities in the food hygiene field, the Organization sponsored and conducted the Annual Seminar on Food and Drug Control for Central America and Panama.

The results achieved in the rabies control program conducted along the U.S.-Mexico border and coordinated by the veterinary public health consultant in the El Paso Office were of major significance. Prior to that program, El Paso as well as Juárez, Mexico, had reported more cases of canine rabies than any two cities in the Hemisphere. Human cases of rabies and large numbers of bites by animals, particularly the stray dogs which were so numerous there, occurred all along the border. As a consequence of this program, started three years ago, no human cases have been reported, no epidemics of canine rabies have occurred, well over 80 per cent of the owned dogs have been vaccinated, and approximately 30 per cent of the estimated stray dog population has been captured and destroyed.

One of the important contributions to rabies control in the Americas has been the advisory assistance furnished by the Organization for the establishment of national rabies diagnostic laboratories and the training of many specialists in the fluorescent antibody technique as a routine procedure in rabies diagnosis. Also, a

better understanding of zoonoses control was gained as a result of the International Symposium on Health Aspects of the International Movement of Animals, held in San Antonio, Texas (28-30 August 1968) under the sponsorship of the Organization and the Conference of Public Health Veterinarians. More than 160 participants representing 18 countries reviewed in detail the problems associated with the movement of animals and animal products and their implications for public health.

To further strengthen the programs of zoonoses control, a Seminar on the Epidemiology of Zoonoses was held at the Pan American Zoonoses Center (August 1968) for 29 veterinarians and four physicians, representing 14 countries.

The veterinary public health consultant in Zone IV assisted the Government of Ecuador in coordinating the activities and mobilizing the resources of health and agriculture sectors in the campaign to control the outbreak of Venezuelan equine encephalitis. This epidemic caused thousands of clinical cases in horses, resulting in the death of many animals. Several human cases and deaths occurred. The consultant also helped with the coordination of the work between epidemiologists, virologists, veterinarians, and laboratory and hospital medical services.

The assignment of the veterinary public health consultant to Zone V, in January 1969, led to an increase in the activities undertaken in fields of zoonoses control, food hygiene, veterinary medical education, and other related services in cooperation with the federal authorities of Brazil. Assistance was rendered, in conjunction with the health authorities of São Paulo, in the design and preparation of a canine rabies control program. The consultant also helped to prepare and conduct a course on rabies diagnosis and production and control of rabies vaccine, which was sponsored by the Organization and held at the School of Veterinary Medicine in Belo Horizonte, Brazil, with 23 participants from the regional laboratories of the Ministry of Agriculture.

This brief account of PAHO/WHO activities in veterinary public health reflects the steady advances that have been made, and it is to be hoped that in future years the rate of progress will be even greater as the Governments intensify their efforts to curb the losses caused by zoonotic diseases to both individuals and the economy.

## OTHER HEALTH SERVICES

### PUBLIC HEALTH LABORATORIES

During the four-year period reasonable progress was made in the improvement of health laboratory services in Latin America. While the need for these services is

well recognized, the development of adequate laboratories is still lagging. Some advances have been made in extending health services to the rural areas, but in many countries concomitant laboratory services have not been provided to support the available medical services.



The Organization has attempted to assist the Governments by providing fellowships for training specialist personnel from almost all the countries of the Americas, and by assigning regular staff members and short-term consultants to furnish technical advice on the organization and strengthening of central laboratories and to cooperate in specific activities such as the production and control of biological products for the treatment and prevention of infectious diseases, establishment of animal colonies, organization of virological diagnostic laboratories, and improvement of immunological techniques. Other services have included the provision of biological reagents, reference services for the assay of vaccines, sponsoring of courses on bacteriological and serological techniques, and advice on the selection of laboratory equipment and methods.

In 1966 advisory services were rendered to Colombia, to assist in the planning of a new building for the National Institute of Health. A consultant was made available to Brazil to assist in the establishment of a virological diagnostic laboratory at the Oswaldo Cruz Institute in Rio de Janeiro, where studies on enteric viruses were pursued. The laboratory played an important part in the investigation of outbreaks of poliomyelitis and other paralytic diseases in the States of Guanabara and Rio Grande do Norte. An agreement was signed with Venezuela to extend assistance in the development of the Laboratories Division of the Ministry of Health and Social Welfare.

Some countries recognized their inability to strengthen their national laboratories utilizing solely their own resources and sought outside assistance for this purpose. Advice was furnished to Peru on the preparation of a plan and application for assistance from the Inter-

American Development Bank for financing and building a new National Institute of Health. Advice was also given on the preparation of applications to the UNDP for assistance in modernizing the National Institutes of Hygiene, Epidemiology, and Microbiology in Cuba and the National Health Laboratories in Mexico. The plans for both projects were completed and were submitted to the UNDP for consideration.

Perhaps the most significant progress has been made in the production and control of biologicals. In 1966 the Organization assisted the National Institute of Microbiology in Buenos Aires by providing technical information and equipment, including a freeze-drying unit. A long-term consultant was assigned to the National Institute of Health of Colombia to assist in the preparation of pertussis and diphtheria vaccine.

#### Smallpox Vaccine

Past failures to meet the goals of the continent-wide smallpox campaign were due largely to the lack of adequate supplies of good-quality vaccine. To overcome this problem an agreement was concluded with the Connaught Laboratories (Canada) to furnish consultant services for the following purposes:

- 1) Assessment of the status of all laboratories in Latin America producing smallpox vaccine, in regard to physical facilities, procedures in force, staff, and testing facilities.
- 2) Recommendations for improvements in facilities, staff, and procedures.
- 3) Making available the services of a standard reference laboratory in Toronto.

This program was begun in 1967. All laboratories



Extensive drug control work is done in the Central Federal Control Laboratory in Brazil.

producing smallpox vaccine were visited and recommendations made for their improvement, and they were encouraged to submit samples of all smallpox vaccine produced to the Connaught Laboratories for testing. As a result of the program, the quality of vaccine has markedly improved. Most countries are now producing a good quality freeze-dried vaccine which meets the minimum requirements established by WHO.

#### Other Vaccines

Although considerable progress has been made in the preparation of a good-quality smallpox vaccine by the various countries, similar progress has not been realized in the production and control of other vaccines. Beginning in 1969, the Connaught Laboratories agreed to extend their advisory services to include all types of vaccines produced by the official laboratories of Latin America.

The production of biologicals for the treatment and prevention of infectious diseases is an important function that may be required of a national laboratory when other facilities are not available, but a significant number of Latin American countries do not produce such biologicals. Although they are needed for immunization programs, the demand in some countries is insufficient to permit production on an economical basis.

For many years the Organization has collaborated with Brazil and Colombia in the production of the yellow fever vaccines needed for control of yellow fever in Latin America. In 1967 a short-term consultant studied the production of this vaccine in Colombia with the objective of standardizing the techniques in use in Latin America in accordance with WHO recommendations. Brazil, in addition to producing yellow fever vaccine needed for its own use, maintains a stock of nearly 5 million doses which are available for shipment to any country when needed. The Organization is also collaborating with Mexico with the aim of producing poliomyelitis vaccine in sufficient amounts to meet the needs of all the Latin American countries. It has also been assisting the Government of Guatemala in planning a project for the production of biologicals for all of Central America. This project, approved by all the Ministers of Health of the area, has reached the final stages of a feasibility study. If this study proves to be satisfactory, the project will be financed by the Central American Bank for Economic Integration.

#### DRUG CONTROL

The people of Latin America are spending, directly or indirectly (through taxes, etc.), more than \$1,500,-000,000 per year for drugs. Until recently, the countries

imported most of these drugs, but as the result of national laws enacted to stimulate domestic drug production, they now manufacture approximately 90 per cent of the drugs consumed in their territories. Thus, the drug manufacturing industry of Latin America has expanded greatly within the last few years and will continue to do so in order to satisfy the increasing requirements of the population.

There are many technical problems involved in manufacturing drugs, some of which are very difficult to overcome. It is for this reason that health officials, particularly those in countries that are only now developing a strong technical base, are concerned over the quality of the drugs distributed.

The Organization has pointed out on a number of occasions that in order to ensure good drug quality, a country should have a modern drug control law which is administered by a well-coordinated agency staffed by highly trained administrators, inspectors, and analysts and supplied with adequate funds to carry out a high level of drug control activity.

In order to assess the situation in the various countries, PAHO/WHO conducted a continental survey in 1968 which produced the data shown in Table 41. This information, along with the Organization's suggestions for improvement, was presented in a report to the Special Meeting of the Ministers of Health. That meeting adopted a number of important decisions which, together with the report, provide a comprehensive set of principles that will serve as a guide for the drug control activities of the countries and the Organization in forthcoming years.

PAHO/WHO continued its program of assistance both to individual countries and to groups of countries on a regional basis. Experts were sent to make comprehensive studies of the drug control situation in Brazil, Costa Rica, and Uruguay, and to study the government drug testing laboratories in Mexico, Peru, and Venezuela. The results of these studies were submitted in formal reports to the Governments concerned.

The Organization made a rapid survey of the drug control situation in Jamaica, Guyana, and Trinidad and Tobago at the beginning of February 1969, and on the basis of the partial information obtained made recommendations to the Conference of Health Ministers of the Caribbean (Trinidad, 11-14 February 1969), concerning the possibility of intergovernmental action to deal with the drug control problems of the countries of that area.

Since 1965 the Organization has sponsored annual seminars for the food and drug control officials of the countries of Central America and Panama. These seminars are useful for providing information to such

TABLE 41. DRUG CONSUMPTION AND DRUG CONTROL DATA FOR 1968.

COUNTRY	ESTIMATED RETAIL COST OF DRUGS CONSUMED PER YEAR (IN US\$)	NO. OF DRUG MANUFACTURING ESTABLISHMENTS	GOVT. EXPENDI- TURE FOR DRUG CONTROL PER YEAR (IN US\$)	NO. OF GOVT. DRUG INSPECTORS	NO. OF SCIENTISTS TESTING DRUGS FOR GOVT.	GOVT. DRUG CONTROL EXPENDITURE PER \$1,000 OF DRUGS CONSUMED
Mexico	400,000,000	700	650,000	40 <sup>a</sup>	15	1.6
Brazil	350,000,000	600	240,000	41 <sup>a</sup>	35 <sup>a</sup>	0.7
Argentina	250,000,000	350	1,300,000	20	45	5.2 <sup>b</sup>
Venezuela	110,000,000	80	334,000	7	27	3.0
Colombia	90,000,000	100	90,000	16 <sup>a</sup>	13 <sup>a</sup>	1.0
Peru	60,000,000	70	80,000	5	10	1.3
Chile	50,000,000	60	164,000	24 <sup>a</sup>	13	3.3
Ecuador	22,000,000	30	90,000	2 <sup>a</sup>	24	4.1
Uruguay	22,000,000	30	24,000	7 <sup>a</sup>	5	1.1
Guatemala	22,000,000	30	4,000	3	0	0.2
El Salvador	18,000,000	20	15,000	3	2	0.8
Nicaragua	18,000,000	17	20,000	7 <sup>a</sup>	3 <sup>a</sup>	1.1
Dominican Republic	15,000,000	35	45,000	7 <sup>a</sup>	13 <sup>a</sup>	3.0
Panama	12,000,000	2	92,000 <sup>c</sup>	9 <sup>a</sup>	27 <sup>a</sup>	7.7 <sup>c</sup>
Costa Rica	12,000,000	14	16,000	1 <sup>a</sup>	12 <sup>a</sup>	1.3
Honduras	9,000,000	14	15,000	1	3 <sup>a</sup>	1.7
Jamaica	9,000,000	7	12,000	6 <sup>a</sup>	3 <sup>a</sup>	1.4
Trinidad and Tobago	8,000,000	7	12,000	7 <sup>a</sup>	0	1.5
Bolivia	8,000,000	6	12,000	1 <sup>a</sup>	3	1.5
Haití	4,000,000	2	4,000	2	0	1.0
Barbados	2,000,000	3	2,000	0	0	1.0
West Indies	500,000	0	...	0	0	
British Honduras	400,000	0	...	0	0	
United States of America	7,000,000,000	2,100	32,000,000	380	450	4.5

<sup>a</sup> These personnel spend only a portion of their time performing drug control work for the Government.

<sup>b</sup> This rate of Government expenditure is due to a recent Argentine law taxing drug control producers 0.75% of their sales to support the Government's drug control program.

<sup>c</sup> Of the \$92,000 listed as Panama's annual expenditure for drug control.

\$80,000 relates to that portion of the cost of Panama's Specialized Analysis Laboratory attributable to testing samples submitted by firms wishing to sell drugs in Panama. It performs such registration analyses on a fee basis and is self-financing in that the fees collected for sample testing cover the cost of operation.

... No data available.

officials, as well as for developing a spirit of collaboration among them.

The Special Analysis Laboratories at the University of Panama plays a leading role in stimulating interest in drug control at these annual seminars. The Organization helped to establish the Panama Laboratories and continues to promote the use of its services.

The Organization moved forward with the project (started in 1965) for establishing a regional drug institute in Uruguay which will serve all countries of the Americas by providing advanced training for drug analysts and other officials of the national drug control agencies, supplying those agencies with drug control information, conducting research to improve testing procedures, helping the countries to select the best kind of drug testing equipment, and serving as a reference laboratory. Assistance was given to the architect appointed by the Government of Uruguay to develop plans for the building to house the proposed institute. The Government is now engaged in developing a procedure for financing its construction.

During recent years, there has been a significant increase in the number and variety of requests from the

Governments for information relating to drug control. The Organization supplied the requested information and also assisted many of the countries to increase their trained manpower by providing fellowships for drug analysts.

With much encouragement from PAHO/WHO, the last few years have produced a noticeable increase of interest and action among government officials in regard to improvement of their drug control agencies. This is evidenced by the recent rapid growth of Argentina's drug testing laboratory, the measures being taken by Mexico to strengthen its laboratory, the continuing stability and effectiveness of Panama's drug testing laboratory (which exerts a useful effect on the other countries of the Central American area), the impending reorganization and strengthening of the drug control agency of Brazil, and the significant improvements in some aspects of drug control in Venezuela and Uruguay.

Unfortunately, the drug control activities of most of the countries are restricted by lack of funds. The great value of adequate financing is well illustrated by the case of Argentina, which in 1967 enacted a law requiring drug manufacturers and importers to turn over

to the Government 1 per cent of their gross sales. Of the money so obtained, one-fourth is used by the Government for supporting basic medical research, and the remainder for drug control purposes. The ample funds obtained by means of this law have enabled Argentina to develop an excellent laboratory base for assuring high quality drug production in that country.

It is to be hoped that with the establishment in the near future of a regional drug institute in Uruguay, an important step forward will have been taken in this field, which deserves ever-increasing attention by the health authorities.

## FOOD HYGIENE

Food-borne diseases continue to be a constant health hazard for man. The threat of transmission of these diseases has increased steadily in the Hemisphere during the last decade because of the mass migration of populations from rural areas to urban centers, the rapid transporting of animals and foodstuffs, environmental pollution, concentration of animals for feeding and handling, and changes in food habits and food-preparation techniques. Among the social, cultural, and economic effects of this population movement has been the development of food-handling conditions which are often less sanitary than those in the interior or rural areas themselves. The overcrowded conditions, the less natural environmental influences, and the problem of quantity of available food have created further hazards for this population in its efforts to re-establish itself under better economic conditions.

Food hygiene continues to be the responsibility and an important activity of the health services of the countries and of the Organization, because:

1) It is a duty to prevent foodstuffs from serving as vehicles for toxin-carrying infective agents and non-infectious chemicals.

2) It is a duty to preserve food, especially the protein-rich food of animal origin, essential for human nutrition.

Such was our thinking when, at the II Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, we stated:

The Governments of the Americas have clearly decided progressively to reduce the incidence of foot-and-mouth disease because it means the loss of proteins essential to children under 5 years of age whose mortality annually accounts for 45 per cent of all deaths. Evidence has been repeatedly produced to show that well-nourished children resist environmental assaults, especially infectious diseases and those of a psychological nature, whereas the malnourished child—a by-product of underdevelopment—

rapidly falls victim to them. Among the survivors there is a growing proportion whose impaired intellectual development is reflected in the inability to learn and to grow. Malnutrition in the final months of pregnancy and in the first six months of life gives rise to as much as a 30 per cent reduction in the number of brain cells; these are the findings of research studies being carried out with the collaboration of our Organization.

In most countries there are no programs adequate to protect the population from infected or contaminated foods or to control the abuse of food additives or preservatives. Nor do many of the countries have food analysis laboratories or trained personnel for field or laboratory work. Meat inspection programs are restricted to large slaughterhouses or warehouses in the major cities and are usually understaffed. Milk or milk-products control services carry out only limited sampling and the analysis is generally for economic and not for health purposes. For example, the 1967 outbreak of brucellosis involving more than 2,000 human cases in Lima, Peru, resulted from the ingestion of unpasteurized goat cheese containing the *Brucella melitensis* agent.

With the use of modern technology, the food industry has developed rapidly in recent years in Latin America. This technology has been the result of scientific progress, but the control of the food as a public health service has failed to keep pace with these technological advances. The use of antibiotics as additives to preserve meat and fish, or of toxic preservatives and additives that may be carcinogenic, underscores the need



Technicians take samples in retail food establishments to verify quality.

for adequate control of food processing, preparation, and preservation.

Some countries, such as Argentina, Brazil, and Venezuela, are making efforts to improve their food control services in regard to registration and analysis of processed products. However these countries, like many others, are confronted with a serious problem owing to the lack of trained personnel for the supervision and technical observation of food production, preparation, warehousing, and retail distribution.

### Seminars

One of the significant achievements in food hygiene was the adoption by the Governments of the Central American countries, in 1966, of sanitary standards for food and drugs. Consultants from the Organization cooperated with these Governments in the III Seminar on Food and Drug Control for Central America and Panama (San José, Costa Rica, June 1967). The discussions and conclusions dealt with the need for legislation on food and drug control, for the establishment of standards, for the licensing and analysis of products, and for competent inspection procedures.

A regional food-analysis reference laboratory for Central America and Panama has been proposed to assist in meeting these countries' requests for assistance in food hygiene.

The IV Seminar on Food and Drug Control for Central America and Panama (San Salvador, El Salvador, June 1968) reviewed the accomplishments of each country in implementing the recommendations of the three previous Seminars, especially in regard to the use of minimum food standards prepared by the Organization and the licensing and analysis of foodstuffs. Included in these standards were principles of labeling, laws and regulations for the use of food additives, control of pesticide residues in food, and basic principles for the standardization of laws and regulations concerning importation of food.

Educational and procedural activities in food hygiene were reinforced at the international, regional, and national levels during the quadrennium. Contributing to this progress was the WHO-sponsored Interregional Seminar on Food-Borne Diseases and Intoxications and Food Hygiene Practices (Copenhagen, Denmark, August 1969), which was attended by eight professional workers from Latin American countries (Argentina, Brazil, Colombia, Costa Rica, Mexico, Peru, and Venezuela). The participants, drawn from the medical, veterinary medical, and other professions related to public health and food hygiene, discussed the major food-borne diseases and intoxications in both the Americas and the European Region.

In 1969 the V Seminar for Central America and Panama was held in Managua, Nicaragua, under the Organization's sponsorship and in collaboration with the Nicaraguan Ministry of Public Health. The Organization provided the advisory services of Headquarters and Zone III staff. The main topics of discussion were food intoxication, use of gas chromatography equipment in food analysis, drug standards, use of plastic containers, and standardization of food colors.

Consultation on food hygiene was furnished to Argentina, Brazil, British Honduras, Colombia, Guatemala, Honduras, and Uruguay. The Governments of Brazil and Colombia were assisted with the organization, preparation, and conduct of two training courses.

Through the Zone Veterinary public health consultants, assistance was rendered to the countries of the Region in various aspects of food hygiene, especially those related to inspection, processing, and preservation of foods of animal origin. Technical information on food hygiene was furnished to health and agricultural agencies throughout Latin America.

During this period the greatest obstacle to the achievement of objectives in food hygiene in general was the lack of trained professional and technical personnel to assume responsibility for inspection and surveillance.



Gas chromatography unit for analysis of residues of pesticides in foods, in the food analysis section at INCAP.

In addition to the health hazard of transmission of diseases through food, great wastage and deterioration of food have been observed in countries which are experiencing losses of animal protein and where food production itself is insufficient. Although there has been improvement in food hygiene in the Americas as a result of the legislation adopted in some countries, this has not been enough to accomplish what is really necessary to solve the problems and adequately protect the public. Great efforts are needed for the training of professional and technical staff in food hygiene practices in order to bring about closer cooperation between the health services and those engaged in the food industry and food trade.

## HEALTH AND RADIATION

The application of nuclear technology and radiation in the field of medicine has resulted in spectacular progress, as it has in industry, agriculture, and research. This progress has brought with it the responsibility for evaluating and taking measures to avoid the hazards to health which the use of these tools entails. This is a task for the public health services, and one in which the Organization has been providing assistance and support for a number of years.

PAHO/WHO has cooperated with the countries in the formulation of radiation protection, hygiene and surveillance programs, fostering their application in the interests of public health and encouraging the adoption of adequate safeguards. Special attention has been paid to the following points in the drawing up of these programs:

- a) Identification of sources of radiation and of environmental contamination.
- b) Drafting of legislation and regulations.
- c) Training of personnel.
- d) Coordination of the programs of national and international agencies that carry out related activities.
- e) Promotion and coordination of research in the field of radiobiology.

During the period 1966-1969 the Organization gave assistance in these activities to Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guyana, Jamaica, Nicaragua, Peru, Trinidad and Tobago, Uruguay, and Venezuela.

A survey was started with the aim of standardizing nomenclature for the presentation of data and laying the bases for evaluating the existing and planned manpower and material resources at the regional level. The program for the surveillance of radioactivity levels in air, water, and food was continued in order to detect possible risks to health from radioactive fallout produced

by the detonation of nuclear devices. This study is being undertaken in cooperation with the USPHS National Center for Radiological Health and is utilizing a network of air sampling stations located in Buenos Aires, La Paz, Santiago, Bogotá, Guayaquil, Quito, Cuenca, Georgetown, Kingston, Lima, Caracas, and Trinidad. The study also includes measurements of samples of milk obtained from stations in Bogotá, Santiago, Guayaquil, Montego Bay, Lima, and Caracas.

The Organization also assisted with the installation of film dosimetry laboratories to measure exposure levels in persons exposed to radiation by reason of their work; such assistance was given to Bolivia, Chile, Colombia, Ecuador, and Peru.

Some countries of the Americas have already enacted legislation governing radiation protection. The Organization's health and radiation unit prepared a model law of this type and also gave advice to one country on the preparation of the pertinent provisions of its health code.

### Training and Courses

The course for the training of physicians in the clinical use of radioisotopes continued to be given at the Latin American Center established in the El Salvador Hospital, connected with the University of Chile. The program is sponsored by the University, the Chilean National Health Service, the W.K. Kellogg Foundation, and the Organization. By the end of 1969, nine annual courses had been held for a total of 34 physicians from different Latin American countries.

The Organization assisted with the annual basic training courses at the national level organized in Argentina, Chile, Colombia, Costa Rica, Ecuador and Nicaragua, and in 1966, jointly with WHO and the U.S. Public Health Service, it organized an international course on radiological inspection.

Assistance has also been given to candidates from different countries in obtaining fellowships, thus helping with the training of radiophysicists and radiotherapists.

### Coordination

Particular emphasis has been placed on coordination of the programs of national and international agencies working in the radiation field, in order to achieve better utilization of available manpower and equipment and to properly channel, without duplication, the resources furnished through international technical assistance. Close cooperation is maintained with WHO Headquarters, and there is constant contact also with the International Atomic Energy Agency (IAEA) with respect to programs under way in the Americas.

One of the major joint achievements was the preparation of a manual of clinical radiation dosimetry, based on the recommendations of a meeting of experts convened by WHO, IAEA, and PAHO (Caracas 1968), which will be distributed in 1970. Early in 1967, the manual *Basic Science Review*, originally prepared in English by the U.S. Public Health Service, was translated into Spanish and printed. The purpose of this manual is to acquaint those studying radiation problems with the basic principles of mathematics, physics, chemistry, and biology that they need for their studies. The Inter-American Nuclear Energy Commission, at its VII Meeting in 1969, approved a resolution calling for cooperation with the Organization in the development of its radiological safety programs.

### Research

The research on manganese poisoning in occupationally-exposed persons was continued. A consultant from the Organization is coordinating these studies, which are being conducted at the Catholic University Medical School in Chile with the assistance of the Brookhaven National Laboratories in the United States of America. The results so far achieved have made an important contribution to the understanding of the metabolic manifestations of several neurological disorders and their therapeutic implications.

The Biophysics Institute of the University of Brazil, the Department of Physics of the Catholic University in Rio de Janeiro, and the U.S. Atomic Energy Commission have continued their studies on the effects of chronic exposure to high background radiation in some areas of Brazil.

### Radioisotope Techniques

The use of these techniques in clinical research has progressed rapidly and researchers have had to make considerable efforts to keep abreast of the new applications. In order to coordinate and facilitate a part of the work being done by different groups of researchers in the Americas, the Organization has arranged for a meeting of a scientific group, in 1970, for the purpose of establishing a multinational coordinated research program in nuclear medicine.

### Radiation Protection

A Working Group on Radiation Protection met in Guayaquil at the end of 1969 under the auspices of the Government of Ecuador and the Organization. This meeting drew attention to the considerable progress achieved in Latin America in the field of health and radiation and recommended measures to enable national

health authorities to consolidate or formulate specific programs for radiation protection. The Group recognized the responsibility of those authorities in the matter and the need to coordinate the activities of institutions carrying out related activities. It also defined the components of such programs—such as adequate information media, trained personnel, and pertinent legislation—and laid special stress on the importance of multinational programs.

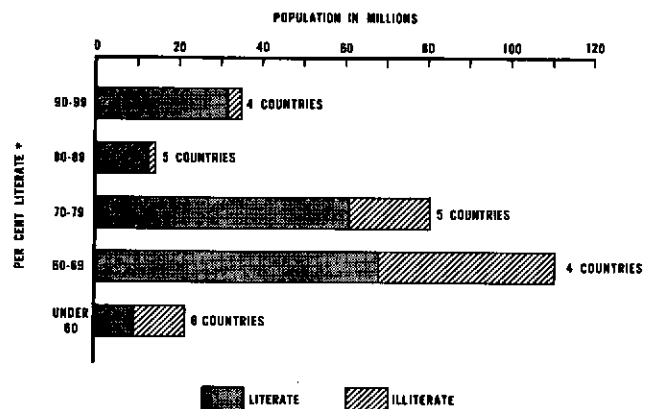
## HEALTH EDUCATION

There have been marked changes in the theory and practice of health education in the Americas during the four-year period under review.

The application of the new concept of health as an essential component of socioeconomic development, and the recognition of the important part played by social and cultural environment in the problems of health, have led to the need to give new direction to health education so that it may fully achieve its purpose of promoting favorable behavioral changes in the individual, the family, and the community.

Even when adequate health services are available, social and cultural patterns may form a considerable barrier to any modification of health habits. Among the significant factors of this type in the Americas are illiteracy or low educational level, economic and social differences between population groups, language differences within one and the same country, insufficient community awareness and concern regarding public health, and beliefs and practices rooted in superstition and "folk medicine."

While in 1966 almost all the Latin American countries had health education services, some of these services lacked the necessary orientation, organization, and



\* Based mainly on census data around 1960

Fig. 50. Distribution of population in Latin America by level of literacy in the countries.

resources with which to fulfill their basic functions satisfactorily. For various reasons, their activities amounted to little more than provision of information or public relations. They usually operated without liaison with similar activities conducted in other sectors such as general education, land reform, social service, community development, and agricultural cooperatives and extension work. In the Caribbean area only three countries had health education services.

The educational functions and responsibilities of the different professional members of the health team were not clearly defined. Everything was usually left to the specialists, little attention being given to the responsibility of the entire staff for health education work. There were, moreover, not enough specialists (Table 42) and a good proportion of the personnel of the health agencies had not received appropriate training.

The Organization's efforts, therefore, were directed primarily to assisting the Governments to review the orientation of their health education services. To this end it sponsored a series of meetings on a Hemisphere scale. One of them, the Latin American Seminar on Health Education in relation to Health Planning (Paracas, Peru, 20-26 April, 1969), discussed the most feasible means of strengthening and integrating the social and educational components in the health planning process, and sought to define those areas in which research was most urgently needed in order to facilitate this process and establish indicators to assist with the evaluation of education campaigns in the health and behavioral sciences and their inclusion in the health planning methodology. The Seminar also defined the role of educators as members of the health team.

The Regional Seminar on Postgraduate Preparation of Health Workers in Health Education and Behavioral

Sciences (Buenos Aires, Argentina, 28 August-5 September 1969) reviewed health education policy and suggested changes in the curricula in this discipline at schools of public health in the light of present-day requirements.

For the purpose of demonstrating quantitatively the specific value of health education as an essential part of health programs, a small working group convened by PAHO/WHO prepared the bases for conducting an evaluation of the educational component of some of the health projects undertaken by various countries with the Organization's assistance. The intention was to develop suitable instruments and indices with which to assess behavioral changes in individuals and groups subjected to health education.

Several Governments were assisted with the analysis of administrative structures within the health ministries at the various levels of operation, in order to identify key points where health education specialists could exercise greater influence over the orientation and supervision of educational activities conducted by health and related services and to increase the effectiveness of health education among the different population groups. Special attention was paid to the countries of the Central American Isthmus and of the English-speaking Caribbean area, where effective coordination between official and voluntary agencies and community groups has been achieved through local health committees. The Organization also helped to reformulate the organizational and operational bases of health education services in Bolivia, Brazil, Colombia, Cuba, the Dominican Republic, and Peru.

Health education has been made part of over-all family guidance within the maternal and child health programs, with a view to encouraging proper health

TABLE 42. PERSONNEL IN HEALTH EDUCATION IN THE AMERICAS, 1967.<sup>a</sup>

AREAS OF THE REGION	MINISTRIES OR DEPARTMENTS OF HEALTH				OTHER GOVERNMENTAL AND VOLUNTARY INSTITUTIONS
	SPECIALISTS IN HEALTH EDUCATION		OTHER PERSONNEL IN HEALTH EDUCATION SERVICES		EXISTING SPECIALISTS
	EXISTING	MINIMUM NECESSARY	EXISTING	MINIMUM NECESSARY	
Canada	7	1	11	11	27
United States of America	511 <sup>b</sup>	714	86 <sup>c</sup>	40	33
Latin America	232	740	210	565	40
Caribbean	8	28	17	20	5
Total	758	1,483	324	636	105

<sup>a</sup> According to PAHO/WHO survey.

<sup>b</sup> In the case of the U.S.A. the information (including Puerto Rico) was obtained from the schools of public health according to the places of employ-

ment of the graduates in health education. The information applicable to Columbia University is not included because of lack of data.

<sup>c</sup> Data available only for Puerto Rico.



habits in the family group and inducing parents to help ensure, as far as they are able, a healthy and productive life for their children. Advisory services in these activities were rendered to the Governments of Colombia, Jamaica, and Trinidad and Tobago.

It is evident that, from the health point of view, a properly structured, organized, and supervised school system constitutes a most valuable tool for directly influencing not only the families of schoolchildren but also the entire population of the district, especially in rural areas, through effective health education programs. In most countries, however, schools had not been effectively and systematically used for this purpose. The basic facts about health were not always taught in the schools and the pupils' needs and interests in regard to both local and national health problems were not taken into account. For this reason the Organization has encouraged and assisted the Governments to give due attention to health education activities but in the schools and in teacher-training institutions. In this connection, WHO and UNESCO jointly published the manual *Planning of Health Education in Schools*, which was distributed to the Governments concerned, and PAHO prepared and distributed in Spanish a health education guide on rabies, the first of a series of such guides on major health problems in the Americas designed especially for teachers. Several countries, including Argentina and Brazil, requested the Organization's assistance in reviewing their school health education programs.

As a result of the intensified community promotion activities in rural water supply programs in Central and South America, carried out with PAHO/WHO assist-

ance, the benefited communities in some areas are contributing between 10 and 20 per cent of the construction costs of the systems, plus their contribution toward financing their operation and administration. In the same way, the educational activities in the malaria eradication campaigns in the Central American Isthmus and Surinam have promoted extensive voluntary cooperation by local communities in the collection of blood specimens from febrile cases and in collective treatment. The most typical example is Surinam where, despite the diversity of ethnic and cultural groups, the population's initial resistance has been overcome, due in no small part to good health education work.

By the end of the quadrennium, some of the Caribbean countries and territories that had lacked health education services had begun to organize such services and to recruit suitable staff for them. This was particularly the case in Barbados, Dominica, Grenada, and St. Vincent. For their part, Jamaica, Guyana, and Trinidad and Tobago drew up plans to strengthen and extend their services so as to achieve greater coverage.

The establishment of a Health Education Working Group that meets annually and whose conclusions and recommendations are endorsed by the Central American Public Health Council has facilitated the joint action by the Governments and the Organization to increase the effectiveness of these services in the Central American Isthmus.

Although there is much that remains to be done, the progress made in health education in the period 1966-1969 has laid a foundation for further advances in the years to come.

## RESEARCH DEVELOPMENT AND COORDINATION

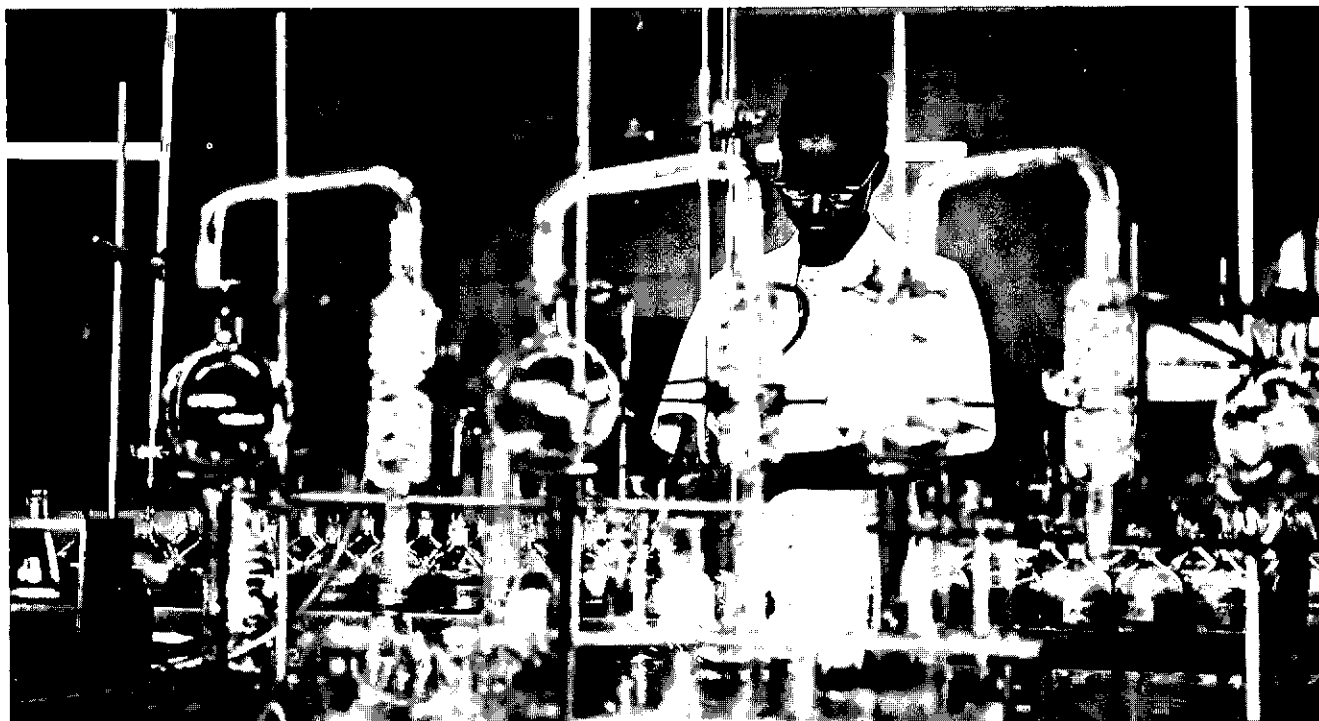
In response to the new policy directions for research set forth by the Presidents of America in 1967, an expanded PAHO/WHO research program was conceived and put into operation during the quadrennium. It is based on the following broad aims:

- To increase the capacity of the peoples of the Americas to protect themselves against the major diseases that affect them.
- To help improve the effectiveness of health expenditures in the nations of the Hemisphere.
- To elevate, through close association with research, the quality of the training of physicians and biomedical research workers and to strengthen the institutions that educate them.
- To establish conditions that will encourage more

physicians and health-related scientists to remain in their own countries.

- To promote and support health research in priority areas and to coordinate these programs with activities sponsored by other international and national bodies.
- To strengthen the existing capacity for biomedical research and research training of institutions in Latin America, and to tie them together more effectively.

Research is an indispensable means of uncovering the causes of disease, finding remedies, and guiding the use of resources. The inclusion of research in a total health program is ultimately justified because of its favorable effects on levels of health. In earlier years it was argued that a health agency, especially one that deals primarily with countries in which many disease



Medical research laboratory in Trinidad.

problems can be resolved by applying known remedies, should concern itself not with securing new knowledge but rather with making use of the vast body of information already available but not being applied. This argument is no longer accepted; experience has shown that active research efforts must be carried on to ensure, among other things, that existing knowledge is effectively used.

Thus, the Organization is committed to expanding its program of research and to helping the Governments to strengthen their own programs in this area. In order to deliver its services more effectively, it established a Department of Research Development and Coordination.

#### ADVISORY COMMITTEE ON MEDICAL RESEARCH

Guidelines for the Organization's research program are provided by this Advisory Committee, which meets once a year to review the needs and resources for biomedical research in Latin America and to suggest the fields of research that the Organization might properly cultivate. Its counsel and recommendations are taken carefully into consideration in the setting of priorities.

In response to specific suggestions by the Advisory Committee, and often in connection with its annual meetings, panels of distinguished scientists are convened

to explore a variety of topics of current interest. In 1966, in a special session on life at high altitudes, consideration was given to the problem of man's natural and acquired acclimatization to anoxic environments—a subject of special significance in the Western Hemisphere, where several million people reside at altitudes of over 10,000 feet. The following year, attention was directed to the immunologic aspects of parasitic infections, including the outstanding problems in the host-parasite relationship in these infections and the complexity of the antigenic structure of the parasite and of the response of the host. In addition, a special symposium was held on drug resistance in human malaria. A 1968 panel reviewed the biomedical challenges presented by the American Indian and stressed the urgency of studying such populations from a multidisciplinary perspective—drawing upon ecology, anthropology, medicine, and genetics—before these primitive groups disappear entirely or become acculturated. The perinatal factors affecting human development—the many factors that may act during pregnancy, labor, and early life and can interfere with the normal development of the infant—were examined at the special session of the Advisory Committee in 1969, and a symposium also held in conjunction with that meeting dealt with the subject of iron metabolism and anemia, with presentations on topics ranging from the basic concepts of the chemistry and biochemistry of iron to the epidemio-

logical and therapeutic aspects of the anemia problem. The proceedings of each of these scientific meetings were published in the Organization's Scientific Publications Series.

In 1966 the Advisory Committee also devoted special attention to the problem of the migration of health personnel, scientists, and engineers from Latin America. A report on this subject, prepared at its request (Scientific Publication PAHO 142), reviewed the importance of these professional groups to the national economies and to the intellectual, cultural, and political future of the countries concerned. In particular, the study identified the characteristics and size of the migrating groups, analyzed the forces leading to migration, and recommended measures that would reconcile the legitimate aspirations of highly trained individuals with the needs of the countries for trained manpower.

During its more recent meetings, the Advisory Committee has also given consideration to studies in nutrition, physical growth, and mental development; comparative childhood mortality in the Americas; leprosy; field studies with long-acting antimalaria drugs; dental health; geographic distribution and possible northward movement of Venezuelan encephalitis virus in Central America and Mexico; and the role of molecular biology in health and medicine.

Finally, the Committee maintains under continuous review the progress of research funded by both the Organization and outside sources in such broad fields as nutrition, communicable diseases, environmental health, reference and training center activities, health manpower, and medical education.

The expanded research program endorsed by the Advisory Committee in 1968 calls for the work to be carried out through the following means: implementation of research and research training projects in fields



Special session on perinatal factors held during the 1969 Meeting of the Advisory Committee on Medical Research.

that are directly relevant to health problems in the Hemisphere; promotion of multinational cooperative efforts among biomedical scientists so as to make the best possible use of existing resources for research and research training; strengthening of communication among biomedical scientists in the Hemisphere; and improvement of the effectiveness of health expenditures through the application of operations research methodologies to the planning and administration of public health programs.

These phases of activity, taken together, form the framework of the Organization's current research program. Under each of them, specific undertakings have been initiated—and some of them carried to completion—during the quadrennium.

## RESEARCH AND RESEARCH TRAINING PROJECTS

The Organization uses several approaches for supporting and implementing these efforts. It has been learned, for example, that financial assistance to independent investigators for projects of their own selection is a highly effective means of promoting research. Accordingly, a research grants program offers assistance in areas related to the general objectives of the Organization. The research projects in which it is interested may be supported by the Organization itself or by outside sources. There were exactly 100 such undertakings in progress at the end of 1967. A volume entitled *Research in Progress*, containing summaries of these activities, is published regularly. Its most recent edition, with information as of December 1969, will appear in 1970.

The program on virology offers an example of results achieved from a PAHO/WHO-coordinated research activity. Devoted to the study of the ecology of arboviruses, especially the role of migratory birds in the spread of these viruses in temperate and tropical areas in the northern part of the Hemisphere, this effort has been focused on the study of encephalitis viruses transmitted by arthropods in Mexico and Central America.

During the period 1966-1969, seven arboviruses were isolated for the first time from Mexico, including Venezuelan encephalitis and St. Louis encephalitis viruses (Table 43). In 1967 Venezuelan encephalitis virus was isolated from British Honduras and from the Atlantic and Pacific lowlands of Guatemala, and in the same year eastern encephalitis virus was isolated from the Petén in northern Guatemala. The isolations established the endemicity of these important human and equine pathogens in areas where they were previously unknown. The dramatic success of the field program is due in large part to the discovery that the hamster is

TABLE 43. ARBOVIRUS ISOLATED FOR THE FIRST TIME IN MEXICO AND NORTHERN CENTRAL AMERICA IN A PROGRAM SPONSORED BY PAHO.

ARBOVIRUS	MEXICO	GUATEMALA	HONDURAS	BRITISH HONDURAS
Venezuelan encephalitis virus	I,M,C,E,W,B	I,E,C	C	C
Eastern encephalitis virus	—	C	—	—
St. Louis encephalitis virus	B	—	—	—
Nepuyo virus	C,M	C	C	—
Patois virus	M,C	C	—	—
Zegla virus	C	C	W,C	C
Tlacotalpan	M	—	—	—

C = Centinel hamsters. I = In man.  
M = Mosquitoes. W = Wild mammals.  
E = Equines. B = Birds.

highly sensitive to infection with low levels of Venezuelan encephalitis virus and only slightly less sensitive to infection with some other arboviruses.

The role of wild birds and mammals and domestic animals—including poultry, pigs, cattle, and horses in Mexico and Guatemala; pigs and rodents in Honduras; and pigs in British Honduras—in the ecology of Venezuelan encephalitis virus has been extensively studied. Following the 1969 epidemic in Guatemala, a special effort was made to ascertain the role of domestic animals, including dogs, as amplifiers of virus in close association with human habitation.

In addition to the isolation and identification of viruses from field materials, laboratory studies on Venezuelan encephalitis virus have been carried on as well. These have included a comparison of the virulence of strains isolated from diverse hosts over most of the geographic range of the Venezuelan encephalitis virus complex; studies on the reaction of a spectra of laboratory animals and baby chickens, cotton rats, and wild birds to infection with the virus; and an evaluation of the cross-protection to virulent strains of the virus provided by previous infections with the naturally attenuated or vaccine strains.

This program has also been productive in the area of research training. Since its inception, 33 individuals have received field training in research methods in virology, ornithology, ecology, and tropical medicine. The trainees were from Jamaica, Mexico, Peru, the United States of America, and from countries outside the Hemisphere as well. In addition, public health professional and auxiliary personnel from Guatemala, Honduras, and Mexico have been directly associated with these training activities and have thus gained field experience in areas of epidemiology and field research not previously available to them.

Another effort in the area of advanced training in research is the grants program in clinical medicine, which was initiated in late 1968 with financial assistance

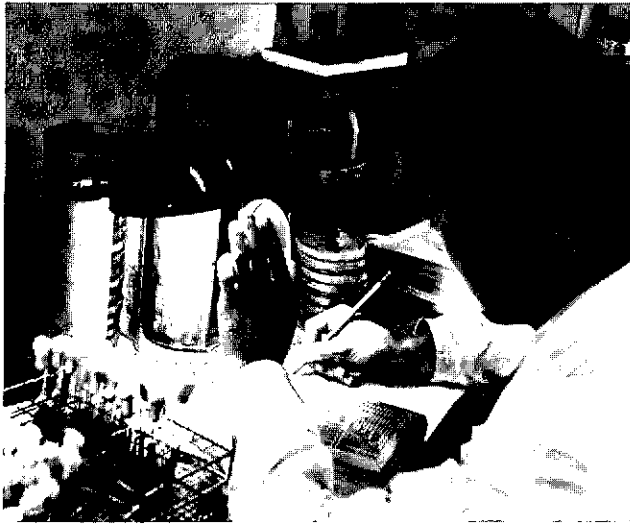
from the Wellcome Trust. This program is specifically designed to take advantage of the training potential of institutions and laboratories in Latin America and the Caribbean area whose research activities are well recognized. Grantees—nationals of the countries in Latin America and the Caribbean—are selected preferably from among physicians with less than five years' post-doctoral experience who are actively engaged in research in medical or allied sciences and who need further study abroad to increase their experience.

The immediate aim of the program is to increase the research capability and output of individual workers in all areas of clinical medicine. It has been intentionally structured to offer the following advantages: the trainees will be more closely oriented toward the problems and conditions they are likely to find in their own countries when they return; there will usually be no language barrier, so that much loss of time will be avoided; and the exchange of research workers generated by this undertaking will help to promote an intellectual common market in the region indicated.

#### MULTINATIONAL PROGRAMS

Biomedical research in Latin America is characterized by strong points in practically every discipline related to health and medicine, but these points tend to be specialized and isolated. Resources are so scarce that every effort must be made to combine forces and overcome the handicaps inherent in separate, specialized, and relatively limited research activities. The Organization looks upon the development of multinational programs for research and research training as an important step toward the solution of this problem.

One field to which the multinational approach has been applied is immunology. This discipline has received special attention because of the prospects it offers for early diagnosis and for the development of better vaccines against the diseases of public health



A scientist examining cultures at the Microbiology Laboratory of INCAP.

importance in the Americas. In particular, it is hoped that research in this field will lead to ways of immunizing against parasitic diseases such as malaria and that it will provide insights into the problems of autoimmune and other immunopathological disorders and cancer.

The Organization has established two Immunology Research and Training Centers, one in São Paulo and the other in Mexico City, which operate in coordination with three other WHO centers outside the Hemisphere. The students, who come from all parts of Latin America, are exposed to a research atmosphere and learn by example how research of high quality is conducted. Whenever possible, diseases of local public health importance are used as models for the training given.

The center at São Paulo was established in 1966 at the Paulista School of Medicine and in January 1969 was transferred to the Butantan Institute. To date, four annual eight-month courses have been given at the postgraduate level, and in 1970 it is planned to offer a program of four months' duration, which will receive students from Brazil and other countries as well. Its research activity has included work on the responses of patients with Brazilian pemphigus foliaceus to treatment with immunosuppressive drugs; on the biological significance of the heterogeneity of immunoglobulins for the purpose of determining which ones afford protection against infectious agents and which ones contribute to tissue damage by hypersensitivity reactions (allergy and immunopathology); and on the mechanism of hemorrhagic reaction produced in the skin of normal laboratory animals by the sera of Brazilian pemphigus foliaceus patients. Future research will concentrate on the immunochemistry of venoms and antivenoms of the

two major groups of snakes in Brazil: *Crotalus* and *Bothrops*.

The center in Mexico City began combined operations during 1969 using the laboratory facilities and permanent staff of seven cooperating institutions. It offers a unique three-year training program leading toward the Master's or Ph.D. degree, and it also gives shorter courses and seminars at the postgraduate level. Research is being carried on in the following areas: immunochemical analysis of carbohydrate antigens in mycobacteria; immunoglobulin levels in malnutrition; the role of the common antigen (Kunin) of *E. coli* in infant diarrheas; antigenicity of IgG in various states of aggregation, and its implications in immunological tolerance and rheumatoid arthritis; complement components in rabbits in relation to immune responses, including rejection of transplants; immunochemical properties of polysaccharides from *M. tuberculosis*, *M. leprae*, *N. brasiliensis*, *N. asteroides*, and *K. rhinoscleromatis*; systemic lupus; anti-enzyme antibodies; laboratory models of anaphylaxis; erythrocyte groups and other genetic markers in normal and atopic populations; cell-mediated immunity in lepromatous and tuberculoid leprosy; anti-DNA antibodies in collagen diseases; experimental induction of anti-nuclear antibodies by different pharmacological agents; collagen antigenicity; delayed hypersensitivity with special reference to cytotoxic effectors; and production of antibodies to guinea pig macrophages.

It is hoped that the provision of initial PAHO/WHO support to these centers of excellence will lead to their eventual establishment as a continuing feature in the respective host institutions.

## BIOMEDICAL COMMUNICATION

As part of the effort to promote communication among biomedical scientists in the Hemisphere, a continuing program of scientific meetings and symposia is being carried on. In addition to the special sessions held in conjunction with the annual meetings of the Advisory Committee on Medical Research, international conferences have been convened on a number of subjects of broad and immediate public health importance.

The PAHO/WHO International Conference on Vaccines against Viral and Rickettsial Diseases of Man held at the end of 1966, brought together 280 scientists from 27 countries. The Conference reviewed current knowledge in this field and called attention to directions and needs in vaccine research. It also reported on the latest results from chemotherapeutic and other approaches to the control of these diseases. The proceedings of the

Conference were published in a special volume early in 1967 (Scientific Publication PAHO 147).

In preparation for an international symposium on mycoses, a consultant from the Organization visited institutions in Argentina, Brazil, Colombia, Mexico, and Venezuela in late 1969 to determine the status of work in the field of medical mycology as carried on in these countries.

Another facet of the communications effort is the series of PAHO/WHO Lectures on the Biomedical Sciences. In 1967 Professor Abel Wolman spoke on the theme "The Unreasonable Man," and in 1968 Professor Joshua Lederberg dealt with the subject of "Health in the World of Tomorrow." The texts of these two lectures were issued as Scientific Publications PAHO 152 and 175, respectively.

The Organization also has the commitment to improve communication through the occasional publication of research findings in fields of special public health interest in the Americas. In this connection, a monograph summarizing current knowledge on Argentine hemorrhagic fever was published and distributed in 1969 (Scientific Publication PAHO 183).

#### Regional Library of Medicine

The exchange of information among biomedical scientists in the Hemisphere has been enhanced greatly by the activities of the Regional Library of Medicine in São Paulo, Brazil. The Library was established in response to an urgent need for improved medical library resources and services in South America.

A survey conducted by the Organization in 1965 had revealed serious deficiencies in the supply of information to the biomedical community, a shortage of trained

library personnel, and a lack of awareness of modern procedures for the analysis and retrieval of scientific information. At a meeting of the U.S. National Library of Medicine attended by representatives of PAHO/WHO and of other institutions interested in this field, it was recommended that a central core of bibliographic resources be developed to better serve the Latin American biomedical community. Finally, with support from the Brazilian Ministries of Health and of Education and Culture, the U.S. National Library of Medicine, and the Commonwealth Fund, the Regional Library was formally opened in April 1967 on the premises of the Paulista School of Medicine. In January 1968 a full-time director was appointed.

From an initial collection of approximately 15,000 volumes, including journals and monographs, the Library doubled the size of its holdings to 30,000 volumes within two years. Acquisition by subscription increased from 400 titles in 1967 to 1,200 in 1968 and 1,300 in 1969. During the same three years, a total of 25,202 journal issues were received from the U.S. Book Exchange and added to the collection. By using these issues to fill gaps in the serials holdings, the Library at the end of 1969 was well on the way to its goal of a complete collection of 1,200 selected periodicals from 1960 onward.

Seven subcenters in Brazil—Fortaleza, Recife, Salvador, Brasília, Rio de Janeiro, Belo Horizonte, and Pôrte Alegre—have been identified as the basis of an interlibrary network within the country. Once these libraries' resources are pooled and operations throughout Brazil are fully established, the Regional Library will cooperate with national centers elsewhere in South America. Already in 1969 gift and exchange activities

Regional Library of Medicine, São Paulo, Brazil.



were conducted with 188 libraries in Brazil and 363 similar institutions in other South American countries.

Interlibrary loan services were initiated within Brazil in January 1969, and in the course of the year 12,085 requests from 90 Brazilian libraries were processed: approximately 51 per cent were satisfied from the Library's own resources, 14 per cent by other libraries in the São Paulo area, and 35 per cent by the U.S. National Library of Medicine. During the same period, 66 reference requests were received for special bibliographies; of these, 41 were fulfilled using the resources at the Regional Library and 25 were submitted to the National Library of Medicine for retrieval by the computer-based Medical Literature Analysis and Retrieval System (MEDLARS). With the experience gained from its operations in 1969, the Regional Library hopes to have the necessary base for extending interlibrary loan services to other South American countries on a full scale in 1970.

The Directing Council has requested the Director to study ways of increasing the financial and technical resources of the Library and to explore the possibility of partial self-financing. It has also pointed out the need to begin the program for training staff in modern procedures for the collection, classification, and use of bibliographic information in the biomedical sciences.

This is a program whose future development will help to accelerate and improve both teaching and research in the biomedical sciences in Latin America.

## OPERATIONS RESEARCH

One of the chief problems faced by health administrators in Latin America is how to make the most effective use of the limited resources available to them. Operations research supplies the scientific methodologies so that administrators can arrive at the best possible solutions for establishing orders of priorities, determining the bases upon which choices can be made, and developing objective means for deciding on the relative effectiveness of different programs.

Accordingly, in November 1968 a unit was established within the Department of Research Development and Coordination to promote the application of operations research methodologies to the description and solution of public health problems so as to obtain maximum returns on investments in this sector. These methodologies are currently being applied to health planning, blood bank operations, manpower studies, and the determination of a typology for the countries of the Americas based on mortality structures. Advisory services in this field are available to the Governments.

## NUTRITION RESEARCH

### Endemic Goiter

Nine laboratories and research units in eight countries (Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, and Venezuela) are now participating in the PAHO/WHO Collaborative Study on Endemic Goiter and Cretinism. Epidemiological and socioeconomic data were collected and the use of intramuscular injections of iodized oil as a means of preventing goiter was investigated in Ecuador and Peru. Interim appraisals were made of the thyroid status of adult population treated with iodized oil by intramuscular injection. Preliminary results showed substantial reduction in prevalence of goiter and in the size of enlarged glands in the communities.

The Third Meeting of the PAHO Scientific Group on Endemic Goiter took place in Puebla, Mexico, in June 1968. The meeting reviewed the status of this public health problem in the Americas and analyzed the results of the various research projects under way, giving special attention to the results obtained with iodized oil in Ecuador and Peru. On the basis of these findings a protocol was formulated detailing the conditions of use and the methodology of this alternate form of prophylaxis for endemic goiter and cretinism. This information has been made available to the Governments. The report of the Scientific Group was published and distributed by the Organization (Scientific Publication PAHO 193). This compendium of 34 scientific papers includes the significant research on endemic goiter and related defects carried out by the participants in the past two years.

The Iodine Reference Laboratory in Santiago, Chile, was completed in 1966 and started its training activities late in the year. During the quadrennium it continued to strengthen its program of endemic goiter studies through the checking of duplicate samples from collaborating laboratories, and helped to improve the techniques through training of personnel. The Laboratory trained six technicians and undertook 2,138 determinations of  $I^{127}$  in biological samples.

### Nutritional Anemias

The PAHO/WHO Collaborative Study on Nutritional Anemias was continued actively with the collaboration of research units in Argentina, Brazil, Colombia, Guatemala, Mexico, Paraguay, Peru, Trinidad and Tobago, the United States of America, and Venezuela. The Reference Laboratory for the study of nutritional anemias at the Venezuelan Scientific Research Institute trained research workers from seven collaborating laboratories in hematological techniques and completed

more than 2,000 laboratory determinations of hematological indices for national and international investigators.

The Second Meeting of the PAHO Scientific Group on Nutritional Anemias took place in August 1968 in Caracas, Venezuela. The data on the epidemiology of this group of diseases collected in collaborating laboratories in recent years was analyzed and discussed. Specific recommendations were made for preventive measures through local health services; gaps in knowledge were identified; and future research areas were defined. The report was prepared and distributed in 1969.

### Hypovitaminosis A

Hypovitaminosis A and its severe ocular manifestations of xerophthalmia and keratomalacia have been identified as public health nutrition problems in various parts of the Hemisphere. A complete analysis of all available data on vitamin A intake in the Americas was undertaken for the purpose of defining the extent of the problem of vitamin A deficiency.

A Technical Group was convened by PAHO/WHO in November 1968 to define the nature of the problem and make recommendations for specific preventive measures. It also identified gaps in scientific knowledge and defined areas in need of further research. The report of this Group was prepared for publication in 1970.

### Maternal Nutrition and Family Planning

Relatively little information is available to health services in the Americas on the subject of maternal nutrition and its relationship to patterns of reproduction. A Technical Group was therefore convened to consider critically different aspects of the problem, taking into account biological, socioeconomic, and cultural factors and the interrelations of program activities in nutrition and family planning. The report of the Group summarized the evidence reviewed and conclusions reached. Since several gaps in knowledge were identified, recommendations for research were made that will help to orient future investigations. The report was prepared for publication and distribution in 1970.

### Nutrition and Mental Development

In recent years increasing attention has been paid to the relationship between nutrition and mental development, and a number of studies on this subject are under way or planned in Latin America. PAHO/WHO has assisted by providing short-term consultants and training fellows for the development of project Chile-4201, on brain development in malnourished children.

The current interest in studies on the interrelationship of nutrition and development has led to an increasing demand for the training of Latin American scientists in basic and clinical research in this subject area. To meet these requests, a training program for professional personnel is being planned by the Organization in close



Psychological tests are an important part of the longitudinal study to determine the effect of nutrition on mental growth and development.



cooperation with the Government of Chile, the University of Chile, and Cornell University (U.S.A.)

In 1968 the nutrition component of the Inter-American Investigation of Mortality in Childhood was actively developed during the planning and pilot study stages of that project. By placing considerable emphasis on nutrition status prior to and at the time of death in preschool-age children, it is expected that more quantitative estimates of the contribution of malnutrition to childhood morbidity and mortality can be made in the future. Preliminary reports indicate that up to 70 per cent of the preschool deaths in some areas may be associated with malnutrition.

#### Nutrition and Chronic Diseases

The Organization's publication *Patterns of Urban Mortality* identified chronic diseases as a public health problem of considerable magnitude. Recent epidemiological research has identified nutritional aspects of these diseases as being of particular importance. Obesity, diabetes, and arteriosclerotic heart disease have significant nutritional aspects. Relatively little information is available on the interrelationship of nutrition and chronic diseases in the Caribbean area and Latin America. A consultant was appointed to visit 10 representative countries of the Hemisphere: Argentina (Buenos Aires); Brazil (São Paulo); Chile (Santiago); Colombia (Bogotá and Cali); Guatemala City; Jamaica (Kingston); Mexico City; Peru (Lima); Uruguay (Montevideo); and Venezuela (Caracas). The purpose was to collect information on nutrition-related chronic diseases, particularly obesity, diabetes, and arteriosclerotic heart disease. The report will be available for distribution during 1970.

#### Nutrition Surveys

At the request of the Ministry of Public Health and Social Welfare of the Dominican Republic, a national nutrition survey was carried out by the Research Corporation with the close cooperation and advice of PAHO/WHO technical staff. The general objective was to reveal the principal food and nutrition problems that affect the most vulnerable population groups, in order to establish practical measures for their solution. A report will be prepared during 1970.

The research and training programs of the Institute of Nutrition of the Federal University of Pernambuco (Recife, Brazil) were further strengthened with a view to meeting the local needs and promoting nutrition activities in the health services of northeastern sector of the country.

Investigations were continued for the modification

and improvement of Incaparina-type foods and the improvement of cereal food crops. PAHO/WHO field staff participated in clinical and acceptability testing of protein-rich foods in Brazil, Peru, and Trinidad and Tobago.

Operations research aimed principally at evaluating the functioning of nutrition rehabilitation centers was conducted in Brazil (Recife), Colombia, Guatemala, and Haiti and plans were made for similar studies in Peru.

As a means of strengthening nutrition research, the Organization rendered assistance to the recently created Latin American Nutrition Society and to its quarterly journal *Archivos Latinoamericanos de Nutrición*, the first issue of which was published in December 1966.

That same year the Organization again sent to Chile a short-term consultant to cooperate in the updating of the protocol for the research project on the biodynamics of vitamin D in osteomalacia, which was submitted to the U.S. National Institutes of Health for financial support.

#### INCAP Research Programs

The research activities of INCAP were reoriented and the order of priorities adjusted in accordance with the needs uncovered by the nutrition surveys in the member countries, the progress in scientific knowledge, and the technical resources available for solving the major problems in the Central American area.

Special attention has been given to research aimed at improving the quality of the diet. Among the significant studies are those on both experimental animals and children to establish the nutritive value of genetically improved varieties of corn, in particular Opaco-2. It



Corn, basic cereal used in food for large segments of the population of the Central American area, is studied for the purpose of improving its nutritional value.

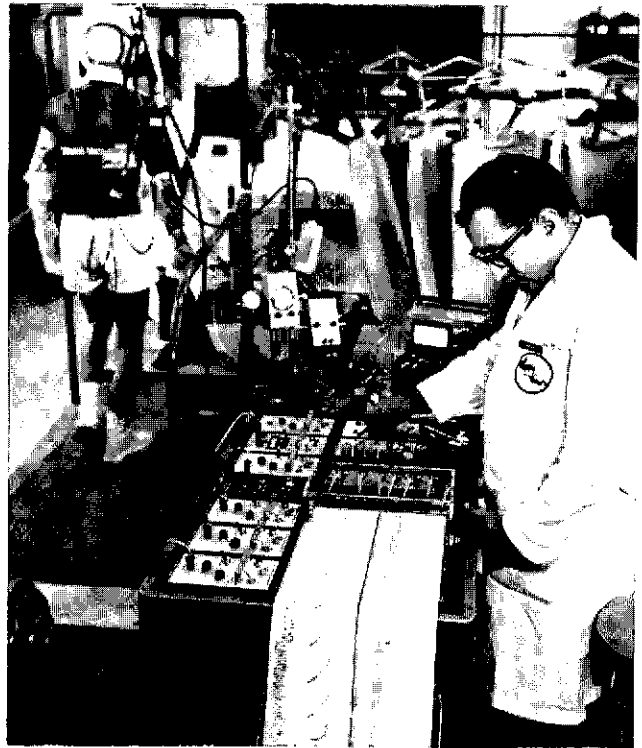
was demonstrated that these highly nutritious varieties are suitable for use in tortillas and other traditional, corn-based food preparations in the area.

Other important research has been undertaken to explore various forms of enrichment to improve the protein value of traditional foods. Research studies have been completed on fortifying grains and cereal products with synthetic amino acids or with various protein concentrates, or both. The first practical application of the study findings was the enrichment with lysine of the Incaparina formula produced in Guatemala. This made it possible to correct slight deficiencies in the formula with regard to this essential amino acid, and also to bring its nutritional value closer to that of milk. On the basis of these studies, researchers are exploring the possibilities of fortifying grains commonly used in the Isthmus, as well as the various products made from them.

Another area of intensified activity was the search for sufficiently sensitive methods to make it possible to diagnose, and even quantify, the light to moderate forms of protein-calorie malnutrition. The surveys conducted in the six member countries of INCAP revealed that the currently available methods are not adequate for this purpose. Therefore, two biochemical methods which appeared to be very promising were tested: (a) determination of the relationship between essential and non-essential amino acids in blood plasma, and (b) the creatinine/height index (CHI), which estimates the degree of muscularity of an individual by relating urinary excretion of creatinine to height. Both methods are being carefully evaluated under experimental conditions to determine their potential value and application in the study of general population groups.

In the studies of the factors responsible for malnutrition, particular attention was given to environmental factors as distinguished from dietary ones. The effect of infections was studied, especially the diarrheal processes, and the effect of colonization of the intestine from early infancy by abundant flora which, while they may not be responsible for disease, could interfere with adequate nutrition in various ways. These studies have resulted in very significant observations which prove the importance of environmental sanitation and of specific protective measures against various infectious diseases, both in the preventive programs and in those of nutritional rehabilitation.

In other research studies, advances were made toward gaining a fuller understanding of anemia associated with protein-calorie malnutrition. On the basis of the findings, important recommendations were formulated for improved treatment of this condition, and new research has been undertaken to find practical means, through



At the work physiology laboratory of INCAP, studies are made of the influence of nutritional status on physical work capacity.

public health activities, for the prevention of nutritional anemias.

Considerable progress was made in other research to assess the relative role of malnutrition and other factors limiting the physical and mental development of children. It was possible to develop and evaluate the methodology required by these complicated studies, and field work was begun on a long-range project aimed at clarifying many questions that still exist about this problem, which has great importance both for the countries of the area and for others which have similar nutritional and ecological conditions.

There were also significant advances in the studies to demonstrate the unfavorable effects on work capacity and productivity of subclinical, chronic, and non-apparent forms of malnutrition in adults, forms which, according to the INCAP studies and other similar ones, affect a large proportion of the inhabitants of most Latin American countries. The importance of this research on child growth and development and on physical work capacity of adults lies primarily in the fact that it will provide guidelines in regard to the relative priorities of the efforts to improve diet and nutrition in the different age groups and, in addition, will make possible a more precise evaluation of the damage produced by nutritional deficiencies and consequently the better planning of pro-

grams of both the health sector and other sectors as well.

The results of INCAP research activities were circulated through 253 scientific articles published in widely recognized journals, and they served also as the basis of various reports and documents presented to interested Governments and organizations. These studies have enabled INCAP to maintain the scientific standing required for its effective functioning as a center of advanced education and as an advisory and collaborative agency in the nutrition field.

#### Program of the Caribbean Food and Nutrition Institute

The Institute's research activities are related to practical problems of high priority. They are interdisciplinary and collaborative in character and are designed to promptly feed back data for planners and for the initiation, orientation, modification, and evaluation of preventive programs.

Where clinical or laboratory research is required in connection with a research project in the field, the Institute seeks the cooperation of existing centers, preferably those in the Caribbean area. Whenever possible, its research is carried out in active collaboration with the staff of relevant governmental departments, voluntary bodies, and international agencies. It cooperates with centers, units, and schools in the Caribbean or abroad to develop joint projects of short or long duration.

The following collaborative studies have been completed: a rapid survey of childhood malnutrition in St. Vincent; an investigation of cultural concepts of marasmus in rural Jamaica; the cost-availability of foods in the Caribbean; the arm circumference as a public health index of malnutrition; the financial cost of malnutrition; and the interrelationship of nutrition and schistosomiasis in St. Lucia.

At the request of the Government of Barbados, a full-scale national food and nutrition survey was carried out in May 1969 jointly by staff of the ministries of health, agriculture, and education of Barbados, by CFNI staff and students, and by PAHO/WHO and FAO colleagues. The survey was based on the home-visiting of a randomly selected 1 per cent sample of the households of the country, and included biomedical examinations (clinical, anthropometric, hematologic, biochemical); dental examination and sociocultural inquiries (knowledge and beliefs concerning nutrition, health, and young child feeding practices); socioeconomic data (household characteristics, family income and expenditure); food consumption (families and vulnerable groups); food production and economics (national, local, and family levels).

Rapid analysis of the 750,000 items of information was undertaken by computer and the preliminary results were presented four weeks after the end of the survey. A complete analysis of the data will be presented in early 1970.

At the request of the Government of Trinidad and Tobago, a national food consumption survey was initiated by the Institute, jointly with the National Nutrition Unit and the Ministries concerned with this field. Data collection will be completed in early 1970.

Collaborative investigation of current methods of young-child feeding in the Caribbean was continued by CFNI staff and students, and by other national and international staff in the area. Results will be available from Antigua, Barbados, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts-Nevis-Anguilla, St. Lucia, St. Vincent, and Trinidad and Tobago for a CFNI technical group meeting to be held in 1970, and they will form the basis of a publication to be entitled "Guidelines to Young-Child Feeding in the Contemporary Caribbean."

As a follow-up of the CFNI Conference on Protein Foods in the Caribbean (Georgetown, Guyana, July 1968), a joint FAO/WHO-PAHO/CFNI team undertook a two-month survey (October-November 1969) to assess the feasibility of producing and marketing within the Caribbean area, a protein-base processed food derived mostly from locally grown ingredients, for use by families, and especially young children.

#### PROGRAMS OF THE PAN AMERICAN ZONOSSES CENTER

This Center, although a relatively new institution, has made marked progress in laboratory and field research activities that seek to throw further light on the complexities of the zoonoses. There is a great potential for further advances in this field. As a result of its expansion and the extension of its activities on a regional scale, the Center possesses a staff with a wide range of experience as well as the necessary facilities to enable it to develop research programs in greater depth.

##### Brucellosis

The work undertaken in connection with this disease has taken the form of both laboratory and field research, directed primarily to the isolation of *Brucella* strains in human and animal cases from various Latin American countries. Some of the field investigations have included serum agglutination tests on large numbers of animals to determine the prevalence of the disease in areas in which there are large concentrations of livestock, especially cattle, sheep, and goats. Research on phages associated

with strains of *Brucella* has been carried out with a view to determining strain-specific bacteriophage which will aid in the identification of the new *Brucella* isolates.

Other laboratory procedures were studied in order to develop a rapid diagnostic test for use in the detection of ram epididymitis. Vaccine study trials have been conducted with a live attenuated vaccine of *Brucella abortus* in combination with a heat-killed culture of *B. suis* to determine the efficacy of this product against swine brucellosis. The Argentine Zoonoses Institute cooperated with the Center in this project. Other vaccine trials were conducted, using safety tests on different strains of *B. abortus* employed in the production of vaccine.

In two large dairy establishments where 9,500 animals were kept solely for milk production, a brucellosis eradication program was undertaken in association with the Government of Argentina as part of the Center's research activities. The program included vaccination of calves between 3 and 6 months of age using *B. abortus* strain 19 vaccine and the serum agglutination test to detect reactors, with subsequent isolation and slaughtering. This program made it possible to reduce the prevalence of the disease from 26 per cent in 1960 to less than 1 per cent in 1969.

#### Rabies

Most of the research undertaken by the Center in the past four years has been on rabies. Outstanding in this program were the studies evaluating the various vaccines available for the protection of cattle. Their purpose was to find a method of protection against paralytic rabies in cattle transmitted by vampire bats. The presence of this disease has been confirmed in all but two or three countries of the Americas. It is a major problem in Bolivia, Brazil, Mexico, Paraguay, and Venezuela and in the northern part of Argentina. Large-scale outbreaks have occurred in many parts of Paraguay, and in Mexico the annual losses from this disease are in the neighborhood of \$10,000,000. The total losses in all the countries affected in the Americas are of the order of \$50,000,000 a year. The studies of various vaccines for the protection of cattle included a comparison of levels of neutralizing antibodies developed in cattle over periods of one, two, and three years. In conjunction with these studies, research was undertaken on the transfer of neutralizing antibodies against rabies from the vaccinated cows to their calves, in order to determine whether passive immunity was acquired by these young animals as a short-term protection.

At the same time, other investigations were conducted in which 17 heterogeneous strains of rabies virus from 17 different countries were examined to determine their



Extensive research on rabies is conducted at the Pan American Zoonosis Center.

virulence and immunogenicity for the purpose of selecting one of them for vaccine use and serum production and possibly for challenge purposes in research.

Probably the most outstanding contribution to rabies epidemiology and control was the continuing effort made by the Center to improve diagnostic procedures, such as the preparation of biological reagents for fluorescent antibody tests and the standardization of diagnostic agents and antigens for vaccine production. Determined efforts were also made to improve the quality control of rabies vaccine.

Studies were made on purification of the virus by centrifugation and chromatography with a view to developing an antigen free of undesirable substances. Other rabies research studies were those concerned with reference control of vaccines, development of a serologic test for rabies, interference between rabies and other viruses, nonfatal rabies in dogs, ecological and virological studies of bat rabies, comparative studies of different schedules of postexposure antirabies vaccination in humans, sensitivity of tissue culture systems for the isolation of latent rabies virus, and evaluation of a corneal test as an ante-mortem laboratory method for rabies diagnosis.

The ecological studies initiated in northern Argentina on vampire bats have a very important bearing on the problem of bovine rabies in South America. Biotelemetry measurements of these bats were made in order to obtain a better understanding of their ecology. For these studies, miniature radio transmitters weighing less than 10 grams were used; these were attached to the bats, which were then set free. A radio receiver prepared especially for this purpose was employed to detect and record the direction and distance of the bats' flight. For the first time it was possible to determine by mea-

surement the exact moment and direction of flight and the location of the habitat of these mammals.

### Hydatidosis

The Center has carried out considerable research on hydatidosis in an attempt to determine the efficacy of various chemical compounds for treating the *Echinococcus granulosus* parasite in the dog. These studies on anthelmintic drugs have shown that some chemicals are effective against mature parasites but their capacity to reduce the number of immature parasites in the host is very limited. Research was also conducted on the purification of antigens from *E. granulosus* hydatid cyst fluid. These studies on the diagnostic value of this purified antigen were made with a group of 100 patients from Argentina, Chile, Peru, and Uruguay.

In connection with these studies on human cases, a rapid and reliable system for the production of a specific antiserum was developed. With this procedure, large quantities of antiserum were produced for use at the Center and as a standardized reagent in other laboratories of the Americas.

For the purpose of improving the diagnosis of ovine hydatidosis carriers, immunological studies were conducted with infected and noninfected sheep; serologic responses were measured by hemagglutination and immunoelectrophoresis tests.

### Tuberculosis

The addition of a tuberculosis consultant to the Center's staff made it possible to carry out several applied research projects in the tuberculosis field. Large numbers of cattle and swine were given the intradermal tuberculin test and many milk samples were examined for the presence of the organism. Samples of pasteurized milk for human consumption from various sources in the greater Buenos Aires area were analyzed to determine the effectiveness of the pasteurization technique against tubercle bacilli.

### Laboratory Animals

In 1968 a consultant on laboratory animal production and management was added to the Center's staff to provide technical advice to the Governments and institutions using such animals for diagnosis and research.

A survey on the production and care of laboratory animals in Latin America was conducted with a view to determining how best to meet the needs in 15 Latin American countries. The results of this survey showed that 90 per cent of laboratory animals are produced in Argentina, Brazil, Colombia, Mexico, and Venezuela.

Approximately 46 per cent of the organizations using laboratory animals are teaching institutions.

## PROGRAMS OF THE PAN AMERICAN FOOT-AND-MOUTH DISEASE CENTER

The Center's Research Section has continued its basic studies designed to investigate more thoroughly the characteristics of the foot-and-mouth disease virus, with special reference to lasting immunization, the survival of the virus, and development of the asymptomatic carrier. These activities have been directed toward improvement of existing foot-and-mouth disease vaccines and the investigation of those providing better and more lasting immunity. Studies are being made of the classic form of inactivated virus vaccines, of modified live virus vaccines, and of some of the so-called "oil-type" vaccines. Research is also being conducted on the preparation and maintenance of a strain collection of various subtypes of foot-and-mouth disease virus regarded as epidemiologically significant and adapted to the Frenkel method and BHK-21 tissue culture cells and embryo organs and tissues. Efforts are also being made to simplify the tests for determining the efficacy of the vaccines in order to provide a more reliable product for field campaigns.

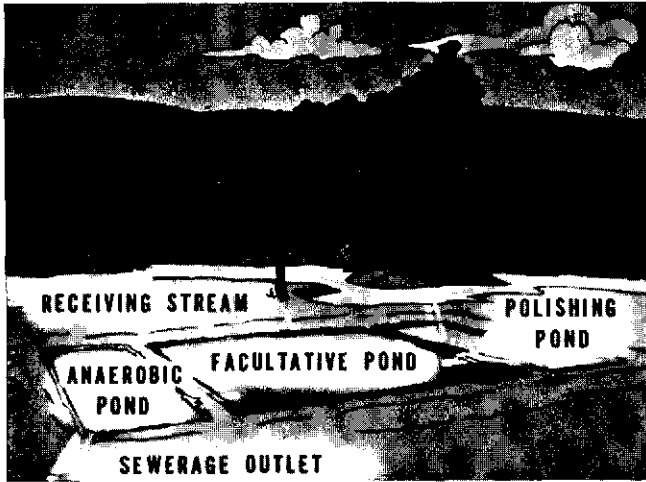
Many of the Center's research efforts are concerned with tests to detect carrier animals. Studies have been made on the immunization of cattle, sheep, and swine with inactivated vaccines. Among the activities related to vaccine development were the studies conducted with modified live virus used in tissue culture systems containing mutagenic agents that produced a mutant virus with a loss of pathogenic characteristics but retaining its immunogenic properties. This work has a very important bearing on the future use of modified live viruses in the immunization procedures in national campaigns.

## SANITARY ENGINEERING RESEARCH

The Organization decided to assist the research work undertaken in the engineering schools of the universities of the Hemisphere, following the surveys made by the Batelle Memorial Institute.

The very favorable results of this action are already being felt. The National University of Engineering of Peru established an Applied Research and Continuing Education Center in 1967, staffed by two full-time and one part-time professors and possessing its own, if limited, premises and laboratory.

In 1966 the Organization-supported program in the Region began with four research projects; in 1967 there were 11 projects and in 1968, 16. By 1969 there were



Sketch showing several types of stabilization ponds. Several research projects for the improvement of these ponds are under way in the Americas.

20 projects in progress, covering a wide range of aspects of sanitary engineering.

In this program, which is organized on lines similar to those used in continuing education, small subsidies and limited amounts of materials and equipment are provided as a catalyst for larger investments made by the universities. The fact that an operational framework of universities was already in existence very much simplified the undertaking of the research work.

The Sanitary Engineering Center of the University of Mexico has signed a contract with the firm *Petróleos Mexicanos* to conduct a major research program on the effects of pollution of coastal waters in Veracruz by the discharge of wastes from the petroleum industry in that area.

Similarly, *Yacimientos Petrolíferos Fiscales* in Argentina signed a contract with the Sanitary Engineering Institute of the University of Buenos Aires in 1969, under which the latter will study the pollution of water bodies by petroleum residues.

As these research programs show, the support and technical assistance furnished by the Organization is having a notable multiplying effect. When a minimum of research services is established with its assistance and a nucleus of researchers, even though small, is formed, the institution assisted is in a position to undertake effective research projects on a substantial scale for major national agencies.

The Organization and the Inter-American Development Bank are sponsoring a study on the use and efficacy of household water meters in three different categories of houses. The study is being carried out simultaneously in Bogotá, Guatemala, and São Paulo. The participating agencies are the School of Engineering of the National University of Colombia, the Regional

School of Sanitary Engineering for Central America and Panama of the University of San Carlos, and the School of Hygiene and Public Health of the University of São Paulo.

## TUBERCULOSIS RESEARCH

The research undertaken has been concerned with epidemiology, diagnostic procedures, immunization, and treatment. As a result of these studies, methods of ambulatory chemotherapy and BCG vaccination are available, as are techniques enabling the majority of the developing countries to reduce the prevalence of tuberculosis, even in remote areas of the interior.

Studies were undertaken in Central America comparing BCG vaccination by jet-injector with the currently recommended method of intradermal injection.

In South America an international project was begun to investigate the prevalence of atypical mycobacteria and to undertake their classification, typing, and serological characterization. The Central Tuberculosis Laboratory in Rio de Janeiro, Brazil, is responsible for the preliminary classification and for the distribution of cultures to other participating laboratories in the United States of America and Czechoslovakia.

In order to foster studies on tuberculosis bacteriology, WHO decided to establish in Caracas, Venezuela, in association with the National Institute of Hygiene of the Ministry of Health and Social Welfare of that country, a Regional Reference Center for Tuberculosis Bacteriology.

The results obtained in a technical, administrative, and operations research program carried out in cooperation with the Argentine Government have contributed not only to the training and preparation of personnel but also to the national unification of standards, methods, and techniques for tuberculosis control.

International collaborative studies on chemotherapy, principally on the effects obtained from the association of isoniazid and thiacetazone, were conducted with the support of the Governments of Argentina, Brazil, and Venezuela.

Research studies on tubercular infection were also carried out, with international support, in Brazil and Chile.

## OTHER RESEARCH ACTIVITIES

The Organization has supported the fertility studies undertaken in São Paulo, Brazil, to determine the social, biological, and economic factors connected with human reproduction and the relation between induced abortion and maternal mortality. In two communities in Peru, at different altitudes, prospective epidemiological studies of

human reproduction are under way, in which data are being collected on pregnancies, intervals between pregnancies, frequency of early or late fetal loss, income, and nutrition. Support is also being given to research studies relating to population dynamics undertaken by the Department of Preventive and Social Medicine of the University of Chile.

In Uruguay the Organization is sponsoring the Latin American Center for Perinatology and Human Development, which is undertaking an extensive program of research and education.

During the four-year period the most important research in maternal and child health was that aimed at gaining a more thorough knowledge of the process of

child development, with special reference to the epidemiological factors conditioning it. In addition to the work undertaken by the Center for Perinatology, INCAP, and the project for the Inter-American Investigation of Mortality, special importance is attached to the studies being conducted jointly with the Universities of Cornell and Chile on the impact of malnutrition in early childhood on the development and maturation of the nervous system of the child.

In earlier sections of this *Report*, dealing with statistics, leprosy, plague, health planning, radiation, and other activities, we had opportunity to refer to the research that was completed or in progress in those fields during the period 1966-1969.

## HUMAN RESOURCES DEVELOPMENT

The marked increase in the concern for human resources development for health and the need for coordinated action in the planning and carrying out of activities in this area led to the establishment of the Department of Human Resources Development.

To move forward in the field of manpower development, the following is required: (a) a full understanding of existing supply of health manpower in the Americas; (b) a realistic appraisal of the needs which must be met; (c) a knowledge of existing conditions in teaching institutions; and (d) the formulation and implementation of programs designed to achieve desired short-term and long-range goals.

Accordingly, the Organization has promoted health manpower studies, the conceptual and methodological principles of which have been widely recognized and accepted for implementation in various countries of the Hemisphere. These studies have led to a greater awareness of the need for reorienting the structure, content, and methods of teaching and a new consciousness of the urgency of implementing and extending activities in those areas in an attempt to achieve an adequate development of human resources for health.

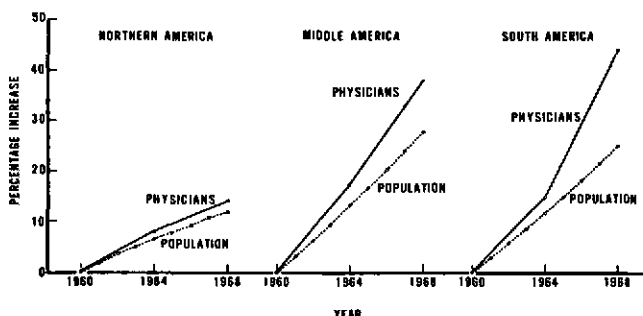


Fig. 51. Percentage increase in population and in physicians in three regions of the Americas, 1960-1968.

Beginning in 1967, the Organization conducted a survey of 130 medical schools in Latin America. Preliminary results have already been published and several more detailed reports are now in preparation. Special attention was given to the teaching of preventive and social medicine as well as to the student's attitude toward medical education and particularly the teaching of this matter. A survey of all Latin American schools of public health was also completed and the results have been fully reported.

The findings of the studies conducted confirm the need for a closer relationship between health planning, training activities, and the socioeconomic development of the countries. With this in mind, the Organization promoted the Sixth Conference of Directors of Schools of Public Health in which the subject for discussion was "The Role of the Schools of Public Health under Changing Socioeconomic Conditions in Latin America." The conclusions and recommendations of that meeting will be most valuable in guiding the schools and the Organization in their activities during the coming years.

Recognizing the difficulties now existing and which conceivably will continue to exist for some time in Latin American countries in regard to a balanced development of human resources, the XIX Meeting of the Directing Council gave consideration to the concept of health sciences centers which would bring together health resources at present dispersed and which, as part of their function, would serve to provide training to health personnel in various areas and at various levels. The theory was advanced that such centers could cater to prospective medical students who are at present turned away and who take up professional activities other than those of health. Underlined in this concept is the advan-

tage which can ensue from a properly integrated and organized curriculum envisaged to produce categories of health personnel stratified at increasingly high levels. This structure could absorb at the outset larger numbers of candidates who may later switch their initial interest in studying medicine to other related fields. This new movement, which is a departure from traditional thinking in medical education, is now being carefully promoted, supported, and evaluated by the Organization.

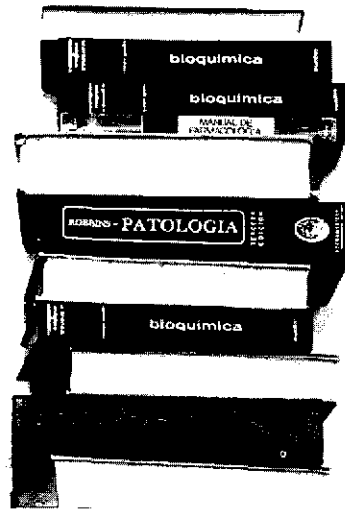
In addition to long-range plans for the integration of health sciences, the Organization addresses its activities to the immediate need for strengthening teaching institutions and their personnel as paramount instruments for the development of human resources. Seminars on the administration of medical schools are organized as well as laboratories and workshops, thus complementing the continuing assistance provided through the Organization's fellowship program, which in the period 1966-1969 made awards to 731 faculty members from schools of medicine and related sciences.

PAHO/WHO's contribution to the expansion of educational activities in support of health manpower is also evidenced in the number of additional faculty members who have attended the courses entitled "Laboratory of Human Relations and Medical Teaching," sponsored with a view to raising the level of instruction. Under this program the participant, through proper application of group dynamics, gains first-hand knowledge of student's motivations, expectations, and experience as well as of factors acting on interpersonal relations as they relate to the teaching-learning process.

Short courses on epidemiology for public health personnel in service were conducted as a new approach to extend the training facilities to those who had not had the opportunity of formal public health training. Similar programs were developed to acquaint professors in clinical departments of medical schools with general principles and applications of clinical epidemiology.

Of particular importance has been the assistance provided through and with the cooperation of the national associations of medical schools and other similar associations. To the extent possible, the Organization has attempted to channel its assistance to medical schools through the national associations in order to achieve a higher degree of coordination at the national level.

To further strengthen institutions of learning, PAHO/WHO established in 1967 a textbook program, designed to make quality textbooks available at prices compatible with the financial situation of medical students, and thus help to remove one of the fundamental obstacles confronting medical education in Latin America. Today, more than 100 medical schools are incorporated to this program (*see* Chapter I, p. 16).



Of no less importance are the efforts to alleviate the critical need for auxiliary personnel. Studies are being conducted to determine in what measure nonprofessional workers can relieve high-level personnel of some of the duties they are now called upon to perform. It is estimated that nonprofessionals can be trained in greater numbers and at lower costs than professional staff. The Organization has therefore encouraged the countries and offered them assistance to develop local resources for the training of auxiliary staff in accordance with their particular needs.

Broad support and assistance are provided to a variety of other health-related projects for the development of human resources through short- and long-term consultants and specialists.

The Organization publishes in Spanish—with summaries in Portuguese, French, and English—a quarterly journal, *Educación médica y salud*, which is particularly addressed to teaching personnel in the health sciences in Latin America but is also widely distributed to libraries in the United States of America and Canada.

## SPECIAL STUDIES

During the past four years the trend toward planning for national development by means of broad integrated programs has been gaining momentum and has demanded a careful re-examination of existing needs and available resources. To achieve this end, the Organization sponsored or conducted surveys and studies which have yielded invaluable information for the formulation of programs and projects for the development of human resources.

A two-year study of health manpower and medical education was completed in Colombia in 1966, under



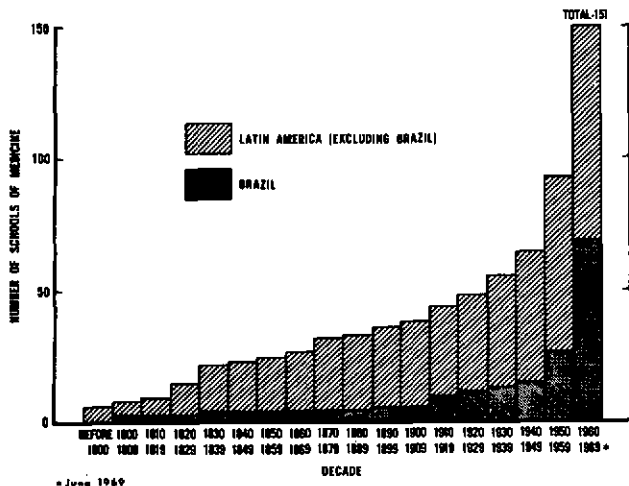


Fig. 52. Number of schools of medicine in Latin America, by decade.

the auspices of the Colombian Association of Medical Schools and the Government, and with the collaboration of PAHO/WHO and the Milbank Memorial Fund. The final results of the study were presented at the International Conference on Health Manpower and Medical Education (Maracay, Venezuela, 19-23 June 1967). Ninety-five specialists from 22 countries attended the meeting, which also fulfilled one of its main objectives in establishing closer relations between public health officers and medical educators and encouraging a dialogue among them for the solution of common problems. In the light of the preliminary results of the survey, some of the medical and nursing schools have already undertaken urgent revisions in their programs. The survey has also served as a model for studies in other countries, such as those in Argentina and in the Caribbean area, both sponsored by PAHO/WHO. Also completed was the study on all medical schools in Latin America, the results of which were published in *Educación médica y salud*.

In 1966 a study of the status of dental education was carried out in Argentina, Brazil, Paraguay, and Uruguay and in 1967 a survey of all Latin American countries was conducted to ascertain the status of the training and utilization of auxiliary dental workers. Dental manpower studies which commenced in 1968 in Venezuela and Colombia were completed in 1969.

Other studies initiated or completed covered such areas as demography, manpower resources for nursing, utilization of medical care services, studies on health services, and the functions of professional and auxiliary personnel. In addition, a survey of schools of public health, similar to the one on medical schools, was completed and a report of the findings was published in *Educación médica y salud*.

The series of studies and surveys conducted during

the past four years have yielded a rich flow of information on structure, administration, curricula, teaching personnel, budgetary plans, and other significant data which will serve as an important tool in the planning and development of human resources.

## STRENGTHENING OF TEACHING INSTITUTIONS

### Schools of Medicine

The Organization continued to render assistance to schools of medicine by providing subsidies to national associations of medical schools, short-term consultants and advisers, fellowship grants to teaching personnel, equipment, and textbooks. In addition, conferences and seminars, such as the afore-mentioned meeting on health manpower and medical education held in Maracay, served to acquaint the participants with major findings of studies conducted in selected countries and to promote the exchange ideas for programs and projects for human resources development.

Recognizing that the introduction of social sciences in the medical teaching programs is one of the major concerns of medical educators, the Organization offered technical and financial aid in this area to various schools of medicine.

In addition, it participated in two meetings with the

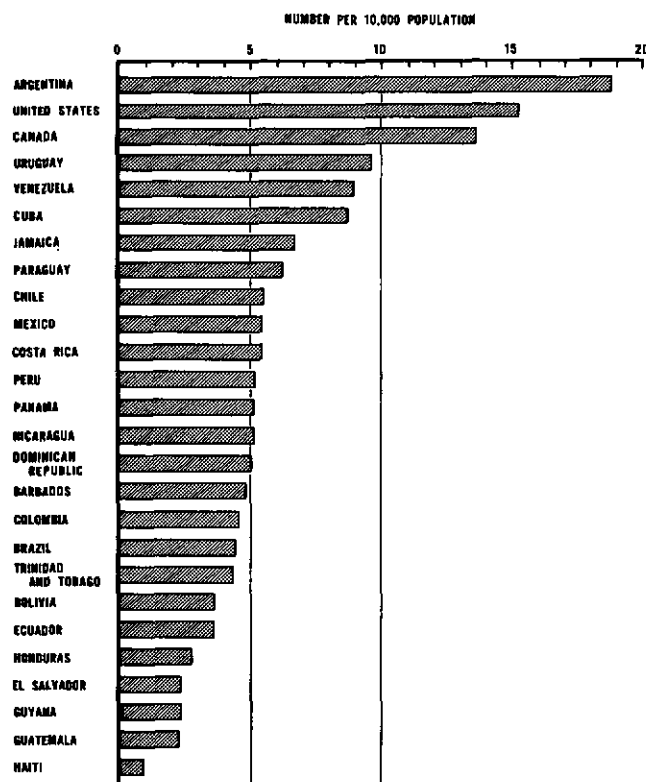


Fig. 53. Physicians per 10,000 population, by country, 1968.

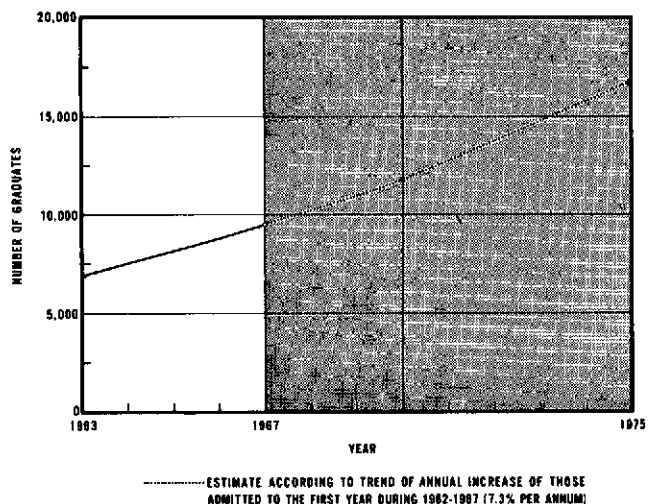


Fig. 54. Estimate of number of medical graduates (20 countries in Latin America).

Pan American Federation of Associations of Medical Schools designed to strengthen lines of communication for the coordination of activities in the field of medical education. In 1966 and 1969, it took part in the I and II Pan American Conferences on Medical Education sponsored by the Federation and held respectively in Bogotá, Colombia, and in Mexico City.

At the close of the four-year period, 26 projects directly related to schools of medicine in 21 countries of the Americas, were in full operation.

#### Schools of Public Health

Schools of public health in Latin America have continued to receive advisory services and other forms of assistance from the Organization, upon request. Thus, consultants and advisers have collaborated in programs of instruction such as the reorganization of health administration courses in Cuba and the formulation of basic guidelines for epidemiology courses in the School of Public Health in Lima, Peru.

The Fifth and Sixth Conferences of Directors of Schools of Public Health of Latin America, held in Argentina in 1967 and in Colombia in 1969, respectively, were sponsored by PAHO/WHO, as was the Travelling Seminar on Organization and Administration of Schools of Public Health in Latin America, in which deans from 10 Latin American, Canadian, and U.S. schools participated. The Organization helped to bring about, in 1968, an exchange of teaching staff between the Schools of Public Health of the Universities of Antioquia (Colombia) and Chile. Most of the courses in schools of public health in Latin America received technical assistance from PAHO/WHO, and some of them were particularly strengthened by having a staff member assigned on a permanent basis.

#### Dental Education

Latin America is confronted with the problems of limited numbers of trained teachers, scarcity of institutions and programs to prepare such teachers, and generally inadequate resources for education in the field of dentistry. Training institutions for the development of dental manpower in many instances lack the necessary equipment and facilities and tend to produce professionals attuned to provide services to only limited sectors of the community.

The objectives of the PAHO/WHO program during 1966-1969 envisaged an increase in the teaching of preventive dentistry in dental schools, expanded opportunities for dentists to undertake training programs in public health, the strengthening of teaching programs in specific technical areas such as dental epidemiology and oral microbiology, and the establishment of additional centers in order to increase resources for the training of personnel and the conduct of investigations.

The Third Latin American Seminar on Dental Educa-



Fig. 55. International courses in dentistry developed with direct participation of PAHO/WHO, 1966-1969.

tion was held in Petrópolis, Brazil, in November 1966, with the collaboration of the Government of Brazil and the W. K. Kellogg Foundation. It was attended by representatives of the 47 schools in Argentina, Brazil, Paraguay, and Uruguay and by 80 observers from countries of the Hemisphere. Other international seminars were held in Maracaibo, Venezuela, to determine the structure of the dental curriculum, and in Caracas in 1967 on standardization, control, investigation, and training in dental materials, and in 1969 on the teaching of pedodontics. National seminars in which the Organization collaborated were also held in Venezuela and in Ecuador, where the dental education program for the three dental schools was discussed and the Association of Dental Schools for Ecuador was founded.

The Organization assisted in the design and planning of the new dental school in Panama and in the development of its teaching program. A special program was arranged for professors of the new school to visit other schools of dentistry. Departments of preventive dentistry were assisted in several countries and an international course for teachers of this discipline was organized at the University of Antioquia (Colombia) in November 1967; it was attended by 15 participants from eight countries.

A course on dental epidemiology was conducted at the University of São Paulo, Brazil, in 1967 and courses on oral microbiology were held at the Oswaldo Cruz Institute (Rio de Janeiro) in 1966 and at the University of Antioquia in 1968. In the period 1968-1969 the program for the introduction of simplified dental equipment was initiated and courses were held in Medellín (2 courses) and Maracaibo for national personnel. Assistance in the preparation of auxiliary personnel was rendered to the Province of Buenos Aires in Argentina,



Building (under construction) of the School of Dental Nurses in Jamaica.

where a course was given for 10 persons responsible for the training of auxiliaries.

During the four-year period facilities for the teaching of public health to dentists were increased and the Organization gave assistance for this purpose to the Universities of São Paulo and Antioquia, the National University of San Marcos in Lima, and the University of Chile. The University of Antioquia initiated definitive programs in dental public health in 1968 and the University of San Marcos did so in 1969.

The collection of information on matters related to dental education and dental health has been pursued. A survey was conducted on the status of dental education in the 50 dental schools of Brazil, in six schools in Argentina, and in those in Paraguay and Uruguay. The survey findings were incorporated in a working document used at the afore-mentioned seminar on dental education in Petrópolis. The national surveys on dental education and the availability of human resources currently being conducted in Colombia and Venezuela have also received support from the Organization. In 1969 a survey on teaching in the field of dental materials was initiated in Latin America; the results will be utilized in the over-all program for dental materials in the Hemisphere and by the Center for dental materials established at the Central University in Caracas in that same year.

The preparation and training of auxiliary personnel has been supported in Jamaica, where the Government constructed the first school in the region to train school dental auxiliaries. At the University of Antioquia, a program in 1968-1969 demonstrated that it was possible to train such personnel to perform expanded functions in dentistry, and at the University of Zulia, Venezuela, additional programs for the training of auxiliary personnel to discharge such functions are being undertaken. Two surveys on the present situation of dental auxiliary personnel and their training were conducted and these have provided data for two publications.

A center for the development of training programs in dental epidemiology was established in São Paulo, and another for applied research in social dentistry was set up in Pôrto Alegre, Brazil, in 1967.

The Organization, in collaboration with the American Dental Association, has continued to assist the development of activities of the Latin American Association of Dental Schools (ALAFD). Specific support was provided for the third annual meeting held in Petrópolis in 1966 and for the Seminar on the Teaching of Pedodontics (Caracas, 1969). A system was established in 1968 to facilitate the interchange of information among the 91 schools of dentistry in Latin America.

During 1968 surveys were conducted to provide information for three directories: *Schools of Dentistry in the*

*Americas, Dental Auxiliary Education Programs in Latin America*, and *Latin American Dental Journals*. Other publications prepared include a Guide to Dental Materials (in Spanish), *Guidelines for the Development of Dental Curricula*, and *Current Situation of Dental Auxiliary Personnel in Latin America*. A manual on the design and construction of simplified dental equipment has been prepared for publication.

In the field of fluoridation, the laboratory manual *Fluoride Determinations in Water* was published in English and Spanish. An updated Spanish edition of the *Manual of Water Fluoridation Practice* was prepared for publication, as was a technical manual for the fluoridation of public water supplies (see also p. 128-130).

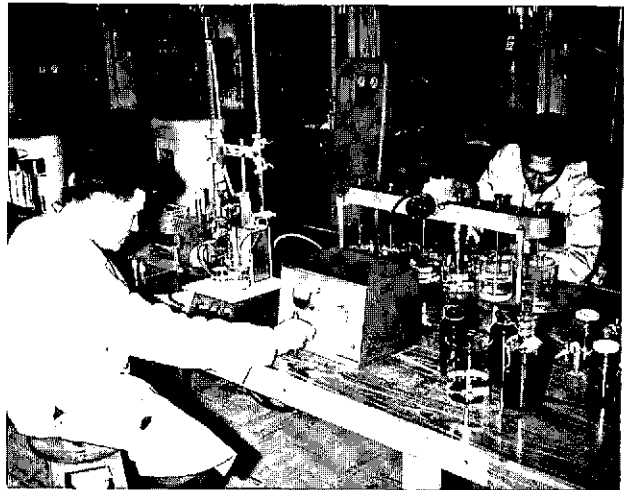
### Training in Sanitary Engineering

Considerable progress was made with education in sanitary engineering in the four-year period. In 1967 the Sanitary Engineering Department of the Central University in Caracas was opened, providing postgraduate educational facilities, and in the same year the postgraduate course in sanitary engineering was established in the Polytechnical School at the Catholic University in Pernambuco (Brazil). In 1968 the School of Sanitary Engineering in Buenos Aires was raised to the level of Sanitary Engineering Institute. In the following year the University of Antioquia introduced full five-year courses in sanitary engineering and in Peru the university reforms included the School of Sanitary Engineering of the National University of Engineering.

### Seminars and Meetings

In 1966 a Regional Symposium on Administration of Water Supply and Sewerage Services was held in San Salvador, El Salvador, and in 1967 a Symposium on River Basin Development took place in São Paulo, Brazil. In addition, an international course on water fluoridation engineering techniques was organized in Cincinnati, Ohio, under the joint sponsorship of the Organization, the W. K. Kellogg Foundation, and the United States Public Health Service. Also in 1967 an International Seminar on Water Rates was held in Quito, Ecuador, under the auspices of the Organization and the Inter-American Development Bank.

In 1968 a Regional Seminar on the Teaching of Sanitary Engineering in Latin America was held in Quito, Ecuador; and in Rio de Janeiro a Seminar on Water Quality Control was organized. In view of its importance, mention should also be made of the Symposium on the Development of Water Resources held in Maracaibo, Venezuela.



At a graduate school of engineering, tests are performed with equipment provided for the postgraduate courses for engineers specializing in the design and operation of water supply systems.

### Collaboration with Universities

The Organization has carried on an intensive program to assist in strengthening the schools of engineering in which sanitary engineering is taught at various levels. These schools are faced with a shortage of laboratory facilities, due to the high cost of installations and equipment, which hinders them in their teaching work. It is encouraging to note that the countries are making substantial efforts to set up, expand, and improve laboratories in order to overcome these difficulties. For this purpose they have sought financial assistance from international agencies or from other Governments through bilateral agreements. For their part, several voluntary foundations are giving assistance with the installation of laboratories and UNDP is providing similar support. During the quadrennium Brazil, Colombia, Guatemala, Mexico, Paraguay, Peru, and Venezuela received assistance from some of these institutions and agencies. The Organization, within the limits of its budgetary resources, has also given positive support to the countries of the Americas through the provision of materials and equipment and through programs of continuing education.

PAHO/WHO has also furnished technical assistance to Argentina, Bolivia, Chile, Guatemala, Peru, and Trinidad and Tobago for the review of sanitary engineering curricula in some of their engineering schools.

The School of Engineering of the Central University of Venezuela was given assistance in improving its administrative practices, and it is hoped that the Organization's support will lead to effective modernization of its over-all administration, which would go side-by-side with the progress made in the improvement of study programs.

The program for improving the teaching of sanitary engineering in four Venezuelan universities was actively continued. Financial assistance for the program has been provided by the UNDP, and the Organization has served as executing agency. The universities in question are the Central University and the Andrés Bello Catholic University in Caracas, the University of Zulia in Maracaibo, and the University of Los Andes in Mérida. As a result of the program, the sanitary engineering curricula in these universities have been consolidated, laboratories have been expanded through the provision of additional lecture classrooms and teaching materials, and fellowships and travel grants have been awarded for the additional training of teaching staff.

One purpose of the project was to introduce a postgraduate program of studies at the Central University which, in addition to the teaching activities, would concentrate on research into water and air pollution, radioactivity, and biological, chemical, and other problems of environmental health. This objective was achieved in 1967 when the postgraduate course of the Department of Sanitary Engineering was established.

This program has been extended until June 1970. Meanwhile, a new program to support research projects in sanitary engineering in the same four universities was prepared and submitted to UNDP for its consideration. This program, if approved, will commence in mid-1970.

In the four years under review, UNDP has helped to finance the plan for improvement and expansion of the Institute of Sanitary Engineering of SURSAN (Superintendency of Urbanization and Sanitation) in Brazil. The Institute is located at the University of Guanabara in Rio de Janeiro, where it is conducting training programs in sanitary engineering. In addition to its teaching activities, it is organized to undertake research and also to provide services. The Institute's laboratories have been expanded and improved, as has its library. Furthermore, its personnel receive travel grants for further professional training. An important part of the Institute's educational activities are the short intensive courses of which, in the 1966-1969 period, it offered 31 on various aspects of sanitary engineering.

With the Organization's support, exchanges of information and of visits by professionals were arranged between the School of Hygiene and Public Health of the University of São Paulo and the School of Sanitary Engineering of the National University of Engineering of Peru; between the Institute of Sanitary Engineering of Buenos Aires University and the School of Hygiene and Public Health in São Paulo; and between the School of Engineering of the University of the West

Indies in Trinidad and Tobago and the Central University of Venezuela.

Progress was also made in interuniversity cooperation within countries. Such associations developed between the Universities of São Paulo, and of Paraíba in Brazil; the Universities of Buenos Aires and of Rosario in Argentina; the National University of Engineering and the University of Ica in Peru; and the Universities of Chile and of Concepción in Chile.

#### *Continuing Education*

The program of continuing education in sanitary engineering, initiated in the preceding period, was continued during 1966-1969 with a marked expansion of activities. The countries' response to this program was immediate and their interest has steadily increased.

The Organization has furnished assistance through short-term consultants who have acted as advisers and also through the assignment of lecturers; the provision of limited amounts of equipment and materials for improving laboratories, installations, teaching facilities, and printing services; small grants to pay local lecturers, coordinators, and auxiliary staff; and assistance for improving libraries and printing technical manuals.

In the four-year period, 225 courses and 23 seminars and symposia, totaling 17,542 instruction hours, were held. There were 7,161 participants and 1,566 national and 530 international lecturers served in the program (Table 44). These figures alone indicate the extent to which the program has been accepted by the countries.

The courses covered a wide range of subjects. Most of them dealt with water supply and water treatment, in all their many phases, but many other subjects were also covered, such as use of computers, solid wastes disposal, administration and finance, emergency services, swimming pool operation, and industrial hygiene, thus indicating the remarkable adaptability of this program. It can confidently be stated that, as a result of this activity, the universities participate much more intensively than in the past in the formulation and study of national problems.

#### *Special Programs*

In 1967 an agreement was signed with IDB under the terms of which that institution gave financial support to a number of the short intensive courses which were held in that year. Those selected related to subjects in which the Bank was particularly interested. Under the same agreement, the International Seminar on Water Rates was held in Quito, Ecuador, in 1967.

A further agreement was signed with IDB under which the Organization undertook to carry out a special

TABLE 44. SANITARY ENGINEERING COURSES HELD IN COOPERATION WITH UNIVERSITIES, 1966-1969.

PLACE OF TRAINING	NO. OF COURSES	NO. OF PARTICIPANTS	COLLABORATING STAFF				TOTAL
			NATIONAL	SHORT-TERM CONSULTANTS	PAHO STAFF	OTHER	
Argentina	19	462	141	3	12	12	168
Barbados	3	68	2	3	4	9	18
Bolivia	11	320	80	7	12	6	105
Brazil	59	1,648	333	15	21	21	390
British Honduras	2	27	6	1	2	2	11
Chile	25	908	241	11	13	12	277
Colombia	18	440	144	15	9	7	175
Costa Rica	3	46	17	1	4	7	29
Cuba	3	113	17	3	5	5	30
Dominican Republic	4	86	21	5	9	—	35
Ecuador	6	235	10	20	11	7	48
El Salvador	6	156	24	3	2	9	38
Guatemala	6	181	19	6	7	2	34
Honduras	7	119	58	12	8	5	83
Jamaica	3	90	1	1	6	1	9
Mexico	19	838	144	19	15	9	187
Nicaragua	7	174	33	8	5	5	51
Panama	7	151	63	4	7	3	77
Paraguay	4	71	15	3	5	—	23
Peru	9	264	47	14	6	7	74
Trinidad and Tobago	2	38	15	1	1	3	20
United States of America and Puerto Rico	3	92	32	3	7	10	52
Uruguay	7	142	25	10	4	4	43
Venezuela	15	492	78	18	8	15	119
Total	248	7,161	1,566	186	183	161	2,096

program on water meters, divided into three sections: (a) the preparation of a reference manual on water meters; (b) three research projects—in Bogotá, Guatemala City, and São Paulo—to study the performance of water meters; and (c) an international course for officials holding positions at the decision-making level in connection with the selection and purchase of water meters. This program is fully under way.

An agreement was also signed with the W. K. Kellogg Foundation for the execution of a training program for Latin American engineers on the fluoridation of drinking water. As a result of this agreement, an international course on the subject was organized and held in 1967 in Cincinnati, Ohio, on the premises of the Robert A. Taft Sanitary Engineering Center, kindly lent by the U.S. Public Health Service; and two inter-Zone courses were held in 1968, one in San Juan, Puerto Rico, for the English-speaking areas of the Americas and one in Guatemala for Central America and Panama. Concurrently with the course in Puerto Rico, a meeting of Health Ministers of the Caribbean area was held to discuss fluoridation programs. A course on fluoridation was organized in Mexico and another one in Venezuela during 1968, and in 1969 five courses on this subject were held in Brazil, Chile, Colombia (2), and Venezuela.

The agreement with the W. K. Kellogg Foundation is still in effect. By the end of 1969, a total of 280 professional workers had received training through this program.

#### Schools of Nursing

The principal problem faced by the countries of the Hemisphere in the nursing field is the lack of a suitable educational system, that is, one adapted to the present needs of health programs, responsive to scientific and social change, and capable of forecasting future personnel needs. This problem is most acute in those nations that have already introduced the health planning process.

In Latin America, the preparation of nursing personnel tends to be regarded as an integral part of a country's educational system. This situation has meant, as a general rule, more exacting educational requirements and longer duration of studies.

Table 45 shows those nursing schools in 20 Latin American countries that required nine or more years of general academic education for admission in the 1965-1969 period. It will be noted that the number of schools requiring preuniversity admission qualifications has practically doubled over the four-year period. There is also a tendency to locate training facilities for

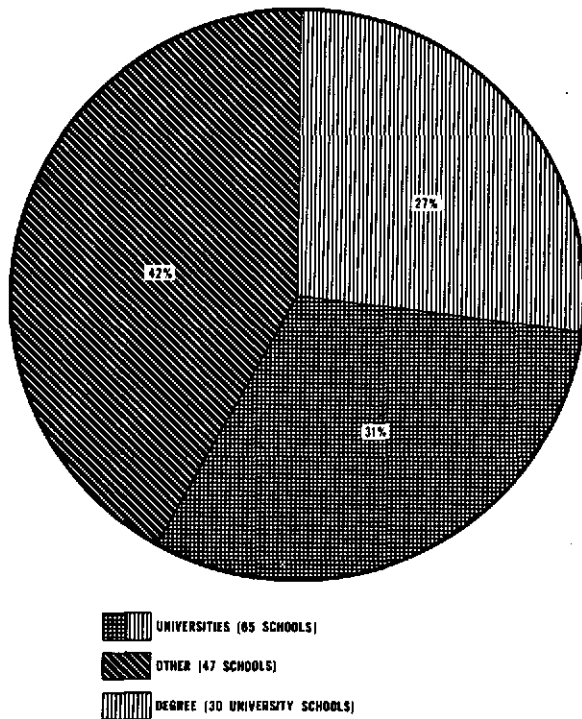


Fig. 56. Schools of nursing in Latin America (112) with admission prerequisite of undergraduate studies, with emphasis on those conferring degrees.

professional personnel in the universities. Figure 56 shows that, of the 112 schools requiring preuniversity studies in 1969, 65 (58 per cent) were university schools and 30 of these (47 per cent) awarded a university degree in nursing. In 1969, 4,945 students were registered for these programs (Table 46).

As the academic preparation of nurses has improved, the need has been felt for a closer correlation between educational programs and the requirements of health services.

There is at present a certain imbalance between supply and demand, and nursing educators are concerned to find a better definition of what the end-product of nursing education should be, the purposes it should serve, and how it should be accomplished.

During the quadrennium the assistance rendered by the Organization to the countries was directed toward study of the current system of nursing education, definition of levels, and review and improvement of curricula for the preparation of staff.

An international seminar on planning was held in which the methodology of studies in schools and nursing courses was discussed. With the Organization's support, studies on the functions and activities of nursing personnel or surveys on nursing schools and courses,

TABLE 45. SCHOOLS OF NURSING IN LATIN AMERICA REQUIRING NINE OR MORE YEARS OF ACADEMIC STUDIES AS PREREQUISITE FOR ADMISSION, 1965 AND 1969.

COUNTRY	1965			1969		
	TOTAL	9-10 YEARS	11-12 YEARS	TOTAL	9-10 YEARS	11-12 YEARS
Argentina	6	1	5	62 <sup>b</sup>	57	5
Bolivia	2	0	2	6	1	5
Brazil	33	0	33	34	0	34
Chile	5	0	5	11	0	11
Colombia	6	0	6	6	0	6
Costa Rica	1	0	1	1	0	1
Cuba	8	8	0	10	10	0
Dominican Republic	1	0	1	2	0	2
Ecuador	2	0	2	5	0	5
El Salvador	2	2	0	2	1	1
Guatemala	2	0	2	2	0	2
Haiti	2	0	2	3	0	3
Honduras	1	0	1	2	0	2
Mexico	14	14	0	87	83	4
Nicaragua	2	0	2	4	0	4
Panama	1	0	1	1	0	1
Paraguay	2	1	1	3	1	2
Peru	10	10	0	20	—	20
Uruguay	2	1	1	2	—	2
Venezuela	2	2	0	14	12	2
Total	104	39	65	277	165	112

<sup>a</sup> Pre-university requirement.

<sup>b</sup> The substantial increase in the number of schools in Argentina and Mexico does not represent a true increase but rather better statistical data.

TABLE 46. NUMBER AND STUDENT POPULATION OF SCHOOLS OF NURSING ESTABLISHED BY UNIVERSITIES WITH THE SAME ADMISSION REQUIREMENTS AS OTHER UNIVERSITY SCHOOLS, 1969.

COUNTRY	NO. OF SCHOOLS	STUDENT POPULATION
Argentina	5	435
Bolivia	2	166
Brazil	21	1,483
Chile	7	882
Colombia	6	502
Dominican Republic	1	69
Ecuador	3	228
Honduras	1	45
Mexico	4	252
Panama	1	133
Paraguay	2	162
Peru	9	456*
Uruguay	1	77
Venezuela	2	55
Total	65	4,945

\* Student population in seven schools.

or both, were conducted in the Caribbean area and in Argentina, Brazil, Costa Rica, Cuba, the Dominican Republic, Ecuador, Guatemala, and Peru. The objective was to arrive at a better definition of nursing functions and with it a redefinition of educational programs.

Some countries have already established three levels of personnel—professional, technical, and auxiliary—and there are already in operation 19 courses for “nursing technicians,” with a total of 566 students.

The training of nursing auxiliaries, now accepted by all the countries, is also undergoing study and new instructional techniques are being tried out (Table 47).

Although there have been substantial increases in the number of auxiliaries prepared in such courses in

TABLE 47. NUMBER OF AUXILIARIES GRADUATED FROM COURSES IN 1964 AND 1969 IN 12 COUNTRIES OF LATIN AMERICA.

COUNTRY	NUMBER OF GRADUATES	
	1964	1969
Argentina	219	800
Brazil	1,209	1,519
Chile	1,018	1,061
Dominican Republic	38	97
Ecuador	115	111
El Salvador	211	75
Guatemala	175	226
Haiti	—	39
Honduras	31	266
Mexico	228	206
Panama	110	91
Paraguay	40	34
Total	3,394	4,525

certain countries such as Argentina, Guatemala, Haiti, and Honduras, in most cases little progress has been made and in some cases the number has even fallen.

This situation may be due to the fact that many of the personnel in the services do not have sufficient education to follow the official courses and, also, the number of posts created each year for new personnel is limited. On the other hand, the number of auxiliaries now in the services who have received training has considerably increased as a result of in-service education programs.

Postbasic education for nurses is another field in which the Organization has cooperated with the countries. Postbasic courses are principally of two types, supplementary and postgraduate, and in these courses special importance has been given to such subjects as maternal and child health, administration of nursing services, psychiatric nursing, pediatrics, and public health.

In 1969 there were 99 courses for the training of nurse-midwives and midwives, with an enrollment of about 2,690 students.

In general, it can be stated that nursing education has not remained static and that there is a strong desire to evaluate present systems, to discover new techniques for preparing nursing personnel, and to formulate an educational system consistent with scientific advances, health needs, and socioeconomic and cultural realities in the various countries.

## OTHER TRAINING PROGRAMS

### Training in Nutrition

Two conferences in 1966 resulted in the preparation of guidelines for the education of professional personnel in nutrition: one sponsored by the Organization and held in Caracas, Venezuela, on the training of public health nutritionists-dietitians; and the second held in Washington, D.C., in collaboration with the Agency for International Development, on nutrition education in schools of medicine and public health in Latin America. The reports of both conferences were prepared and distributed.

Fifteen schools of dietetics in Latin America have now become schools of nutrition and dietetics, and have revised their curricula and extended their training to university degree level. This has entailed the incorporation of additional areas of study essential for an understanding of public health objectives and the conduct of appropriate activities and services in public health nutrition as well as hospital dietetics. Advisory



services are being provided to these schools by the Organization.

In accordance with the recommendations of the Caracas conference, a comprehensive bibliography of texts and teaching materials available in Spanish, Portuguese, and English was compiled and distributed (Scientific Publication PAHO 174). The insufficient number of texts in Spanish and Portuguese presents a problem for faculty members and students. A technical group meeting in Washington, D.C., in 1969 made recommendations to the Organization for the translation of certain textbooks on nutrition. It also established guidelines for the selection of such texts for schools of nutrition and dietetics, schools of medicine, schools of nursing, and schools of public health (Scientific Publication PAHO 192).

No information is currently available on the total number of medical schools or schools of public health that have departments of nutrition or specific courses on nutrition.

A new program, granting a Master of Science degree in Public Health Nutrition, was initiated in Puerto Rico in 1967, with advisory services from the Organization. In 1969, there were students from Brazil, Canada, Colombia, Ecuador, Peru, and Venezuela, as well as the United States of America. This graduate course is open to physicians and public health nutritionists holding university degrees.

Advisory services were also furnished to the School of Public Health of the Central University of Venezuela in the development of their department of nutrition, as well as to the two schools of nutrition and dietetics in that country.

Another postgraduate course leading to a Master of Science degree with emphasis on nutrition was opened in 1969 at the School of Hygiene and Public Health in São Paulo. The School also offers a short course for physicians in alternate years; and the Institute

of Nutrition in Recife conducts a short course annually. Both courses are assisted by the Organization.

The Organization has provided technical assistance and actively participated in the nine-month course in public health nutrition for graduate dietitians offered by the School of Public Health, Lima, Peru; in the training programs for personnel of hospital dietary services in the Dominican Republic; and in short courses for teachers, health personnel, and agricultural workers in Barbados, Brazil, Costa Rica, Dominica, Guyana, Jamaica, Paraguay, Peru, St. Kitts, St. Lucia, Trinidad and Tobago, and Venezuela.

It has continued its collaboration with FAO and UNICEF in the five-month course on food economy and applied nutrition offered especially for agricultural and home economics personnel. This course, formerly held at the La Molina Agrarian University in Lima, Peru, was transferred to Bogotá, Colombia, and is being conducted under the joint sponsorship of the National University, the Ministry of Agriculture, and the Nutrition Department of the Colombian Institute of Family Welfare. Known as "CRECENA," the course trained a total of 47 persons in 1968-1969 from 16 Central and South American countries.

#### *Training Activities at INCAP*

The shortage of professional and technical staff adequately trained in nutrition and related disciplines, which has for many years been facing the member countries of INCAP, is one of the limiting factors in the conduct of applied nutrition programs. For this reason, the Institute has, from its outset, devoted a major part of its efforts to assisting in every possible way to overcome this limitation through the training of personnel, not only from Central America and Panama but also from the other countries of the Region and even other parts of the world. In the past, in keeping with the countries' requirements and avail-



Senior-year students at the INCAP School of Nutrition receive instruction on practical work in dietetics.

able resources, INCAP offered short supplementary courses or inservice training programs, but the need for professionally trained nutritionists and physicians specialized in nutrition became increasingly urgent both for the applied nutrition programs and for educational programs at national levels.

The 1966-1969 period marked a new stage in INCAP's progress in the educational field with the introduction of the following academic programs organized in association with the University of San Carlos in Guatemala.

#### *School of Nutrition*

At the university level and with a four-year program of studies, this School, whose objective is to prepare students for baccalaureate degrees in nutrition, was opened in early 1966. Degrees were awarded to its first graduate class of 16 Central American nutritionists in December 1969. The School is located in one of INCAP's modern buildings and is attached to the School of Chemical Sciences and Pharmacy of the University of San Carlos. Each year it will produce new professional nutritionists whose services will help to meet the countries' needs in this field. No less important is the fact that it prepares personnel who, with specialized training, can later devote themselves to work related to food production, an area in which there is also a great shortage of manpower.

#### *Postgraduate Courses for Physicians*

In cooperation with the School of Medical Sciences of the San Carlos University and with the support of the Josiah Macy, Jr. Foundation, the first postgraduate course in nutrition and pediatrics for physicians was opened in 1967 with a two-year program of studies. This course was designed with the help of professors of pediatrics and preventive medicine of the medical schools of the Isthmus to meet the need for specialized medical personnel for teaching positions and directing posts in national health services. The first course was completed in December 1969, and six physicians were awarded degrees as Specialists in Pediatrics and Public Health Nutrition.

With the experience of this first specialized course, and in response to requests from INCAP member countries and other countries in the Region, the program of studies has been revised and beginning in 1970 a one-year course leading to the Master's degree in nutrition and maternal and child health will be offered. Professional candidates from all Latin American countries will be accepted.

#### *Other Educational Programs*

Aside from the foregoing activities, INCAP continued other short-term educational programs such as the practical tutorial instruction in various aspects of its activities in the nutrition field. Table 48 indicates the number and country of origin of the students who participated in INCAP educational programs during the quadrennium.

#### *Training in the Caribbean*

In the Caribbean area, numerous categories of workers in the fields of health, agriculture, and education are in need of further orientation in comprehensive community nutrition. So far it has been possible to enhance the teaching of nutrition to medical students and agricultural undergraduates at the University of the West Indies, and to assist in postgraduate training

TABLE 48. NUMBER OF PERSONS PARTICIPATING IN EDUCATIONAL PROGRAMS OF INCAP DURING 1966-1969 (BY YEAR AND COUNTRY OF ORIGIN).

COUNTRY	1966	1967	1968	1969	TOTAL
<i>Member countries of INCAP</i>					
Costa Rica	7	10	10	9	36
El Salvador	6	13	12	12	43
Guatemala	10	19	31	46	106
Honduras	4	11	11	8	34
Nicaragua	7	11	7	9	34
Panama	7	10	8	13	38
<i>Other countries of the Americas</i>					
Argentina	7	2	—	1	10
Bolivia	2	2	—	—	4
Brazil	2	5	2	1	10
Canada	1	1	1	—	3
Chile	2	1	—	—	3
Colombia	3	2	—	—	5
Dominican Republic	4	—	1	1	6
Haiti	1	1	—	—	2
Mexico	2	—	—	—	2
Paraguay	1	—	—	—	1
Peru	2	3	—	1	6
Puerto Rico	—	—	—	1	1
United States of America	6	14	12	29	61
Uruguay	2	1	—	—	3
Venezuela	5	5	2	—	12
<i>Other countries</i>					
Austria	—	1	—	—	1
China	—	—	1	—	1
England	—	2	—	—	2
Ethiopia	1	—	—	—	1
Germany	—	—	1	—	1
India	—	1	1	2	4
Indonesia	—	—	—	1	1
Philippines	—	1	1	—	2
Switzerland	1	1	—	—	2
Thailand	—	1	—	—	1
Yugoslavia	—	—	—	1	1
Total	83	118	101	135	437

programs for home economists, public health inspectors, and nurses.

One difficulty in the Caribbean area is the insufficient number, at all levels, of personnel trained to deal with practical aspects of community nutrition geared to the actual problems and resources.

A major activity of the Caribbean Food and Nutrition Institute (CFNI) was the implementation in 1969 of the new course leading to the Diploma in Community Nutrition of the University of the West Indies. It is designed primarily for key middle-level personnel from ministries of agriculture, health, education, and community development. The first course, which is for one academic year (nine months), was completed in October 1969. The training program was mobile: the first three months were spent in Jamaica, followed by six weeks' field experience in selected Caribbean countries and six weeks' experience in Trinidad. Following examinations, the second part of the course consisted of three months of supervised field investigation carried out in the students' home country and detailed by the students in an analytical report on the project.

The course was interdisciplinary, practical, and related to the problems and background of the Caribbean area. The sequence in the presentation of its main subject matter was as follows: the human scene and ecology, the diet and its production, malnutrition (its causation and recognition), techniques for the assessment of food and nutrition status, and methods of combating malnutrition.

Twenty-nine Government-sponsored students received PAHO fellowships for the course. In addition, two public health physicians from the Philippines were awarded WHO fellowships.

The Caribbean students were from the following countries: Antigua (2), Barbados (8), Grenada (2), Guyana (3), Jamaica (6), Montserrat (1), St. Kitts-Nevis-Anguilla (1), St. Lucia (1), St. Vincent (1), and Trinidad (4). The students' fields of specialization were the following: health (11), agriculture (5), home economics education (9), community development or social welfare (4).

The ultimate aim of CFNI is to develop a network of informed influential officers and policy-makers and technically trained personnel throughout the area, in order to facilitate the implementation of practical interdisciplinary programs and activities directed toward the solution of food and nutrition problems in the Caribbean.

#### Training in Zoonoses

This activity of the Pan American Zoonoses Center has been the one most requested by the Governments.

One of the major deficiencies in the national health programs is the lack of specialists trained in the control and prevention of the zoonoses. The health authorities of the Latin American countries have recognized the capability of the Center for providing high-level training. Special attention has therefore been given to this activity and some outstanding achievements have been made, although the lack of adequate space and of a full staff of professionals at the Center had a limiting effect on the number of trainees that were received.

In response to the requests from the Governments during the four-year period, 114 professional workers from all the countries of Latin America received individual training of short- and long-term duration.

Many international courses and seminars were conducted by the Center, including the First International Seminar on Rabies in the Americas (September 1967), with 102 participants from almost all countries of the Hemisphere and observers from European countries (*see also* p. 86). Immediately following the Seminar, the Center offered an international course on rabies diagnosis and vaccine production, which was attended by specialists from eight Central and South American countries. In 1968 three international courses were conducted at the Center: one on epidemiology and laboratory methods related to leptospirosis (for 17 professionals from eight countries); in August, a two-week seminar on the epidemiology of the zoonoses (33 participants from 14 countries); and in November a course on ram epididymitis (eight participants from five countries). During 1969 the Center offered three international courses: one on the production of *B. abortus* strain 19 vaccine and antigens for brucellosis diagnosis (for 17 fellows from seven countries); in August, one on the breeding and handling of laboratory animals (17 participants from eight countries); and in November, a seminar on production and control of rabies vaccine (24 participants from 11 countries). Professional staff of the Center participated in many meetings, courses, seminars, and symposia sponsored by other agencies and Governments in many countries of the Hemisphere.

#### Training in Foot-and-Mouth Disease

During the quadrennium the training programs of the Pan American Foot-and-Mouth Disease Center have been very helpful to the Governments in their campaigns to combat this disease. From the time of the Center's establishment to the end of 1969, 25 international courses were conducted. Individual training in various aspects of research, control, and prevention of foot-and-mouth disease was provided for more than 500 veterinarians. The subjects in which instruction



Course on diagnosis of vesicular diseases held at the Pan American Foot-and-Mouth Disease Center.

was given included laboratory techniques and methods for diagnosis of vesicular diseases, planning and administration of prevention and control campaigns, epidemiology and statistics, production and control of foot-and-mouth disease vaccines, and animal health planning programs. Many national training courses and seminars sponsored by the Organization were conducted each year through the Center and in cooperation with the national authorities. Some of them were held in countries free of foot-and-mouth disease and dealt with the prevention of the disease in those areas, and others were held in affected countries for the training of personnel in control methods.

For example, in 1969 a course on the diagnosis of vesicular diseases was held at the Center during May-June for 14 fellows from 12 countries. In September a course on the prevention of foot-and-mouth disease was held in Guayaquil, Ecuador, for 14 fellows from eight Spanish-speaking countries free of the disease. In December a similar course was presented in English at Maracay, Venezuela.

The Center's Training Section prepares and distributes two publications: the Epidemiological Report of the Center, and the periodical *Cuadernos*, both dealing with the epidemiology of foot-and-mouth disease in Latin America and with research, technical advisory services, and training in this field. The recent addition of reproduction equipment and qualified staff has made it possible to improve the effectiveness of this information.

### Training in Tuberculosis

Tuberculosis control calls for administrators and supervisors who have been trained in epidemiology, planning, evaluation, and operations research. To train personnel of this category, the Organization has awarded fellowships to officials of national health services, enabling them to attend international courses on tuberculosis control in Prague and Rome, and has promoted the training of personnel at the national level.

In addition, in order to more rapidly reduce the shortage of expert personnel capable of formulating and coordinating programs and to ensure the inclusion of tuberculosis control activities in national health services, the Organization, in association with the Government of Venezuela, organized in Caracas, on a permanent basis, an international course on epidemiology of tuberculosis and administration of control programs, with special consideration given to the epidemiological, social, and economic conditions prevailing in the countries of the Americas. The first course was held in 1969 and was attended by 20 physicians from Argentina, Bolivia, Brazil, Chile, Colombia, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Mexico, Panama, Paraguay, Peru, and Venezuela.

To provide personnel with training in bacteriological methods and techniques and to emphasize their important bearing on epidemiological reporting, treatment control, and program evaluation, the Organization also cooperated with the Government of Venezuela in conducting three regional courses on tuberculosis bacteriology. Held in Caracas, these courses were attended by physicians and technicians from various Latin American countries.

Assistance continued to be given in the training of nurses and other health personnel with the aim of standardizing techniques, ensuring comparability of results, and facilitating the execution of tuberculosis control programs as part of the activities of local health services. A program of this kind was carried out in Brazil, in which some 180 nurses and nursing auxiliaries were trained.

### Training in Population Dynamics

Since 1966 the Organization has been cooperating with the Universities of São Paulo and of Chile in the establishment of centers for research and training in health and population dynamics. The first courses were held in Chile in 1966 and in Brazil in 1967, and since then each of these schools has organized an annual course for national and foreign students.

The Biostatistics and Demography Center in Buenos

Aires, which was established in 1968 through the collaboration of the School of Medicine of the University of Buenos Aires, the Government of Argentina, and PAHO/WHO, will also conduct a training program.

In 1968 a survey was made of the centers in Latin America which provided opportunities for education in family planning and population dynamics. This comprehensive survey covered research, clinical instruction, and the administration of population programs. The results were used as a basis for discussion by a Working Group which met at Headquarters to make recommendations on educational requirements in this field.

The six schools of medicine of Central America and Panama undertook a study on the teaching of demography, physiology of reproduction, obstetrics, and related subjects.

In 1968 the Organization sponsored, together with other agencies, a meeting on the teaching of demography in schools of medicine. It also organized two courses on family planning and population dynamics for nurses and midwives, which were attended by 85 students from 23 countries; and it sponsored a seminar on the educational components in population dynamics, at which there were 72 participants. Assistance was also furnished to the Latin American Course on Maternal and Child Health, at which an integrated plan of studies in maternal and child health and family planning was presented.

Training has been considered an important part of the program development in this field; in Colombia, for example, training activities were accomplished within the national program in 1969.

### **Veterinary Medical Education**

The development of veterinary medical services within the ministries of health and of agriculture in the countries of the Hemisphere has resulted from the demand for greater participation by veterinarians in programs of community health. The national public health and animal health authorities, recognizing the economic losses to health and livestock development caused by the zoonoses and foot-and-mouth disease, have requested the training of larger numbers of specialists in these diseases, at both undergraduate and continuing-education levels.

The countries have suffered for years from a serious shortage of veterinarians, and now that the demand for their services is increasing, the problem has become particularly acute. The progress of the profession in various Latin American countries has been affected by such factors as the scarcity of schools of veterinary medicine, the short time in which some have been in

operation, the professional competence of veterinarians, and other social, cultural, and economic conditions. Another very important factor in veterinary medical education in Latin America is the tremendous loss of students during the professional academic curriculum. For example, in North America, of the students admitted to the professional curriculum, approximately 72 per cent are graduated, while in Latin America the proportion is only about 29 per cent. Directly influencing this rate are the absence of employment opportunities upon graduation, the lack of incentives for the student, and personal financial responsibilities during the academic programs.

The Organization has attempted to strengthen veterinary medical education at the international, national, and local levels during the four-year period.

In Latin America the activities of the veterinarian upon graduation are different from those in North America. Most of the Latin American graduates are employed full time by the Governments in activities related to animal health, public health, and preventive medicine. At present, more than 50 per cent of the veterinarians are in service with the Governments, in contrast to the United States of America, where 23 per cent are full-time employees of the federal, state, or municipal agencies. At the present time, there are 70 schools of veterinary medicine in the Americas, 21 of them in the United States of America and Canada. The total enrollment in all schools is about 14,000, with approximately 4,800 attending schools in the U.S. and Canada.

The Organization's efforts to strengthen its program of support to schools of veterinary medicine have centered primarily on the provision of consultant services, teaching materials, and equipment and the sponsoring of courses for continuing education in epidemiology, veterinary public health, and preventive medicine. Seminars, symposia, and other meetings on the teaching of preventive medicine and public health in veterinary medical schools have been organized in different areas of the Hemisphere.

### *Meetings and Publications*

In March 1967 the III Seminar on the Teaching of Preventive Medicine and Public Health in Schools of Veterinary Medicine in Latin America, was held at the San Marcos University in Lima, Peru. Fifty persons representing most of the countries of Latin America attended. The data obtained from a survey of teaching programs conducted by the Organization in 42 schools of veterinary medicine in Latin America were used to prepare the basic working document of the meeting. The subjects discussed included the minimum content

of courses in preventive medicine and public health, statistics, epidemiology, administration, and environmental health.

The Symposium on Education in Veterinary Public Health and Preventive Medicine, held in St. Paul, Minnesota (18-22 March 1968), was organized by the Association of Teachers of Veterinary Public Health and Preventive Medicine in the United States and Canada, in cooperation with and under the sponsorship of the Organization. The discussions centered on basic principles of curriculum planning, design of instructional material, application of the learning resources in the veterinary curriculum, and evaluation of the students' learning, in accordance with the realistic needs of the contemporary public health veterinarian. The 60 participants represented 20 veterinary schools of the United States of America, Canada, and South America, six medical schools, three public health schools, 14 federal and state agencies, and the U.S. Armed Forces. The recommendations dealt with health promotion, epidemiology, biostatistics, food hygiene, environmental health, veterinary community medicine, field training, and biomedical communications.

Consultation and assistance were furnished by the Organization through short-term consultants, the Zone public health veterinarians, and staff of the Headquarters veterinary medical services to Argentina, Bolivia, Brazil, Colombia, Cuba, Guatemala, Peru, United States of America, and Venezuela. Assistance was rendered in the areas of teaching of epidemiology, preventive medicine, biostatistics and food hygiene, teaching methods, biomedical communications, and curriculum design and development.

A short-term consultant and Headquarters staff assisted the University of Cuyo (Mendoza, Argentina) in the design, preparation, and presentation of a development plan, administrative structure, and study programs for the creation of a new school of veterinary medicine in that University. Assistance was also furnished to the Government of Venezuela in an evaluation of the total teaching program in veterinary medicine in the country. On the basis of this study, recommendations were made for improving the teaching program in order to achieve excellence in quality of teaching at the undergraduate and graduate levels.

Special courses and meetings held under the sponsorship of the Organization in cooperation with the Governments included: a meeting of directors of schools of veterinary medicine of Brazil (Belo Horizonte); meetings on education at the University of Chile (Santiago and Valdivia) and at the University of San Carlos in Guatemala; the II Congress of Veteri-

nary Medicine for Central America and Panama; a course for public health veterinarians at the University of Antioquia (Medellín, Colombia); and courses on epidemiology and control of the zoonoses (Minas Gerais, Brazil), applied epidemiology of the zoonoses (Lima, Peru), production and management of laboratory animals (Buenos Aires, Argentina), and medical photography (Valdivia, Chile).

### *New Guidelines*

In general it has been recognized that the profession has assumed a new dimension in becoming part of the public health team and has assumed a new responsibility. As a consequence, the schools of veterinary medicine in the Hemisphere have attached increasing importance to the inclusion of public health instruction in their programs. They have established the basic needs for the curriculum in public health and preventive medicine and have created positions for full-time professors with formal graduate training in veterinary public health to teach these subjects.

Closer coordination was achieved among the various schools in regard to uniformity of the teaching programs of public health and preventive medicine. This new approach, as it continues to be applied, will contribute toward strengthening and improving veterinary medical education in the Hemisphere.

## FELLOWSHIPS

The PAHO/WHO fellowship program plays an essential role in the preparation, education, and training of personnel and the Organization has always given it special attention. It will be recalled that in 1966 a total of 854 fellowships were awarded; this number increased to 900 in 1967, to 1,004 in 1968, and to 1,051 in 1969 (Table 49 and Figure 57). This progressive increase is illustrated in Figure 58, which shows the continuous development of the program and of its various components.

The program is one of the most effective means the Organization has to strengthen and develop the na-

TABLE 49. FELLOWSHIPS AWARDED IN THE AMERICAS, AND FELLOWS FROM OTHER REGIONS WHO STUDIED IN THE AMERICAS, 1966-1969.

ORIGIN OF FELLOWS	1966	1967	1968	1969	TOTAL
Fellowships awarded in the Americas	854	900	1,004	1,051	3,809
Fellows from other Regions who studied in the Americas	191	210	259	298	958
Total	1,045	1,110	1,263	1,349	4,767

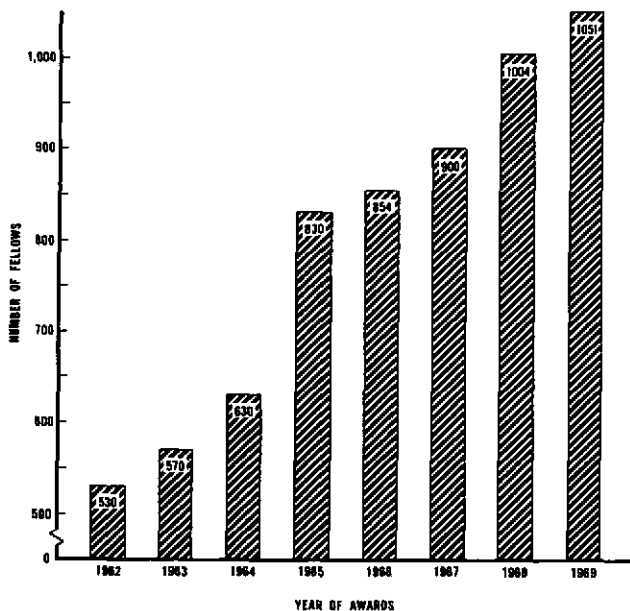


Fig. 57. Fellowships awarded in the Americas, 1962-1969.

tional health services and improve the education and training in medicine and related fields. As far as possible, an effort is made to integrate fellowships in the health programs (Figure 59) and preference is given to candidates who participate or work in programs carried out with the collaboration of the Organization or who hold key positions in the health services, or are members of the teaching staff responsible for the training of professional and auxiliary personnel.

The fellowship program has been developed in conformity with the system in force in WHO and the United Nations and is administered in accordance with a set of regulations which apply to all the specialized agencies. There is close coordination between the Organization and the OAS in matters of fellowships, and PAHO has an Advisory Committee which studies the requests referred to it by that institution.

In 1967 the 56th Meeting of the Executive Committee gave special attention to the program and the

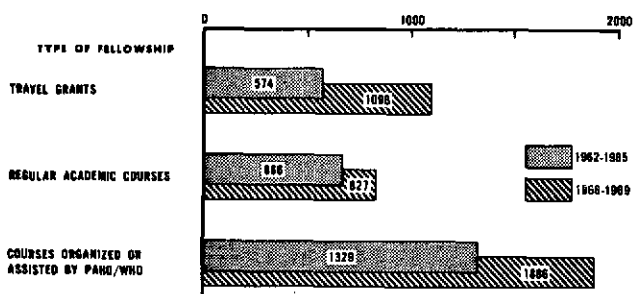


Fig. 58. Fellowships awarded in the Americas by type of training, 1962-1965 and 1966-1969.

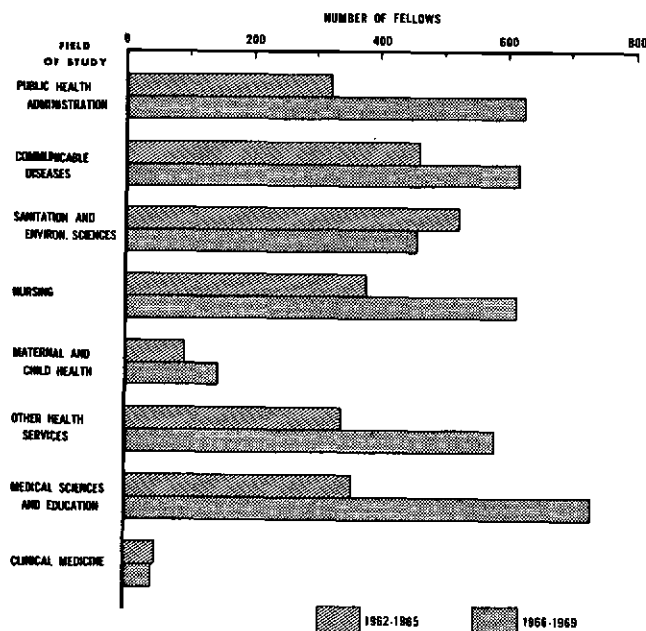


Fig. 59. Fellowships awarded in the Americas by field of study, 1962-1965 and 1966-1969.

XVII Meeting of the Directing Council (Resolution XXV) concurred in the recommendations made by the Committee to the effect that emphasis should be placed on improving selection procedures on the part of Governments, the utilization of fellows on termination of their studies, and the continuance of the salary payments and seniority and other rights of officials studying under fellowships, as had been stressed by the IX Meeting of the Council (1956). Furthermore, the Council recommended to the Director that he maintain the existing coordination of the fellowship program of the Organization with those of the specialized agencies of the United Nations, the Inter-American System, and other agencies; and that he carry out an evaluation of the program in cooperation with the Executive Committee and the Governments.

On the basis of a sampling taken, the design of the evaluation was prepared following two criteria: the professional improvement of the fellow and the diffusion of the knowledge he acquires. The 59th Meeting of the Executive Committee transmitted the report presented by the Director to the XVIII Meeting of the Directing Council, which authorized him to continue the proposed study of the fellowship program until it is completed and to submit the findings to the Governing Bodies in due course.

In Resolution XXV, the Council proposed in addition that the Director study the advisability of granting within-country fellowships for the better utilization of the personnel training resources available in the coun-

tries themselves. The 61th Meeting of the Committee approved the general criteria presented by the Director for granting within-country fellowships and asked that the Governments be consulted on the matter. The XIX Meeting of the Council (Resolution XXXVIII)

approved provisionally the proposed criteria and asked that it be informed of the experience obtained after the program has been in operation for one year.

That was the status of the fellowship program at the end of 1969.

## PUBLICATIONS AND REFERENCE SERVICES

During the quadrennium, measures were taken to strengthen and plan on a coordinated basis all of the Headquarters services concerned with publications and reference services, in order to fulfill the function of the Organization as a "collection and distribution center" of health information in the Americas.\* These include publications and editorial services, distribution, visual aids, translations, and library and reference services.

The program is designed as a complement to the work of the technical divisions, and as a means of disseminating to as wide an audience as possible information on the work of the Governments and the Organization in reducing disease and promoting individual and community well-being, as well as the knowledge gained and new techniques developed in the health and medical sciences.

\* Pan American Sanitary Code, Chap. IX, Art. 55.

### PUBLICATIONS

The principal technical organ—the monthly *Boletín de la Oficina Sanitaria Panamericana*—continued the work for which it was created 49 years ago by the Sixth International Sanitary Conference (Montevideo, 1920). As the number of readers increased, the monthly pressrun rose from 11,100 copies in 1966 to more than 14,300 by the end of 1969. In the four-year period some 280 main articles were published, from authors in all parts of the Americas as well as other regions of the world, in addition to the sections devoted to medical and health news and reports on items of current interest.

In 1967 the Organization introduced the new one-volume English edition of the *Boletín*, published once each year and containing a selection of the articles and reports featured in the regular monthly journal during

Exhibit of publications in the PAHO Library.





the preceding year. Issued in 10,000 copies, it is distributed both in the Americas and in other parts of the world.

A new quarterly publication on medical education—*Educación médica y salud*—was launched in October 1966. Its pressrun increased from 3,300 copies for the first issue to 5,000 in 1969, these being distributed mainly to university faculty and officials in Latin America.

The *Weekly Epidemiological Report* continued to be published regularly in a bilingual edition.

In addition to its periodicals, the Organization published a wide variety of monographs, technical manuals, and reports in its series of Special Publications (Scientific Publications, Official Documents, and Miscellaneous Publications). In the three series, a total of 188 publications were issued, with some 32,704 pages and 412,450 copies printed (Table 50). The titles included both original studies and reports and translations of technical manuals for distribution in Latin America. Among them was a series of 10 monographs emanating from the meetings of the PAHO Advisory Committee on Medical Research, a series of major studies in the health statistics field, and numerous publications on nutrition, medical care, communicable diseases, veterinary public health, professional education, and other subjects. The Spanish version of the American Public Health Association manual *Control of Communicable Diseases in Man* (10th edition), published by PAHO, reached a total pressrun of 30,000 copies, which were distributed to health services in all parts of Latin America. The Portuguese version was published in 1968 in 5,000 copies, and a further 5,000 will be printed to meet the continuing demand. Another key publication was the 627-page Spanish edition of the textbook on nutrition—entitled *Nutrición humana*—of which 8,000 copies have now been printed. Information on other publications is given in the individual sections of this *Report* and, in particular, on pp. 26-28.

As a service to the Governments, PAHO distributes the large majority of its publications free of charge to health departments, official institutions, and organizations. In addition, a certain number of copies are re-

TABLE 50. PAHO SPECIAL PUBLICATIONS, 1966-1969.

TYPE OF PUBLICATION	NO. OF PUBLICATIONS	NO. OF PAGES	NO. OF COPIES
Scientific Publications	112	15,764	277,500
Official Documents	58	15,194	61,950
Miscellaneous Publications and others	18	1,746	73,000
Total	188	32,704	412,450

TABLE 51. PAHO/WHO PUBLICATIONS DISTRIBUTED, 1966-1969.

YEAR	PAHO PUBLICATIONS	WHO PUBLICATIONS	TOTAL
1966	274,017	25,063	299,080
1967	296,809	34,595	331,404
1968	320,198	38,666	358,864
1969	430,703	44,080	474,783
Total	1,321,727	142,404	1,464,131

served for sale at a nominal price; the sales were more than doubled, from 8,370 copies in 1966 to 20,000 in 1969. The distribution service, which handles both PAHO publications and some of those of WHO in the Americas, increased by 58 per cent the number of copies distributed, from 299,080 in 1966 to 474,783 in 1969 (Table 51).

## VISUAL AIDS

This service contributed greatly to promoting the Organization's program. In addition to a number of exhibits organized for viewing both at technical meetings and by the general public, it expanded its program of educational filmstrips, with accompanying scripts in Spanish. These are produced in collaboration with the National Medical Audiovisual Center of the U.S. Public Health Service, as teaching aids in schools of public health, medicine, nursing, veterinary medicine, and sanitary engineering in Latin America. Thirty-six filmstrips were prepared, bringing the total to 44 since the program began in 1964. Several of them were original PAHO productions. The subjects ranged from vector control to the use of a medical library. The filmstrips have been very much in demand, and the program was expanded in 1969 to include material to help in the training of secondary-school teachers, such as the one on "How to Combat Rabies."

## LIBRARY

The PAHO Library maintains a relatively small but highly specialized collection of references (some 35,000 items), designed primarily to meet the needs of the Organization's technical services and special requests of the Governments. The collection was periodically reviewed to keep it up to date, while items no longer of current interest were discarded. Among the services provided were the purchase of books at the request of PAHO staff and officials of the countries, provision of photostats of material on request, preparation of bibliographies in specialized fields, and exchange programs

with other libraries. Some 3,200 readers and visitors were received in the Library in 1969.

### TRANSLATION SERVICE

This service met the needs of all the publications and information activities, and at the same time those of the technical departments at Headquarters. The staff

also regularly performed language services during meetings of the Governing Bodies and technical conferences. Translations done by the regular staff in four languages (English, Spanish, Portuguese, and French) totalled 47,858 pages during the four years (an average of 11,965 per year), apart from work performed during the meetings and that done under outside contract.

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## FINAL COMMENTS

The period from 1966 to 1969 which we have reviewed in the preceding pages from the standpoint of health conditions and progress in the Americas and the work of PAHO/WHO emerges as one of consolidation and further application of the policy, initiated in 1961, of integrating health into economic and social development.

The picture described is likely to remain essentially unchanged throughout the next few decades, with certain trends becoming, perhaps, more pronounced, as far as the Region as a whole is concerned, although in terms of individual countries conditions will, of course, continue to vary with the degree of industrialization attained in each. Indeed, even within a single country there are sharp ecological differences which are reflected in widely varying ways of life in urban versus rural environments, tropical versus highland areas, autochthonous versus industrialized communities, and so on.

In spite of a deeply-felt obligation to solve the existing problems and attenuate their harmful effects, the national health authorities are prevented by a lack of sufficient resources from taking effective action against every negative aspect of the situation. And their task is made even more difficult by the paucity of trained personnel, by scarcity or inadequacy of facilities and services, and by insufficient funding, problems which are in turn accentuated by economic conditions and by historic and cultural patterns that are often a hindrance to social progress.

The health of the people is primarily a concern of the Governments. Determining the problems that need to be tackled and the ways and means of doing the job is a matter within the purview of each Government. In every phase of this work, however, they can count on receiving the help of PAHO/WHO to the extent that they so request and its budget allows.

A salient feature of our entire pattern of collaboration with the Governments is the importance attached to research and manpower development. This task, in which the universities, other teaching institutions, and special centers play a vital role, must be expanded and extended while continued efforts are also made to combat disease with the knowledge and methods placed in our reach by the health sciences and modern technology. The multidisciplinary approach is an imperative of the times.

As we continue—in the words of our Constitution—to “promote and coordinate efforts of the countries of the Western Hemisphere to combat disease, lengthen life, and promote the physical and mental health of the people,” we are buoyed by the knowledge that Latin America has achieved the conditions necessary for sustained economic and social development and that, where health is concerned, there is now awareness of what needs to be done, how to accomplish it, and how to predict results. In all this activity to improve the material conditions and well-being of the American nations, the Pan American Health Organization is proud to be at the service of all the countries of the Hemisphere.



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“ . . . the five years since the Meeting of the Task Force on Health have witnessed the burgeoning in the Americas of a spirit that is breathing new life into old patterns and obsolete structures; and increasing willingness to meet social aspirations; a recognition—not only in words but also in the law and its application—of the right of every human being to a minimum degree of well-being, regardless of his social class, religion, or genetic origin.”

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