QUADRENNIAL
REPORT
OF THE DIRECTOR
1962-1965
INDEXED

QUADRENNIAL REPORT OF THE DIRECTOR
of the
PAN AMERICAN SANITARY BUREAU
REGIONAL OFFICE FOR THE AMERICAS
of the
WORLD HEALTH ORGANIZATION
1962—1965

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Pan American Sanitary Bureau, Regional Office of the
WORLD HEALTH ORGANIZATION
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Washington, D. C. 20037

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 1962–1965. This Report summarizes the activities at Headquarters and in the countries; greater detail is presented in the Annual Report for 1965, which is submitted separately, and in the Annual Reports for the first three years of the quadrennium.

Respectfully,

Abraham Horwitz
Director
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INTRODUCTION
INTRODUCTION

IN THE LIFE OF THE ORGANIZATION THE period 1962-1965 has been marked by political decisions of continental significance, by the strengthening of the ideas that inspired them, and by a series of achievements, the scope of which is reflected in the level of health of the peoples of the Americas. All this has been achieved by the Governments, with assistance from international agencies where deemed necessary. Their fields of action are interdependent, and both are part of the process of economic and social development. An analysis of them will disclose the ideas that gave rise to these decisions and those that sprang from them, the methods used, and the advances made in the protection, promotion, and restoration of health.

During the four-year period under review, the principles embodied in the Charter of Punta del Este, which was signed on 17 August 1961, have been translated into concrete gains in the field of well-being. In a very short period of time consciences have been touched with concern about the common good, a prerequisite for any systematic action in so vast and complex an undertaking affecting millions of human beings. To measure its effects exclusively by its material achievements—to assess it from that standpoint—is to fail to grasp the essence of the whole process as well as the negative factors that limit or slow up development. To point up the determination of peoples and of Governments, the many activities leading to continuing progress, while acknowledging the vicissitudes of the American experience, is to proceed realistically and to make a positive contribution to the continental effort.

Between the taking of decisions and their implementation, there is a gap which will be all the wider as intentions are less strong and structures and administration are weaker. Nevertheless, in the field of health progress has clearly been made toward achieving the objectives of the Alliance for Progress, as outlined in Title I of the Charter of Punta del Este. That document includes also the Ten-Year Public Health Program which spells out both immediate and long-term goals in the health field. In accordance with the recommendations of Resolution A.4 of the Charter, a Task Force on Health at the Ministerial Level met in Washington, D.C., in April 1963 to examine the feasibility of that Program. It studied its intrinsic purposes as well as its implications for the general process of development to which the Americas have decided to devote themselves with growing determination. On completing their task, the Ministers declared: “In the light of the Charter of Punta del Este, we have considered health in the Americas in its technical, social, economic, juridical, and cultural aspects. The important advances made have been examined, the present problems have been defined, and those that should have priority have been selected. We have recommended a number of practical measures for fulfilling the health objectives of the Charter. Their execution will mean greater well-being; failure to carry them out may lead to discouragement or frustration.” They reached the conclusion that the Ten-Year Public Health Program was practicable, provided its objectives were realistically integrated with the other goals the countries proposed to reach. Historically speaking, it was the first occasion in this century that health experts had resolved to proceed in a systematic and measurable manner to the solution of problems, some of them continental in scope, which affected both the well-being and the development of the Americas.

The factors as we know them show that acute and chronic diseases, malnutrition, inadequate sanitation, substandard housing and working conditions, ignorance, and a low per-capita income are prevalent in Latin America. Together they produce morbidity and mortality rates higher than those of the technologically advanced countries; high mortality in infants and in children under five years of age—who account for more than 40 per cent of all deaths—and a precarious course of pregnancy, delivery, and post-partum which is translated into limited life expectancy at birth. These health problems affect the ability of schoolchildren to learn,
limit the return on the investment in the labor force, and are responsible for a hostile attitude and pessimistic outlook on life. The distribution of these problems varies from one country to another and, within each country, between urban and rural areas.

During the quadrennium, as has been mentioned, major political decisions were taken, the most conspicuous of which was the Charter of Punta del Este. We have seen how those responsible for health services in the Americas, where health is regarded as a social service, translated the objectives of the Alliance into techniques and procedures for achieving the goals established. Their ideas and recommendations are today part and parcel of the policy of the Pan American Health Organization, as a result of Resolution XXXII of the XIV Meeting of the PAHO Directing Council, XV Meeting of the Regional Committee of the World Health Organization for the Americas. And they were endorsed by the Inter-American Economic and Social Council at its Second Annual Meeting at the Expert Level.

During the same period, ideas concerning the relationship of health activities and development were further refined and strengthened. There is no longer any discussion about the fact that for each human being health is a good in itself, the true underpinning of happiness as he conceives it. Collective health, which is a social process, calls for organized services for which a certain amount of the national income must be apportioned. There is no agreement whether these funds are capital goods or consumption goods, or whether they represent an investment or an expenditure. To regard them as expenditure is to doubt the economic impact of death, disease, and disability on the labor force. As has been pointed out by Schultz, in technologically advanced countries production has increased at a much faster rate than that of capital investment and manpower, whether professional or manual. A plausible explanation is that the improvement in the quality of the production of each person is due, inter alia, to health and education. However, as yet there is no body of scientifically based doctrine, no true economic theory of health, which makes it possible to explain the relationship of these disciplines. Nevertheless, it may be assumed that health contributes directly to economic and social development in that it prolongs life and increases productivity, or indirectly in that it facilitates the exploitation of natural resources by reducing or eliminating unfavorable environmental factors. General sanitation, water supply, air and water pollution control, and malaria eradication are obvious examples of the influence of health on development. "Much of what we call consumption constitutes investment in human capital. Direct expenditures on education, health, and internal migration to take advantage of better job opportunities are clear examples. . . . The use of leisure time to improve skills and knowledge is widespread and it too is unrecorded. In these and similar ways the quality of human effort can be greatly improved and its productivity enhanced. I shall contend that such investment in human capital accounts for most of the impressive rise in the real earnings per worker."

We would not like the ideas set forth above to be interpreted as a denial of the spiritual value of health and of human beings as the "protagonists and beneficiaries" of development. On the very contrary, we cannot conceive of an economic system that does not have humanitarian ends, that is not aimed at well-being, that does not give due consideration to the common good. What is more, we do not believe that national income is an absolute indicator of well-being or that it determines the character of a society. For that character is determined by culture, in the anthropological acceptance of the word, and is mirrored in the way of life of individuals, families, and communities. The flow of goods and services shows only some of the characteristics of a society and its degree of development, but not the whole of it, for, as has already been said, goods that cannot be directly measured and are probably not reproducible—among them, health—contribute to the present and potential wealth of individuals and communities.

In the Hemisphere there is a wide gap between knowledge of how to prevent and cure diseases and the application of that knowledge, a situation that reveals the disparity between needs and resources. Furthermore, social progress has given some problems characteristics that justify the investment of outside capital for their solution. They are the problems which, because of their scope and significance, are of importance for the economy. It is precisely in this field that the Inter-American Development Bank has made such an extraordinary contribution to social welfare and has made it possible to gain valuable experience for devising a true health investment policy. In the short period of six years, that institution has helped to transform deeply held aspirations into tangible realities. The Inter-American Development Bank, in addition to being the bank for economic integration and its corollary political interdependence, and the bank of higher education or university bank, is in our estimation the "Bank of


Health.” We believe that its activities in these many fields symbolize the oneness of development, of which, in our opinion, the prevention of diseases, the prolongation of life, and the promotion of health—which are the purposes of our Organization—form an integral part.

This new dimension of health, in the context of economic and social development, has been reaffirmed by the United Nations Development Decade and, as far as the Inter-American System is concerned, by the Charter of Punta del Este. The inter-American agencies, in particular the Inter-American Economic and Social Council, meeting at the Expert and the Ministerial Levels, have in recent years adopted resolutions concerning problems of vital importance to the Hemisphere. We need only mention those concerning malaria eradication, water supply, rural welfare, and foot-and-mouth disease control. From the beginning of its activity the Inter-American Committee on the Alliance for Progress (CIAP) has welcomed representatives of the health sector to share in its examination of national and international investments for development purposes. Thanks to this interest, the Inter-American Development Bank and the International Bank for Reconstruction and Development have extended their credit policies to include loans for systematic vaccination campaigns against foot-and-mouth disease.

These are some of the events which, in the period 1962-1965, have had a very direct and favorable effect on the life of the Organization, because the political decisions have made it possible to strengthen the modern idea of health, which goes far beyond the purely biological framework, and have facilitated an expansion of opportunities and achievements. We should like to comment on these achievements in terms of the targets of the Charter of Punta del Este, taking as a basis for comparison the facts contained in this Quadrennial Report, in the publication Health Conditions in the Americas, 1961-1964,1 and in the volume Facts on Progress—Health Goals of the Charter of Punta del Este,2 which was prepared as a report to the Fourth Annual Meetings of the Inter-American Economic and Social Council (Buenos Aires, 1966). The last-mentioned publication provides information on the status of each problem or activity five years after the signing of the Charter. International collaboration is closely connected with the entire process of promotion of health, by either preventive or curative means. It is not always possible to identify that collaboration, since its effects are not immediately obvious, or are achieved by procedures that cannot be related immediately or directly to the objectives of a given program. The best example of this type of cooperation are activities in the field of education and training, in particular fellowships which, because they are given to individuals, make it possible to see what training and spiritual development mean for progress, beyond capital investment. There is, however, abundant evidence of the work of international organizations that has immediate consequences and is directly identified, especially in the control or eradication of communicable diseases. These considerations are guided solely by the desire to highlight the fact that, in this effort, policy and general guidelines are incumbent on the Governments and specific activities on professional and auxiliary health workers. The more the activities of the technicians from abroad are made part of this work, the better the ideas and purposes of the Constitutions of the Pan American Health Organization and the World Health Organization will be achieved.

* * *

To establish as a broad goal for health programs during the present decade an increase of five years in the life expectancy at birth of every person.3

This aim of the Charter of Punta del Este sums up the results of all the efforts of a society to prevent and cure diseases. It can be measured only by a comparison of given periods, and the method used is similar to that used for life tables. At present the only data available for the decade beginning 1960 are those for Argentina, Chile, El Salvador, Mexico, and Venezuela. Around 1950 the average life expectancy in those countries was between 48 and 59 years; by 1960 the lowest was 58 years and the highest 66 years. In other words, the increase was on the average at least five years per person in the decade, as recommended by the Charter, and in some countries it was even more. There appears to be a certain correlation between these increases and the expansion of health services in both urban and rural areas.

In other countries of the Americas, estimated life expectancy in 1950 was between 33 and 62 years, and it is hoped that it will increase by reason of health achievements, according to the nature of the problem, the quality and quantity of human and material resources available, and the appropriate utilization of the instruments for applying scientific knowledge through rational health service organization and administration.

Prolongation of life will be possible if infant mortality can be substantially reduced, since these specific rates

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1 Scientific Publication PAHO 138.
2 Miscellaneous Publication PAHO 81.
are comparatively very high in most Latin American countries. This justifies the goal of the Charter.

To reduce the present mortality rate in children under five years of age by one half.10

More than 40 per cent of all deaths are in children under five years of age; the country percentages range from 13 to 58. In the technologically advanced countries of North America, which are among those with the highest per-capita income in the world, the percentage is only 7.

In the decade 1951-1961 mortality in infants and in children in the age group 1 to 4 years showed a downward trend. Of course the rates varied considerably between countries and between regions within each country. However, judging from the figures for the period 1951-1964, as shown in this Report and in Health Conditions in the Americas, more concentrated efforts are needed if the goal of the Charter is to be achieved in this decade.

There are greater differences between the countries in the mortality of children aged 1 to 4 years than in the mortality of infants under one year of age, and they are even more closely related to environmental factors. A comparison of death rates, by broad groups of causes, shows considerable progress between 1956 and 1963 in reducing mortality. Death rates for infectious diseases were 41 per cent lower in 1963; those for diseases of the digestive system (mainly gastroenteritis) decreased 35 per cent; and those for ill-defined causes, 35 per cent. These figures show that mortality in infants and in children under five years of age is a non-specific indicator and a reflection of the degree of economic and social development. It is not simply an exclusive response to the activities of the health services, although these are absolutely indispensable. Clearly, proven methods of prevention and cure will not succeed in preventing diseases or the death of children if they have a limited capacity to create their own immunity or to react against a morbid process as a result of therapy. It is therefore necessary to reduce the frequency of environmental hazards through sanitation and education, and simultaneously to increase non-specific resistance to them through nutrition and specific resistance to them through immunizations or therapy, whichever is appropriate. In brief, the factors conditioning mortality in children under five years of age must be seen as a veritable ecological system in which human beings and their environment are one, in an endless chain of events that must be identified and qualified insofar as they affect growth and development. It will be difficult to reduce mortality in children under five years of age by half, as is indicated in the Charter of Punta del Este, unless a careful plan is drawn up that will take into account for each community all of the relevant factors, which would have to be duly quantified in order to frame the necessary action to be taken against each of them. The publication A Health Care Program for Mothers and Children 11 sets forth in detail the policy, standards, and procedures in key with these ideas.

To be consistent we now wish to consider the goals of the Charter of Punta del Este with respect to communicable diseases, sanitation, and nutrition in terms of what has been achieved since it was signed.

* * *

To eradicate malaria and smallpox from the Hemisphere and intensify the control of other common infectious diseases, such as enteric ailments and tuberculosis.12

In 1954 the Governments of the Americas gave their support to the eradication of malaria, and in 1956 they launched a systematic program in the areas in which the disease was most prevalent. At that time, approximately 88 million persons were exposed to the risk of malaria; by the end of 1965 the population of those areas had increased to 104 million. As a result of the program, 54 million of them are now living in areas free of risk of the disease, their living conditions have improved, and the natural resources of the regions have increased. The remaining 50 million are expecting similar benefits. The progress achieved since 1961 has been substantial, since the number of persons living in areas where eradication program is in the consolidation or maintenance stage has increased by 30 millions.

The same progress is to be seen on examining mortality figures. Data from 13 countries for the period 1950-1952 showed that on the average malaria caused 43,368 deaths each year. Ten years later the number had fallen to 10,833, and by 1964, to 2,285. This fall is attributable to various factors, including reduction of the risk of the infection, the recognition of the importance of the problem, the greater availability of therapeutic agents, and improvements in diagnostic techniques, which are reflected in the medical certification of causes of death.

It is not surprising that an undertaking which is so complex from the point of view of biology, organization, administration, and financing, has had to face problems that have slowed down the rate of expected improvements.

10 Resolution A.2 (par. 2-b-2). Ibid., p. 31.
11 Scientific Publication PAHO 130.
The fact that the program has not been carried out simultaneously in all countries—which was to be expected, despite the resolutions of the Governing Bodies of PAHO and WHO—has been a serious limiting factor, the consequences of which will continue to be felt with greater impact, the greater the disparity in the development of the various phases of malaria eradication in each country. The present Report shows that there are four types of problems: (a) those connected with spraying operations, surveillance, and administration in general; (b) those inherent in the topography of the malarious areas—such as in the Amazon Basin territories—and the attitude of primitive or hostile populations as in some communities in Colombia, Ecuador, and in the interior of Suriname; (c) those of a biological and technical nature, such as the resistance of the mosquitoes to certain chlorinated insecticides, excito-repellency of vectors, outdoor transmission of the disease (as in Haiti), and strains of Plasmodium resistant to chloroquine; and (d) various types of administrative and financial difficulties, occasioned by the very nature of the epidemiology of the disease and by the need for the efficient and methodical application of measures designed to interrupt transmission. The strategy and logistics must be applied very accurately and adapted to conditions pre-established by nature. Once the dynamics of the disease in each place and the human and material resources available are known, the techniques and procedures to be used must be applied opportunely if the hoped-for effects are to be achieved; in practice this means efficient organization and administration and sufficient funds. In that connection it must be pointed out that between 1956 and 1965, inclusive, $337,295,500 were invested in malaria eradication in the Americas; of that amount 73.3 per cent was provided by the Governments and 26.7 per cent by international agencies. The average annual cost per person protected was $0.295, a relatively low figure if we bear in mind the number of persons who are today no longer exposed to the disease, and the development which has taken place in the areas where they live.

Worthy of mention is the resolution adopted at the First Annual Meeting of IA-ECOSOC at the Ministerial Level recommending long-term, low-interest loans for the betterment of rural life, including malaria eradication. Such external capital should be forthcoming on flexible terms that would allow it to be used for the payment of local personnel costs. The United States Agency for International Development has extended its credit policy to include loans on very favorable terms, and some countries have already taken advantage of them. It is to be hoped that the international banks will take similar decisions, for malaria eradication is of great importance for the economic development of the countries.

At two Seminars on the Role of General Health Services in the Eradication of Malaria, which were attended by representatives of both services, emphasis was placed on the need for close relations between the staff of international and national health agencies and those directly engaged in malaria eradication. In view of the national importance of the program, it is to be hoped that, within their own sphere of action, all technicians will cooperate. An endeavor will be made to put the recommendations of the Seminars into practice, and for that purpose the Organization has appointed two special consultants.

The Report gives details of the malaria eradication activities of the Governments and of the Organization in the period 1962-1965. The data it contains are supplemented by those appearing in Health Conditions in the Americas, 1961-1964, and in Facts on Progress. There is no denying the progress made, but the objective is an absolute one and what needs to be done is to continue to apply the techniques whose effectiveness is established and to use the new methods for interrupting transmission, by action either on the vector or on the parasite, which are the result of epidemiological and operational research. The Governments need to make a firm commitment to contribute the funds required and to appropriately administer the services so as to prevent outside influences that could retard the eradication work. In carrying out the directives of the Governing Bodies, the international staff must identify themselves with this undertaking which, because it is on a world scale, makes the shared responsibility even more evident.

The Governments have accepted a similar commitment with respect to the elimination of smallpox, the epidemiological characteristics of which show that its dynamics are simpler than those of malaria. Vaccination, the universally accepted method, is a relatively simple technique to apply and vaccine is easy to produce; its effects are long-lasting, at least three years. Vectors are not involved and the cycle of transmission is direct.

In the last 40 years, reported cases of smallpox in the Americas have fallen from about 125,000 in 1921, when reporting was very unreliable and data were available from only six countries, to 3,218 reported in 1964 from eight countries. Provisional data for 1965 show

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that there were 1,547 cases in five countries. Of the cases notified during the period 1961-1965, 92 per cent were from Brazil, although reports were received from 10 countries, in three of which the cases were imported.

These figures alone show the progress that has been made and reveal how necessary it is to continue on with the job of eliminating this disease once and for all. An abundance of good quality glycerinated and freeze-dried vaccine is produced in the Hemisphere and is generously distributed between the Governments according to their needs. It is now thought advisable to improve the etiological diagnosis of smallpox through the training of microbiologists in the countries. It would appear from the low mortality and the predominance of at least trim that the incidence, and also the seriousness, of the disease is diminishing; in those circumstances etiological diagnosis becomes more necessary.

The Seventeenth and Eighteenth World Health Assemblies 17 and the XV 18 and XVI 19 Meetings of the PAHO Directing Council stated that priority should be given to the smallpox problem and instructed the Secretariat to collaborate with the Governments for that purpose. This Report deals with the entire problem and describes the work of the Organization especially in the period 1962-1965 and its plans for the immediate future. A survey is under way covering the countries of the Americas, the findings of which will be used as a basis for planning and financing PAHO activities, in accordance with the resolutions of the Council. It is hoped to collect the necessary background information for determining both the type and the amount of international assistance needed in support of systematic vaccination programs to eradicate smallpox and protect the population against it if reintroduced.

Eradication of *Aedes aegypti*, the urban vector of yellow fever, which was begun in 1947, had been achieved in 13 countries and two territories by the end of 1961. In 1963 Mexico was officially declared free of the vector, as was Argentina in 1965. The vector still exists in an area in the southeastern part of the United States of America, covering nine states and measuring approximately 1,550,000 Km², in addition to Puerto Rico and the Virgin Islands. It is also present in countries and territories of the Caribbean area and, in South America, in Venezuela, Surinam, French Guiana, Guyana, * and Colombia (Cicuta).

During the quadrennium progress was slower than expected. *A. aegypti* developed resistance to DDT, to dieldrin, or to both, in several of the aforementioned countries and, as a result, the Governments decided to suspend the program. Nevertheless, trials of organophosphorous insecticides such as fenothion and Abate have given promising results, and point to the need for further trials with a view to their use in large-scale programs.

In 1964 an active program was begun in the States of Florida and Texas, in Puerto Rico, and in the U.S. Virgin Islands, and the work was considerably stepped up in 1965. It is to be hoped that it will cover all the infected area of the country.

El Salvador was free of *A. aegypti* from 1957 to 1965, when its capital was reinfested, possibly owing to mosquito eggs having been brought into the city in used tires imported from a country still infested. With advisory services from the Organization, the Government quickly resumed its program to eliminate the vector. Similar situations occurred in Guyana, Trinidad, and also in Cuba in areas previously free of the vector.

In 1963 an epidemic of dengue flared up in Jamaica and in Puerto Rico, and spread to other countries and territories of the Caribbean and to Venezuela in the following year. This event points up the urgent need to redouble continental efforts to eradicate *A. aegypti* and to improve systems of epidemiological surveillance to prevent its introduction. In the same period there was a serious epidemic of yellow fever in Ethiopia, and hemorrhagic fever transmitted by *Aedes* resulted in many deaths in India and Pakistan. The biological problems we have mentioned become considerably aggravated when service organization is poor and administration inadequate. As in the case of malaria, eradication activities must be carried out opportune and methodically and unless that is done it will be difficult to achieve the absolute objective they are aimed at.

In the period 1962-1965 a total of 370 cases of jungle yellow fever was reported by five countries in South America. No cases of urban yellow fever were reported, and none have occurred since 1954. The virus is firmly entrenched in the basins of the Amazon, Magdalena, and Orinoco Rivers. From these foci the virus spreads out from time to time to give rise to epidemic outbreaks, which will probably be intensified as economic development penetrates the jungle. They can be prevented if immunization with 17B virus vaccine is organized, since a sufficient quantity of this vaccine for all countries of the Hemisphere is produced at the National Institute of Health of Colombia and at the Oswaldo Cruz Institute of Brazil, in accordance with an agreement between the Governments of those countries and the Organization.

Present mortality from tuberculosis is about 23 per 100,000 population in Middle America and 30 per 100,000 in South America, as compared with 4.5 and

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18 Resolution XLI. Official Document PAHO 58, 91-93.
19 Resolution XXX. Official Document PAHO 66, 81-82.
* Formerly British Guiana.
3.5 per 100,000 in the United States of America and in Canada, respectively. The rates vary considerably between the countries as well as between regions within them. In one of them it is as high as 66 per 100,000 population. In at least seven countries there were more than 20 deaths per 100,000 population in 1964.

Outstanding progress has been made in the last 20 years in reducing tuberculosis mortality; registered mortality rates have been reduced to one-third of those in 1946. Nevertheless, in 13 out of 18 countries for which data were available, the death rates decreased, some only slightly, between 1961 and 1964. In order to reach the levels of the United States and Canada, renewed efforts must be made, not only in the use of biological, medical, and public health techniques, but also in the general development of each country. As the incidence of a widespread disease diminishes, it becomes an increasingly complex task to identify and treat cases so as to reduce the sources of infection, and to apply the preventive measures, of whatever type, required to avoid the spread of the disease and increase the resistance of susceptible individuals. This fact explains the statement in the Report that “as far as tuberculosis is concerned, a tendency that emerged during the previous quadrennium has become more marked since 1962 and, in many instances, is not only a well-defined trend but also the most significant event in this field: the change of attitude on the part of national authorities toward the tuberculosis problem and the change in approach to tuberculosis control in the countries in the Hemisphere.”

The Report describes the advisory services given by the Organization to Governments in connection with their renewed determination to conquer the disease; these advisory services were related to measuring the extent of the problem in a community, planning of tuberculosis control activities, and organization of control services. A publication entitled Tuberculosis contains full scientific and administrative information for expanding the work of the Governments and international agencies. It summarizes the experience gained in “verification” areas of several countries, which has given rise to simplified methods for the various stages of tuberculosis control to be carried out jointly by national personnel and the staff of the Organization.

The goal of the Charter of Punta del Este for the control of communicable diseases includes the control of enteric ailments. Because of their frequency, mention must be made of diarrheal diseases, which are among the five leading causes of death in 15 out of 20 Latin American countries. They are responsible for 108,000 deaths, or 10 per cent of the registered mortality at all ages in these 15 countries. The largest proportions are in children under five years of age.

In addition to diarrheal diseases, typhoid fever and dysenteries together contribute another 10 per cent to mortality from enteric diseases. While the increased use of antibiotics has considerably reduced deaths from these diseases, the fact that morbidity has not fallen proportionately is accounted for to some extent by insanitary environmental conditions. Hence, the enormous importance of the water supply program, which we shall deal with later. The situation is complicated even further by the fact that mortality from diarrheal diseases in countries where statistics are more reliable is practically twice as high in the rural as in the urban areas. In Venezuela, for example, only 22 per cent of deaths were in large cities, which account for 35 per cent of the total population. Nearly one third (31 per cent) of deaths occurred in areas without a community of 1,000 inhabitants. That situation is clearly a reflection of the degree of development, and of the fact that the health techniques must be supplemented by sanitation, education, and nutrition. It is not difficult to show the correlation between the frequency of enteric diseases and real increase in per-capita income, considering the family group as a whole.

Although not specifically mentioned in the Charter of Punta del Este, there are other communicable diseases of man and animals which are of concern to the Governments and the Organization; these are dealt with in the Report and also in Health Conditions in the Americas, 1961-1964. We shall refer to only some of them and supplement the statistical data with comments concerning their importance, the policy being followed, and the results achieved.

For historical reasons we should first mention plague, which was covered by the First International Sanitary Convention held in Washington, D.C., in December 1902, when our Organization was founded. The disease is found today in the western part of the United States of America as well as in Bolivia, Brazil, Ecuador, Peru, and Venezuela. Its incidence continues to increase, the number of cases reported in the period 1962-1965 being three times greater than in the period 1958-1961. These figures are given in Table 21 of the Report. Mortality has been very considerably reduced in these cases in which the disease was diagnosed early.

The importance of plague for the economy of the countries may be deduced from its natural history and the consequences for internal and international trade of its tendency to attack ports. Control measures are concentrated in port areas, not only for economic con-
siderations but also because of the enormous difficulties which occur in the hinterlands where plague is present. To determine the dynamics of the disease, its carriers and vectors, in particular wild rodents, a very careful study must be made of the ecology of plague. The impression exists that in rural areas man has organized his life in such a way as to favor the access of rats and other rodents and to facilitate the spread of the disease. Such ecological studies will make it possible to establish control on a surer basis. While they are being made—and they will last for a considerable period of time, since plague appears to have spread through the Amazon Basin—measures in ports and cities to reduce the risk of infection must be intensified. Assistance provided by the Organization in this connection is described in the Report.

The present status of the leprosy problem and of the programs to gradually reduce the frequency of the disease is as follows: Research has succeeded in finding a method of cultivating Hansen's bacillus on the foot-pads of mice. In addition to facilitating diagnosis, it will make it possible to study the therapeutic activity of sulfones and other pharmaceutical products. Trials with BCG appear to show that it tends to exercise a preventive effect against leprosy, and justify vaccinations on a broader scale and longer observations. The diminution in the obscurantism surrounding the disease is reflected in the terminology used, the term "leper" having been replaced by "leprosy patients," and "leprosaria" by "hospitals." What is more, there has been an increase in ambulatory and domiciliary treatment, which shows that leprosy patients have been to some extent incorporated into their social environment. The arrest of the process in advanced cases and the improvement in recent cases, as a result of chemotherapy, has created a new awareness about leprosy and has encouraged Governments, voluntary institutions, and international agencies to make a concerted effort to prevent the spread of the disease. The seriousness of the disease is tested by the fact that not less than 45 per cent of all leprosy patients suffer from some type of physical incapacity, which in its extreme form may be a serious malformation or disfigurement. While much remains to be learned about the epidemiology of the disease, sufficient information is available to allow control activities to be organized. Since the disease is essentially a chronic one, special data-registration systems and continuous observation of cases and contacts are necessary. The information collected in this way serves as a basis for the identification of cases, treatment, and prevention, as appropriate. As will be seen from the Report, the assistance provided during the quadrennium was geared to the characteristics we have mentioned. The number of new cases identified and treated shows a measure of the progress made. The magnitude of the task can be appreciated from the fact that only some 60 per cent of the known patients, and not more than half of their family contacts, are being treated. Table 10 contains the pertinent information. In any event, assuming a prevalence of 1 per 1,000, the Americas would have about 400,000 leprosy patients. The rate must undoubtedly be higher in the tropical areas.

The series of poliomyelitis epidemics recorded in the Report indicates a failure to systematically immunize the susceptible population, which in Latin America is concentrated in the age groups under six years. The fact that the use of modified live virus vaccines has become routine is, we believe, in part the result of two international conferences on live poliovirus vaccines sponsored by PAHO and WHO.22 If the impressive reduction in the incidence of poliomyelitis in the United States of America (Figure 17) is anything to judge by, systematic immunization should be given in health centers. The future of the yaws eradication program in the Dominican Republic, Haiti, Jamaica, Trinidad and Tobago, and the territories of the eastern Caribbean is very uncertain. The disease has reappeared in several zones, and the health services are not in a position to assume responsibility for continuing the programs to the finish. In some countries the services responsible for eliminating the disease have prematurely been suspended. Details of this situation are given in the Report. We trust that an evaluation may be made in Haiti and in the Dominican Republic, based on a carefully designed sample. Similar studies in other countries would be equally useful.

What is happening with yaws explains how necessary it is to make sure that the local health services take part in eradication programs from the very beginning, where such participation is justified. They can help with the diagnosis and treatment of the sick and the education of the public.

The countries of the Americas, as is pointed out in the Report, offer almost unlimited ecological conditions for the persistence and spread of arthropod-borne viruses. Of the 170 agents already classified into that group, more than half have been isolated in the countries of the Region from human specimens, from arthropods, or from other animals. Although many of these viruses have not been shown to be pathogenic for man, the opening up of highways and new land settlement schemes are bringing man into contact with new ecological

22The proceedings of the conferences were published in Scientific Publications PAHO 44 (1959) and 50 (1960).
niches and are thus increasing the danger of infection by these agents. The project to open up to ranching the fertile eastern plains of Bolivia, where outbreaks of hemorrhagic fever affecting most of the population have become an insuperable obstacle, is an example. The opening up of a highway bordering the jungle which will unite the Bolivarian countries may create a similar situation, with incalculable consequences and losses. It is therefore necessary, before that is done, to investigate the factors involved in the transmission of diseases caused by arboviruses and other species which exist in areas where large-scale economic development projects are planned, and to adopt the necessary control measures to prevent their spread.

In this connection the Report describes the epidemics of equine encephalitis in Venezuela, Jamaica, and the United States of America (Tampa, Florida), which appear to indicate an increase of the transmission of virus in the Caribbean area. The evolution of hemorrhagic fever in Argentina and Bolivia is examined and information providing a better understanding of the natural history of a little-known disease is also given.

The scope of the parasitic diseases is shown by their prevalence. It is calculated that at present about 7 million people are infected with Trypanosoma cruzi, the causative agent of Chagas’ disease. The number of schistosomiasis infections is estimated at 5 million. The exact figure for intestinal worms is not known, but a large proportion of the population in most of the countries harbor one or more species. These figures are not, of course, the result of methodical surveys, but of existing information and certain epidemiological studies. Nevertheless, their very magnitude reveals the importance of the problems and justifies investigations to determine the exact incidence and prevalence of the diseases. The Report summarizes the advisory services that the Organization gave the Governments during the quadrennium.

In most countries there is no organized control of parasitic diseases of medical importance. In some instances the problem may become more serious owing to overcrowding into cities, more intensive water and land use in rural areas, especially in the case of schistosomiasis, and the greater mobility and migration of the population.

Statistical data on the zoonoses, which have been included in the work of the Organization during the quadrennium, show the importance of these diseases and are a basis for the activities carried out. The incidence and prevalence of rabies increased in the period 1962-1965 in several countries in the Americas. It has been estimated that the number of human cases of brucellosis in the Americas exceeds 250,000 a year, and that this zoonosis probably causes the greatest amount of sickness in man and the heaviest losses to the economy. Recent studies on bovine tuberculosis in certain selected areas of Latin America report infection rates in excess of 40 per cent in dairy herds. In Argentina, Brazil, and Mexico, where Koch's bacilli isolated from human cases have been typed, infections that may be of bovine origin have run as high as 6 per cent. Anthrax is present in all parts of Latin America. Hydatidosis appears to be more prevalent in the countries of the southern cone of South America, despite the fact that it is a disease which can be satisfactorily controlled by two practical measures: the control of the parasite in dogs, and health supervision of animals slaughtered for human consumption. If to the foregoing we add leptospirosis, the frequency and importance of which is being increasingly recognized in the Hemisphere, we will have enumerated the diseases which constitute the main raison d'être of the Pan American Zoonoses Center. The Report gives an account of the advisory services given to Governments; the work in the field of education and training; and the research carried out during the quadrennium. While most of the investigations were epidemiological or operational in nature, some were ecological. The establishment and operation of the Center has been possible largely as the result of the generosity of the Government of Argentina, which has provided buildings and laboratories, an experimental farm, and makes an average annual contribution of $80,000.

The amount of animal protein lost in South America as a result of the high frequency of foot-and-mouth disease can only be described as enormous. This fact is even more serious if we bear in mind the high incidence of malnutrition and infant mortality. In addition, the disease also affects the economy by the closing of export markets that might have produced an estimated 400 million dollars a year. These facts explain the resolution 22 of the XIII Pan American Sanitary Conference which authorized the Pan American Sanitary Bureau to administer the Pan American Foot-and-Mouth Disease Center with funds from the Program of Technical Cooperation of the Organization of American States and the Government of Brazil. The fact that, thanks to declarations of CIAP, the economic and social importance of the disease was recognized in several resolutions of the Inter-American Economic and Social Council, dominated consideration of the problem during the quadrennium. Thanks to the action of CIAP, the principal international credit agencies agreed in 1965 to extend their credit policy to include loans for systematic vaccination programs against foot-and-mouth

22 Resolution XX. PAHO Publication 257, 18.
disease. Thus the work of the Center acquired a new dimension which will be reflected in the future in advisory services to Governments in the implementation of such programs.

The intensive work of the Center in the period 1962-1965 in training, technical assistance, diagnosis, and research is described in the Report. Mention must be made of the preparation of a modified live virus vaccine which has been used on a large scale in Venezuela and in Ecuador, and in pilot programs in Colombia and Chile. Also deserving mention are the research projects aimed at achieving greater immunity in susceptible animals; the identification of six subtypes of foot-and-mouth disease virus and two subtypes of vesicular stomatitis virus; research related to serum protection and serum neutralization; studies on virus carriers and on certain wild animals that may enter into the epizootiology of the disease.

The possibility of expanding foot-and-mouth disease control programs has made it urgently necessary to stabilize the financial situation of the Center by means of direct contributions from Governments on a scale commensurate with the PAHO contribution. The problem is a serious one for the countries in which the disease is prevalent, and may become one also for the Central American countries, Mexico, and North America which are at present free of the disease. The cooperation of all these countries in activities to be undertaken in their own territories, as well as in those that are international in character, is today unavoidable.

* * *

To provide adequate potable water supply and sewage disposal to not less than 70 per cent of the urban and 50 per cent of the rural population during the present decade. . . .

Nine of the 20 countries that signed the Charter have surpassed the goal established for the urban population. While the enormous progress that has been made should not be underestimated, it must nevertheless be borne in mind that, in order to meet the goal set in the Charter for water supply in the period 1961-1971, the total population for which additional facilities had to be supplied was 134 million. The steps taken to provide facilities in the period 1961-1965 will benefit an estimated total of 44 million inhabitants, leaving 90 million to be supplied in the five-year period 1966-1971.

Of course some programs make it possible both to increase the amount of water per person and to improve its quality, while others are designed to provide certain sectors of the population with drinking water for the first time.

In rural areas, on the other hand, the goal of providing 50 per cent of the population with water is far from being achieved. Two countries, however, have reached this goal, but generally speaking progress has been much slower. The Task Force on Health at the Ministerial Level recommended that the Organization study the possibility of establishing a Special Rural Welfare Fund which would make it possible for Governments to draw up and carry out environmental sanitation projects, with the cooperation of organized communities, priority being given to water supply projects.” A document submitted to the XIV Meeting of the Directing Council complied with that mandate. It defined the principles, standards, and procedures of a broad program for the improvement of living conditions in rural areas, based on the contribution by the population of their labor, local materials, and even funds for constructing community projects elected by them, including, it was hoped, because of their significance, water supply projects. It is estimated that this contribution would amount to about 30 per cent of the total cost of each project, and that it would be supplemented by a 50 per cent contribution from the Governments. External funds would be necessary to finance the difference, and for that purpose it was suggested that a Special Fund should be set up to which all countries of the Hemisphere should contribute. The Governments would receive from the Fund loans on terms to be laid down by the Inter-American Development Bank, which would be responsible for administering it. The Governments would then make 10-year loans to the communities at rates to be fixed for each country. The repayment of the loans by organized communities would enable national revolving funds to be created, and after a certain number of years these in turn would facilitate the extension of the benefits to new communities and the amortization of external capital, and would make the system self-financing. At its XIV Meeting the Directing Council approved the principles and the methods proposed and acknowledged the need for external capital as well as the high priority of the problem. The Inter-American Economic and Social Council did likewise and recommended that the IDB assume responsibility for administering external funds, and that the Pan American Sanitary Bureau provide technical advisory services and supervise the projects.

The idea has not yet become a reality. Nevertheless,

what has been achieved in the years 1964-1965 since it was proposed clearly shows its fundamental basis, and is a further justification both of the need for the scheme and its feasibility. In this connection, we made the following statement at the Regional Conference on Water Supply in the Americas, which was sponsored by our Organization in October 1965: 

"The rural question in Latin America cannot continue to be dealt with by means of palliatives and solutions that benefit some, but deprive others of hope. There is a rich potential in the people who have already shown their desire to participate in and belong to the move ahead, to contribute by their efforts to harmonious development. All these wills must be harnessed and put to use because on them also depends the future, the achievement of the goals of the Alliance for Progress, which has just begun its fifth year of activities with a renewed strength despite all its setbacks. These considerations moved us to point out to this Conference that we are even more convinced today that the PAHO program for the creation of a Special Rural Welfare Fund should be put into practice as soon as possible."

During the quadrennium cooperative efforts have given good results in three countries, where the inhabitants of rural areas have contributed with their labor, money, and resources, and another eight countries have planned similar projects. Nevertheless, it is a vast undertaking and greater concentration of efforts is needed.

Another indicator of the progress made in community water supply is the pace at which investments are being made by Governments and by international credit institutions. In the period 1961-1965 a total of $830,000,000 was assigned for the construction of water supply and sewerage systems. About 43 per cent, or $360,000,000, came from external capital, 80 per cent of it from the IDB. We have already referred to the importance of that institution’s activities for the progress of the Hemisphere. Other agencies that granted loans were the United States Agency for International Development, the International Bank for Reconstruction and Development, and the Export-Import Bank. Every praise is due the Governments which supplied the 57 per cent of the funds invested. Their decision to deal with the water problem realistically, to organize the pertinent institutions, and to promote the increase in water rates will bring 44 million persons the benefit of the systems under construction. In the history of public health in the Americas in this century, it is doubtful whether any comparable success has ever been achieved in a period of five years. The fact that the targets set in the Charter of Punta del Este may not have been reached on time in no way diminishes the significance of the under-taking. Rural water supply did not have the same success; the international funds contributed amounted to only $32,500,000 and the Governments invested $136,000,000. The collaborative efforts of the Governments and the Organization are described in the Report.

Sewage disposal in rural and urban areas presents more serious problems than does water supply. Only 53 per cent of the urban population live in houses connected to a sewerage system. Only one country has reached the goal of providing 70 per cent of the population with that service, as established in the Charter. Only five countries exceed the average of 53 per cent, and the range runs from 0 to 70 per cent. Up to the end of 1965 the IDB and other lending agencies had awarded loans to 12 countries in the amount of $70,000,000 for the construction of sewerage systems and for the treatment of sewage; these loans were matched by similar contributions from the Governments themselves. The rural problem, being proportionately much more serious, can be dealt with only by a mechanism such as that proposed by the Organization, or a similar one based on the active participation of rural communities.

The Report deals in some detail with the activities of the Organization in occupational health, air pollution, housing, and disposal of solid wastes. All these environmental sanitation aspects, although not specifically mentioned in the Charter, have an important bearing on individual and collective health, and therefore on the achievement of the Charter’s general objective to increase life expectancy.

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To make substantial improvements in the feeding and nutrition of the most vulnerable sectors of the community by increasing the consumption of animal or vegetable protein.  

Poor nutrition is one of the main health problems of Latin America. As already indicated, it leads to excessive mortality in children under five years of age, not only that due to deficiency disease but also that caused by infectious, diarrheal, and ill-defined processes. Furthermore, it is not easy to evaluate the impact of lack of essential nutrients which does not lead to death. The relationship of malnutrition and mental retardation is the subject of a considerable number of research projects because of the social importance such a relationship would have if it were to be reliably established.

Generally speaking, there is a lack of accurate information about nutritional deficiencies. The rates re-

29 Scientific Publication PAHO 132, vii-viii.

corded underestimate the magnitude of the problem, either because death is not ascribed to those causes, or because of the difficulty of establishing a sequence of cause and effect between malnutrition and morbidity. This lack of data is to some extent the reason for the difficulty in obtaining for the problem the priority it deserves in national health plans.

Among the many factors that contribute to the problem, mention may be made of the following:

1. The lack of well-defined national nutrition and food policy based on present and future needs. Without it the production, import, and export of foodstuffs cannot be organized in a realistic and effective way. The most serious consequence is felt by the population groups who are essential elements in developing any country.

2. The imbalance between food production and population growth. In particular, the supply of meat, milk, and eggs available in each country has fallen, so that animal proteins constitute less than 30 per cent of the total proteins available per person. A distinction must be made between production and consumption, since consumption has tended to increase in the last decade. The fact is due to the import of food, which, according to the Inter-American Development Bank, is tending to increase more rapidly than national production. In some cases, the balance of payments is seriously affected.

3. As has repeatedly been pointed out, the agrarian problem in Latin America has "two main dimensions: one is modernizing traditional agriculture by more efficient utilization of natural and human resources; while the other is the reform of the rural social structure characterized by the persistently low status of the campesino, his conditions of dependency and insecurity, and the generally limited opportunities for human development open to him. Both technological and social underdevelopment converge on widespread poverty and unsatisfactory levels of living for most of the rural population." In our opinion this statement suggests a series of factors that are the cause of the lack of a sufficient amount of highly nutritive foodstuffs. They range from low productivity of the soil, which involves lack of fertilizers, harsh climate, poor quality of seeds, and inefficient selection of areas for stock-raising, to loss of foodstuffs by poor distribution and storage and incipient technology, which produce chemical and bacteriological decomposition and destruction by insects and rodents. As a whole, these losses have been estimated at 20 to 25 per cent of the total product.

4. The average purchasing power of the inhabitants of Latin America is less than the cost of a balanced diet; this situation is made worse by ignorance, superstitions, and cultural traditions, and influences the selection of foodstuffs.

5. The frequency of parasitic and microbial infections of the intestinal tract impedes good absorption and interferes with the general metabolism.

6. The migration of rural inhabitants to large cities—in some countries at the rate of more than 5 per cent annually—means not only a competition for foodstuffs in the urban area, with a consequent increase in prices, but also the reduction in the rural population responsible for producing them.

7. The teaching of nutrition as a science and as an art in many medical and public health schools and in other teaching centers is not always abreast of the enormous advances made in recent years. It has not been possible to make professionals aware of the social importance of the problem and of the responsibilities they have for gradually solving it.

Possibly, more than any other human requirement, nutrition is a system which encompasses elements of all the factors that make up development, and this fact is the justification for the multidisciplinary approach of nutrition programs. The facts we have mentioned as conditioning the problem in Latin America and in the countries of the Caribbean area also bear this out. In practice, there is a lack of coordination among the public, private, national, and international agencies which, with the best of purposes, are engaged in combating the grave effects of malnutrition. And this lack of coordination is the consequence of the absence of a realistic policy that takes into account, as we have said, the biological and the economic needs of each country and that brings into balance the production, import, and export of foodstuffs. We believe that at the national level the ministries of health, of education, and of agriculture should have the greater responsibility in implementing the decisions of the Governments. Their actions should derive from the national development plan, in whose formulation they should take an active part.

At the local level health services should, in our opinion, recognize that the nutrition of the population is their responsibility, as is the incorporation of general and specific activities in their work programs. What is more, they should take the initiative in promoting efficient action by the various agencies participating in the complex process of nutrition. In practice, the needs of the present population and of the population in 10 years time for protective and energizing foodstuffs should be established, and the pertinent program should...
be formulated. In carrying it out, all the resources of public and private institutions should be harnessed in a joint effort for the common good.

The Report summarizes the important work of the Institute of Nutrition of Central America and Panama and of the consultants of the Organization assigned to other countries in the Hemisphere. The facts speak for themselves; they have made an important contribution to our knowledge of the realities of the problem and to the activities of the Governments for solving it. Nevertheless, if a joint effort such as we have described were organized, the combined results of the work of national and international technicians would result in a substantial decrease in malnutrition.

...*

To give particular importance to the education and training of professional and auxiliary personnel to engage in activities related to the prevention and cure of diseases. To this end it will be necessary: (1) to determine the number of experts required in the various categories for each activity or profession; (2) to provide in-service training to present staff members, and progressively train a minimum number of additional personnel; and (3) to expand or create the necessary educational centers.22

It is in these terms that the Ten-Year Public Health Program of the Alliance for Progress deals with education and training, which in our opinion is the most important long-term investment for protecting and promoting health.

As for the first of these objectives, it was necessary to devise a methodology for measuring human resources. For this purpose a project has been under way in Colombia for the last two years, sponsored by the Ministry of Health, the Association of Schools of Medicine, and the Milbank Memorial Fund and PAHO. It comprises a series of closely related studies on morbidity and mortality, demand for services, unsatisfied needs, an inventory of manpower and material resources, including facilities, and an evaluation of teaching institutions and teaching systems. Based on a representative sample of the population, this study will provide a body of knowledge on fundamental health problems in the country, on the services available, on those needed for attaining certain general and specific targets, and will also make it possible to plan the training of professional and auxiliary health workers in accordance with the information gathered. It will thus be possible to propose a method for determining how many and what kind of personnel a country needs at a given moment and in future years. It is expected that the study will be completed in 1966.

The production of health workers in accordance with the second objective of the Charter calls for some comments. The number of physicians in 22 countries in Latin America rose from 100,369 in 1957 to 131,704 in 1964, or an increase in the ratio from 5.2 to 5.7 per 10,000 population. The country ratios ranged from 14.9 to 0.7 per 10,000 population. The distribution of physicians was very uneven within each country, the physician/population ratio in many of the capital cities being three or four times greater than that in rural areas.

If we bear in mind the kind of problems that are prevalent and the fact that a considerable number of them can be dealt with by preventive measures, the number of physicians mentioned is not excessively low, except in certain countries. Nevertheless, the fact that they are concentrated in urban centers is in large measure the result of the difficulties they have in practicing their profession in isolated places, a situation which is itself an outcome of underdevelopment. The problem is aggravated by the shortage of ancillary medical workers, and especially of nurses, to which we will refer later.

Allowing for the natural growth of the population and the replacement of those who die or retire, the number of physicians produced by the existing 112 schools of medicine—about 6,800 a year—is sufficient to maintain the average physician/population ratio of 5.7 per 10,000 in the next 15 years. Nevertheless, as we pointed out, more physicians are required, not only because the present number is insufficient but also because the demand for their services will increase as a result of development. It is therefore essential to establish new schools of medicine if the quality of training is not to be reduced, and simultaneously to increase the number of ancillary medical workers, and especially nurses.

The most serious shortage in health manpower is in nursing personnel. In Middle America (excluding the territories) there are 2.9 graduate nurses per 10,000 population and 7.3 nursing auxiliaries. In South America the figures are 2.6 and 7.2, respectively. The situation is even more serious, in that the information available shows that only one third of the nursing auxiliaries in Latin America have received any formal training. Taking into account both categories of nurses, in Middle America the ratio is slightly over 2 per physician, and that in South America is under 2. These data reveal both the very serious nature of the nursing shortage and at

the same time the substantial progress that has been made in recent years, which is described in the Report.

The enormous expansion of the environmental sanitation program, particularly the water supply program, has brought to light the shortage of sanitary engineers and other technicians. At present it is estimated that there are about 2,000 sanitary engineers in Latin America. The Organization has conducted a training program based on seminars, symposia, and short courses at universities and dealing with topics selected by the sanitary engineers themselves. It was begun in 1963 and, by 1965, 40 courses attended by 800 persons, mostly engineers, had been held. For each of these courses a manual was prepared and distributed in the universities. The success of the system appears to justify a similar arrangement in other fields. Furthermore, as a result of funds made available by the United Nations Development Program, training or research programs in sanitation have been conducted in four universities in Venezuela and in the University of Rio de Janeiro, Brazil. Similar programs are planned in several countries. The training of health inspectors was also expanded during the period under review.

Similar considerations apply to dentists, veterinarians, and other professional health workers and also to auxiliary health workers.

Other activities of the Organization in the field of education and training during the quadrennium are summarized in the Report, including long- and short-term advisory services to teaching establishments, advanced training abroad for professors, and improvement of teaching through the program of medical pedagogy. Between 1960 and 1965 a total of 22,447 nursing auxiliaries were trained in courses lasting from 6 to 18 months, in the preparation and conduct of which advisory services were given by PAHO staff. The number of these courses continues to grow, which shows the work done.

During the quadrennium 2,569 fellowships were awarded, which represents an increase of 22 per cent over the previous four-year period. In 1965 the number of fellowships awarded was 830. Distribution by fields of study is shown in the Report. An evaluation based on selected samples showed that most of the ex-fellows are making good use of the training they received. The prestige of this educational system is reflected in the increasing demand, which far exceeds budgetary possibilities. This situation is very heartening, since it strengthens our conviction that progress in the health field, as in other disciplines, is inseparably tied up with the quality of technical staff, which in turn depends on appropriate training.

* * *

**To improve the organization and administration of national and local health services by combining the functions of prevention and cure; to obtain a better return from medical care services; to create the necessary services gradually; and to ensure financial accessibility to therapeutic agents and means for the prevention of disease.**

The capacity of health establishments for the prevention and cure of diseases is less than the known demand of the population. Available information shows that although the number of hospitals increased to approximately 10,000 by 1964, with a bed capacity of 764,000, the bed/population ratio still stood at 3.2 per 1,000 population. Thus the number of new hospitals and beds was only sufficient to keep pace with the needs arising from the natural growth of the population. About 70 per cent of the beds were in general hospitals. The bed/population ratio varies very considerably in the countries of Latin America, ranging from 0.7 to 6.4 per 1,000 population; in 12 countries it was under 3. By comparison, the bed ratio in North America in 1964 was 9.0 per 1,000 population, nearly half the beds being in general hospitals.

In order to maintain the rate of 3.2 beds per 1,000 population, 170,000 hospital beds should be built before 1971. It should be borne in mind that a ratio of 4.5 beds per 1,000 is considered adequate and that the average cost of providing a bed ranges from $6,000 to $10,000. The funds to be invested are beyond the budgetary possibilities of the Governments, which is why external financial assistance is essential. Furthermore, it is necessary to improve the administration and organization of the existing services and to train personnel so that more patients can be cared for, as is laid down in the Charter of Punta del Este.

Similar considerations apply to other health services. In 15 countries with a combined population of 88,300,000 there were 5,185 health units providing preventive and curative services in 1964, or an average of 1 unit per 17,000 inhabitants. Taking only health centers and health posts into consideration, the population per unit was 26,000. Although sustained progress has been made in many countries, coverage in the rural areas is still very inadequate, as is the quality of the care provided. Nevertheless, the Governments are aware of these facts, as is shown by the Report and by the other documents mentioned previously, which are the basis for these comments.

Evidence of better utilization of medical care resources is the increase in the number of admissions or discharges

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from hospitals and the reduction of the average period of hospitalization. There has been a substantial increase in the number of consultations, both in hospitals and in health centers and health posts. At the XVI Pan American Sanitary Conference 35 and the XV 36 and XVI 47 Meetings of the Directing Council, steps were taken to formulate a continental medical care policy on the basis of reports from study groups and working documents prepared by the Secretariat. It has been emphasized that the present investments of the various public and private bodies could be used to provide more timely care for more patients. It has been possible to create a climate of opinion which it is hoped will lead to more effective coordination, especially between the ministries of health and social security institutions, since the principal national medical care services come under their authority.

The chapter on medical care and rehabilitation describes the activities carried out in this field, as well as the advisory services provided to Governments both in the field of hospital administration and in education and training.

In connection with the goal of the Charter of Punta del Este which we are commenting on, and in particular with regard to the improvement of the organization of services, a large section of the Report is devoted to the assistance given to national and local bodies in general and specific activities. The chapter shows the progress made, though it cannot be fully expressed in the figures quoted, since there is much in the day-to-day relations between national health workers and their international colleagues which cannot be measured or put into words, but which transcends the work done. Because of the importance of education and training, mention must be made of the number of professional and auxiliary workers who have attended courses which the Organization’s advisers helped to organize.

* * *

To prepare national plans for the next 10 years. To create planning and evaluation units in the ministries of health, with appropriate representation at the national agencies for the over-all planning of economic development and social progress, to ensure due coordination. 38

The marked imbalance between needs and resources justifies planning, which is the method accepted by the Governments for achieving the objectives of the Charter of Punta del Este. “It is a method for selecting means and ends in accordance with a standard. Insofar as it is a method, that is, a procedure for acting, planning is neutral; it is neither good nor bad in the ethical sense. On the other hand, it may be effective or ineffective; it may or may not lead to the attainment of the desired objectives. To be effective, at least three requirements must be satisfied: (a) it must be able to show that the ends are realistic, that is, attainable; (b) it must ensure that the means are the best available for achieving the ends proposed, or at least are efficient; and (c) it must make it possible to ascertain whether the ends and means are compatible.” 39

Planning is not an end in itself; it is a continuous process, as follows from the characteristics we have mentioned. That is so, moreover, because societies are not static and because favorable or unfavorable changes in the problems create changed conditions that call for continuing review of the use to which resources are put. It is a process, that is to say, “the entirety of the successive phases of a phenomenon,” regardless of the method followed to formulate the plan.

During the quadrennium, it has been possible to implement the recommendations of the Task Force on Health held in April 1963 and the resolutions of the XVI Pan American Sanitary Conference 40 and of the XIV, XV, and XVI 42 Meetings of the Directing Council. Those resolutions emphasized the importance of programming, of putting plans into practice, of training the technical staff needed, and of periodically evaluating the system in order to readjust targets and obtain the best return from the resources invested. In collaboration with the Center for Development Studies of the Central University of Venezuela, members of the Organization proposed a method for establishing an order of priorities among health problems. It is a rational, not an intuitive method, providing alternative solutions for the investment of national resources and relating the health plan to the general economic and social development plan. The method has been tried out in various countries, in large areas representative of the whole country. In El Salvador four regions have been chosen, in Nicaragua three, in Trinidad and Tobago two, in Peru 19, in Bolivia 10 health units, and in Chile 25 provinces. In the second approximation of the plan, it is hoped to gradually work with smaller units. In other countries planning is at various stages of development, ranging from an advanced stage of preparation of the plan itself, including training of technical staff, to the preliminary phases of execution.

40 Official Document PAHO 51, 36-37.
42 Official Documents PAHO 54, 9-9, 58, 77-78, and 66, 72-73.
In conjunction with the Latin American Institute for Economic and Social Planning, international courses are held each year, and 125 officials from 20 countries of the Americas were trained in the period 1962-1965. In addition, courses in the health planning method, with a view to collecting the necessary information, have been given in seven countries and 300 health workers have been trained. Staff at Headquarters and in the countries have advised Governments on the preparation of plans and on training. These facts explain the recommendation 43 of the XVI Meeting of the Directing Council that a study should be made of the advisability of establishing a Pan American Health Planning Center which would act as the focal point for these activities in the Hemisphere.

The decision of the Governments to prepare health plans has brought out the difficulties, which had been foreseen, with respect to the quality of vital and health statistics; the weakness of organizational structures and their administration; the need to motivate all the staff of health institutions to direct their activities in line with the plan and to carry them out in accordance with the objectives approved by the Governments. Nevertheless, the fact that these problems have been brought to light provides a healthy stimulus to gradually correct them. Experience appears to show that progress in the field of health will be achieved more rapidly if goals are established and services are organized to achieve them. Human beings take more interest and act more singlemindedly when the purposes are tangible and find their inspirations in the common good. Nevertheless the fundamental thing is the determination of the Governments not only to formulate plans but also to carry them out, to introduce the necessary reforms, and periodically to measure their effect so as to readjust the system. As we have said, planning is a continuing process.

* * *

These considerations are the basis for the following recommendation of the Charter of Punta del Este:

To improve the collection and study of vital and health statistics as a basis for the formulation and evaluation of national health programs.44

The ideas and methods which are the basis for the work of the Organization were shown in the Technical Discussions held at the XVI Meeting of the Directing Council on “Methods of Improving Vital and Health Statistics.” 45 The Report describes the considerable work done in this field, which has included advisory services to Governments for improving the quantity, accuracy, and prompt publication of data; collection and dissemination of information; international classification of diseases; education and training; and research. Mention is also made of courses for statisticians at the professional, intermediate, and auxiliary levels, and those for medical records librarians. The results achieved during the quadrennium are noteworthy and are being reflected in the quality of the statistics.

The Inter-American Investigation of Mortality was successfully completed during the quadrennium by 12 main collaborators working in 12 cities in 10 countries. It was designed to ascertain differences in causes of death in urban areas on the basis of an examination as complete as possible of 43,296 deaths. The corresponding data are being tabulated and will be published late in 1966. Preliminary results indicate that there are important differences in the frequency of the same disease in the cities covered by the study. In addition, mortality in the rural areas is much higher than in the large cities, which is the prime reason for the urgency of a general program involving the active and informed participation of the population to which we referred earlier. The study also demonstrated the value of the coordination provided by the Organization, which made it possible. The same applies to the contribution of the National Institutes of Health of the United States Public Health Service, to which we express our thanks.

* * *

To make the best possible use of knowledge obtained through scientific research for the prevention and treatment of diseases.45

This objective of the Charter of Punta del Este is a recognition of the importance of scientific research for economic and social development. It seems a long time ago when research was thought of as being exclusively for technologically advanced countries. To claim that the struggle against underdevelopment should entail only the application of modern techniques is to ignore the fact that, although problems may take comparable forms, their content is different because human societies are different. The attempt to impose, with the best of intentions, the use of particular systems or "artefacts" has retarded development which could have been stimulated, with the same efforts and investments, by motivating the communities while respecting their cultural values and way of life. The immediate purpose of the support of scientific research in Latin America, in the opinion of

43 Resolution XX. Official Documents PAHO 66, 72-73.
45 Scientific Publication PAHO 128.
the PAHO Advisory Committee on Medical Research, is the solution of problems with a view to promoting human welfare. The long-term purpose is to improve the quality of the community in its most human aspects by means of cultivating science. Indeed, science as a form of culture is a means which with time will provide men with an objective understanding of their condition; which gives them a comprehensive view of the universe in harmony with their intellectual nature; which in the long run will provide a basis for mutual understanding; and which constitutes, in any event, an appropriate basis for education.

For the last four years the research program, which is described in the Report, has been based on these ideas. In addition to the research carried out at the Institute of Nutrition of Central America and Panama and at the Pan American Zoonoses Center and the Pan American Foot-and-Mouth Disease Center, reference laboratories have been created for nutritional anemias, for iodine determinations in endemic goiter, and for the production and control of antigens for the diagnosis of Chagas' disease. Moreover, there is the Inter-American Investigation of Mortality and in Colombia a study on health manpower and medical education. These and other studies are described in the Report. Two carefully organized surveys were conducted on Science Policy in Latin America—Substance, Structures, and Processes, and the other on Migration of Scientists, Engineers, and Physicians from Latin America. The mere mention of them indicates their importance for Governments and the universities. Of equal importance were the so-called “special sessions” of the Advisory Committee on Medical Research which dealt with tuberculosis, environmental determinants of community well-being, and deprivation in psychobiological development. The Report also mentions studies on various health problems of importance in the Hemisphere which are related to the general policy of the Organization fixed by the Governments.

The research activities of PAHO have become better defined in these four years. They have, of course, been carried out in close coordination with the broad program of the World Health Organization. In practice, the main purpose of these activities is either to promote, supplement, or carry out research. They are also closely connected with the programs for advanced education. We believe we have shown concretely how to coordinate research that is being carried out in several countries, a true collaborative program method that should be extended to other international efforts. This, in our opinion, is one of the most important functions that the Organization can exercise and it received a favorable reception from the Governments, universities, and other teaching institutions. Very rich information has been collected on prevalent problems, areas that need specific research, and institutions where it can be carried out or where other research projects of interest are under way. The collaboration of more than 100 highly qualified consultants has helped to establish communication between experts in a field which cannot but promote advances in knowledge. These exchanges are part of the process of strengthening a true “intellectual common market,” which appears to be more and more necessary for the progress of the Hemisphere. We recognize that budgetary limitations have not made it possible for us to extend the program to all the fields which have been explored. To a large extent, the funds come from voluntary contributions of the Governments, in particular from the U.S. National Institutes of Health, and from foundations, and they are assigned to specific research projects. It would appear advisable to study how these funds could be increased in view of the importance of the program, which has been recognized in successive resolutions of the XVI Pan American Sanitary Conference and the Directing Council.

* * *

The Ten-Year Public Health Program of the Alliance for Progress states the following:

To recommend that Governments, whenever they consider it advisable, utilize the technical advisory services of the Pan American Sanitary Bureau, Regional Office of the World Health Organization, in the preparation and execution of the aforementioned plans; and likewise to support the projects of that organization for establishing systems of health planning in the countries of Latin America.

This Report summarizes the work of the technical staff of the Organization in many fields during the period 1962-1965. Each year has seen an average of 400 projects devoted to the main health problems in the Americas and the goals of the Charter of Punta del Este. It is a very diversified set of projects, because the problems themselves vary considerably as do the desires of the Governments and the quality and quantity of the human and material resources available in each case and in each period. Planning has been encouraged for
the very purpose of establishing an order of priority among needs and of making investments in those that are most widespread and affect the greatest number of people. Every effort has been made while framing plans not to interrupt progress but to stimulate it by what the Charter calls measures to take immediate effect. Nevertheless, there will continue to be, in our opinion, a certain relatively small number of projects that will be devoted to specific activities which the Governments have asked for because they consider them of importance in the development of their general health policy. The proportion of funds allotted to each activity in each country, as well as those carried out for various Governments, is shown in the program budget.

The Report describes the work done in the period 1962-1965. It is the work done by the ministries of health and the national professional and auxiliary workers with the assistance of the Organization. Our consultants have participated in the successes, which have been considerable, and in the difficulties, which are inherent in activities so intimately connected with welfare.

Other international organizations of the United Nations system and of the Inter-American System, as well as foundations and other private institutions, have contributed to the progress that has been achieved in Latin America in the prevention and cure of disease. Only because of their more direct relationship to our work do we single out the Program of Technical Cooperation of the Organization of American States, the United Nations Development Program, the U.S. Agency for International Development, the United Nations Children's Fund, the Food and Agriculture Organization, the W.K. Kellogg Foundation, the Milbank Memorial Fund, the Williams Waterman Fund, and the Nutrition Foundation. Relations have been very cordial because our purposes are very similar and because activities have been coordinated by the Governments.

* * *

Among the functions of the Pan American Sanitary Bureau to which we wish to call attention is that of publications and information. The Boletín completed 44 years of uninterrupted existence in 1965; its pressrun amounts to 11,000 a month. We regard it today as a forum of the health technicians of the Hemisphere for the spread of knowledge and experience. The number of papers submitted has been beyond the publication possibilities, which illustrates the interest in this periodical. In the same period, a total of 182 Special Publications were published, 45 per cent more than in the preceding four-year period. A mere glance at the titles mentioned in the Report is enough to disclose their conceptual and practical value.

Among the activities of the visual aids service mention must be made of the production of filmsstrips, with titles in Spanish and Portuguese, for teaching in schools of medicine, public health, nursing, veterinary medicine, and sanitary engineering. By the end of the four-year period 16 of these filmsstrips had been constructed from originals prepared in the audio-visual unit of the Communicable Disease Center of the United States Public Health Service. In the same period 2,722 copies of the first 12 filmsstrips produced by the Organization were distributed.

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The administrative activities of the Pan American Sanitary Bureau were the subject of a careful analysis aimed at modernizing the systems in use, increasing output, distributing responsibilities more appropriately among the three levels (Headquarters, Zones, and countries), and reducing operating costs. As a result of administrative rationalization and mechanization, 85 posts were suppressed and $583,000 was saved, all of which has been invested in direct health programs. The Report describes this work as well as specific activities in the field of budget and finance, personnel, and services and supplies. The fact of the matter is that the constant increase in assistance to Governments has been achieved at a relatively lower administrative cost. The Organization is in a position to adjust its administration to the pace of growth of its general responsibilities.

The responsibilities of the three levels of the Organization were defined when country representatives were appointed. The country representative is the coordinator of all projects in a country, and he is also responsible for one particular project. A country representative manual was published, spelling out obligations and defining the relationship between Zones and Headquarters. A document entitled “Policy Guides for the Planning of PAHO/WHO Programs” was prepared; it defined the nature and magnitude of the problems, the criteria and objectives of the Organization, the recommended methods for achieving them, and the relation of each problem to economic and social development. In addition to serving as a guide for all personnel, these standards will, it is believed, be of further assistance in health planning. Of course its contents are also equally valuable for Governments, since international activities do not substitute for, but supplement their own efforts and we have tried to create a true communion of purposes in the relations of consultants with their national colleagues.

However, it is clear that the Organization has defined its immediate and long-term objectives, that they are in accordance with the priorities established by the Governing Bodies and in line with the political purposes of the Hemisphere, whose highest expression is the Charter of
Punta del Este. For that reason it was our wish to comment on the activities of the quadrennium in terms of the objectives of that document, which, although very recent, is historic because of the stimulus it created and the work accomplished. In the field of health much has been done. As we have pointed out, the general program of work of the Organization will improve as the Governments formulate and carry out their national health plans; for they will serve as a basis for defining the international assistance the ministries consider necessary in each given period and that assistance will be supplemented by activities undertaken pursuant to resolutions of the World Health Assembly and the Governing Bodies of the Pan American Health Organization. It is on this basis that we proceed at present. However, we recognize that the scope of the Organization’s work will have to be adapted as its responsibilities are enlarged in a Latin American economic community, a common market supported by a series of regional legal, political, and social structures. One of these will be specifically for health, and can be no other than the agency which has completed 63 years of uninterrupted existence. If the Governments participating in that community were to agree to assign executive responsibility to it, new fields of action would be opened up. Meanwhile we are convinced that the present system is effective, that it is looked upon with favor by the countries, as is shown by the activities transcending national boundaries to which we have referred. Indeed, the quadrennium has seen the consolidation of a body of principles enunciated eight years ago, according to which health is a basic component of development. That it is not merely a matter of words but of deeds is revealed by the contributions of external capital for programs that are clearly of importance for the national economies. Those principles have also been strengthened as a result of the definition and implementation of planning, which makes it possible to incorporate the techniques of the prevention and cure of disease into development. They have been embodied in certain endeavors of continental and national importance in the planning and realization of which the health sector is included. Above all, they have been strengthened in the decision of the Governments to accept as a standard a balanced development in which the increase in the national income is distributed between capital formation and social welfare, which includes health.
I. HEALTH PROTECTION

A. ERADICATION OR CONTROL OF DISEASES

MALARIA

The over-all picture of the status of malaria eradication in the Hemisphere in the years 1961-1965 is presented in Table 1 and also in Figure 1, which record the shifts from one phase of the eradication campaign to another in terms of the number of inhabitants of the areas affected.

As can be seen good progress has been achieved; five programs have completed their work, and in each of them the entire originally malarious area is now in the maintenance phase; in four others, some areas had reached the maintenance phase by 1965. Set-backs, some serious, have also been experienced. On the whole, progress has fallen short of the maximum that could have been expected.

The difficulties encountered have been of four types: (1) operational deficiencies—poorly organized spraying, incomplete and inadequately supervised surveillance, bad administration; (2) difficulties inherent in the topography of the malarious area, such as in the Amazon Basin territories of several countries, and serious problems of a social nature that arise in dealing with primitive or hostile populations, as in the interior of Surinam and parts of Colombia and Ecuador; (3) technical problems, for example the development of resistance to both dieldrin and DDT by Anopheles albimanus in Central America; excitoto-repellency of vectors in Mexico; outdoor transmis-

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(B)

Population of Malarious Areas of Countries with Eradication Programs, by Phase of Eradication

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</tbody>
</table>
sion in parts of South America and Haiti; strains of *Plasmodium falciparum* resistant to chloroquine, as in parts of Brazil, Colombia, Guyana, and Venezuela; (4) problems of an administrative and financial nature. Budgetary difficulties include those resulting from above-normal needs, as has been the case in the areas with technical problems, and those resulting from the provision of below-normal funds, a situation that has been chronic in some programs and acute in others. A good number of campaigns have been prolonged beyond the technically required period because they have received only 70 or 80 per cent of the funds required. Others have been much reduced in efficiency by various administrative difficulties, such as delay in receipt of budgetary allocations, lack of authority to allocate funds among various activities with sufficient flexibility, lack of control over the type and number of personnel, and inefficient administrative methods.

The attack on malaria has had to include an attack on these problems by the national malaria eradication services, the ministries of health, and PAHO, generally in close collaboration.

**National Malaria Eradication Services**

The measures adopted by national malaria eradication services to overcome difficulties have been tailored to the kind of problems encountered. The basic effort of every service is, of course, to achieve and to maintain a high standard of completeness and efficiency in daily operations. Some programs have had great difficulty in this respect, and strenuous efforts have been necessary to eliminate deficiencies in operations. Success has been achieved in a number of programs, such as those in the Dominican Republic, Haiti, Colombia, and Cuba, where good standards of efficiency have been attained after early failures and have led to improvement in the progress of the programs. Some programs are still suffering from inefficient operations and are struggling to improve them.

Problems caused by characteristics of the vectors, the topography, or the human population are multifarious and have called forth a great number of counterattacks. The basic weapon of eradication is residual insecticide spraying, and several new ways of using DDT have been tried: Mexico has experimented with spraying cycles of varying lengths and dosages; Colombia and other countries, with fill-in spraying between the usual six-month cycles; Ecuador, with the spraying of additional surfaces. Where the vector has developed DDT-resistance or excito-repellency, alternative insecticides are tried: malathion has been used in Nicaragua and Honduras; BHC has been added to DDT to control DDT-resistant bedbugs that were causing householders to refuse spraying in

Mexico and Colombia; dieldrin has been used in areas of Costa Rica and Panama. An experiment with a fumigant insecticide, DDVP, was made in Haiti.

Where local conditions make it feasible, larviciding has been employed. Fenthion is generally used, applied sometimes by hand, as in Nicaragua, Guatemala, Ecuador, and Mexico, and sometimes by airplane, as has been done in El Salvador. In Nicaragua, Paris green is also used; application is mainly by hand although air application has been tried.

In special conditions vectors have been attacked by eliminating their breeding sites: in one part of Brazil, where *A. kerteszia*, the vector, breeds in bromeliad plants, bromeliads were removed through air application of calcium arsenite.

Antimalaria medication is another weapon. It has been routinely employed for the presumptive treatment of fever cases and for the radical cure of confirmed cases since the beginning of eradication campaigns, and has been used in various forms in efforts to overcome particular difficulties. In certain areas in Mexico, Ecuador, Brazil, and Peru special emphasis has been placed on radical cure treatment as a means of reducing the parasite reservoir to a minimum; an intensive search is made for cases to which treatment is administered immediately. Radical cure treatment has also been administered to the entire population of restricted areas, for example in a severe outbreak in a land settlement area in El Salvador, in an outbreak in British Honduras, and in an experimental area in Mexico. In addition to radical cure treatment, chloroquine and primaquine are administered biweekly as a basic attack measure in Central American areas beset by insecticide resistance or other vector problems; they are also used to eliminate small persistent foci of transmission in many other programs, such as those of Bolivia and Peru. In Haiti, the combination chloroquine-pyrimethamine was being administered in three-week cycles to a population of 1.5 million persons at the end of 1965.

Efforts have been made to find a way of reducing the high cost of administering 14-day treatments to *P. vivax* cases and thus make it possible to treat more cases; Mexico has studied the relative efficiency of five-day administration of the classical regimen; Colombia is investigating a new three-drug combination administered for three days. The need has also arisen for a radical cure that is effective against chloroquine-resistant *falciparum* and safe enough for field administration; in Brazil a study of the use of sulfathromidine and pyrimethamine is in progress. Investigations into the presence of chloroquine-resistant strains have been made in Peru.

The use of salt as a vehicle for antimalaria drugs in regions where it is difficult to carry out spraying opera-

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* Formerly British Guiana.
A successful attack on malaria in areas with technical problems almost always requires the use of several methods of attack in conjunction, and various trials have been undertaken to find the most effective combinations for dealing with particular problems. Spraying, larviciding, and collective drug treatment have been combined in Central America; intensified DDT-spraying, exhaustive search for cases of malaria, and immediate radical cure are being employed in an area of Mexico; DDT-spraying and presumptive radical-cure treatment of all fever cases are used in Colombia; simultaneous geographic reconnaissance, spraying, case-detection, and radical cure of cases have been tried in Peru. Plans are being made for an experiment in Mexico entailing the division of an area into small districts, each patrolled by a single polyvalent agent who will keep all surfaces sprayed and search constantly for malaria cases, which will receive prompt radical cure treatment.

Other National Government Agencies

The Governments of countries with eradication programs have not restricted their efforts to those of the eradication services proper. Ministries of health have proposed or undertaken various additional actions to aid the campaigns. In the Dominican Republic and Haiti, PAHO was asked to provide a co-director for the program. In Brazil new legislation calling for administrative reform and reorganization of the malaria service was proposed and has been enacted. Budgetary problems have been solved in a number of countries through external financial aid in the form of long-term loans, which will make it possible to spread the costs of eradication over a longer period. In other countries allocations from the general revenues of the Government to the malaria program have been increased, for example in Brazil, Guatemala, and Bolivia.

The need for the coordination of the programs of neighboring countries has also been recognized by ministries of health and, in the Central American region, the necessary machinery for that purpose has been set up. Through seminars organized by PAHO (see below) the need for the gradual melding of the activities of malaria eradication services with those of the general public health services has been brought to the attention of both services, and some ministries have begun active efforts in this direction. Honduras should be mentioned in this connection, and also Peru and Nicaragua.

PAHO/WHO

During the years covered by this Report, the Organization has made strenuous efforts to coordinate the activities of the many malaria eradication campaigns and to aid them to overcome difficulties of all types. The improvement of routine operations in all programs has been a matter of constant attention by consultants assigned to country programs, zone malaria teams, interregional staff, and headquarters personnel, and advice is similarly given on the most appropriate attack measures for dealing with the local situation of each campaign. In addition, PAHO has engaged in research and provided guidance in many of the main areas of difficulty, including investigation of causes of persistent transmission in problem areas (AMRO-0212); testing of alternative insecticides (AMRO-0209 and cooperation in DDVP trials in Haiti); identification and study of chloroquine-resistant strains of P. falciparum (AMRO-0212); provision of technical guidance in trials of new antimalarial radical cure treatments (Brazil, Colombia); development of improved nozzle tips and pressure-regulator discs for spray pumps; measurement of the susceptibility of DDT and remedies for lots with poor suspensibility; development of a manual of operations for collective drug programs; cooperation with and support of the Gorgas Memorial Laboratory in investigating the use of pyrimethamine-primaquine in collective treatment programs; investigation of the possibilities of a long-acting injectable antimalarial drug (awaiting completion of studies of dosage); testing of WHO-proposed method for measuring the effectiveness of attack measures early in the campaign (in process); investigation of the possibility of using peri-domestic spraying to combat the outdoor resting habit of vectors (in process).

The Organization has also made many efforts to improve the expertise and stimulate the activities of its own malaria personnel, national program personnel, and the general public health services. They include advanced courses for PAHO field consultants (the first one held for medical officers in 1965 and another planned for engineers in 1966) and for senior officers of the national malaria services (planned for 1966); meetings of the PAHO Advisory Committee on Malaria Eradication in 1965 and in the future; seminars in 1964 and 1965 on the role of general public health services in malaria eradication, for the directors-general of health and the directors of eradication services of the various countries; support of annual meetings of the directors of the eradication services for the exchange of information; support of international centers for the training of malaria personnel, and technical assistance to national training programs; stimulation of the coordination of programs through
meetings of Ministers of Health and by arranging and participating in border meetings.

In addition, PAHO, with its own staff or by means of teams of experts, makes frequent periodic evaluations of the progress and status of national campaigns, provides technical guidance in planning future operations, and approves proposed plans of operation and requests for assistance from UNICEF and requests for loans from the United States Agency for International Development.

Costs

The cost of malaria eradication activities during 1962-1965 is shown in Table 2. The lion's share has, of course, been borne by the Governments of the countries involved; UNICEF has contributed the bulk of the imported commodities required—vehicles, spray-pumps, insecticides, supplies; and PAHO/WHO has provided technical guidance, fellowships, drugs, and occasional supplies and equipment.

The projected costs for the period 1966-1969 are based on current estimates by PAHO of the cost of technically sound programs that could be reliably expected to eradicate malaria within a reasonable time, barring the development of unforeseen technical problems. With lesser budgets the time required (and the total cost) could be expected to be greater, with increasing danger that eradication may become more difficult because of the progressive development of resistance of vectors to insecticides, of plasmodia to drugs, and of the human population to the inconvenience of house-spraying, medication, and surveillance.

In some programs, particularly in Central America, considerable success has already been achieved in obtaining the requisite budgetary funds for the current triennium, 1966-1968. The simple holding operations aimed at maintaining the gains already made, which were all that available funds permitted in a number of programs in the last two years, and were often unsuccessful in achieving even that limited goal, will give way to a resumption of true eradication programs adequate to the needs of the situation. In other campaigns efforts to provide adequate funds are less advanced; and in still others the prospects are not good. Nevertheless, some programs have been and expect to continue to be satisfactorily financed.

### YELLOW FEVER CONTROL AND Aedes aegypti Eradication

#### Yellow Fever

During the period 1962-1965, 370 cases of jungle yellow fever were reported in the Americas—in Argentina, Bolivia, Brazil, Colombia, Peru, and Venezuela (Table 3 and Figure 2). No cases of urban yellow fever were notified.

The yellow fever virus is firmly entrenched in the Amazon Basin, in the valleys of the Magdalena and Orinoco Rivers. In this huge area, the virus is always present in its extra-human reservoir. From this tropical rain forest area, and from other similar but smaller areas, the virus spreads out from time to time into other tropical and subtropical forest regions, causing epizootics in monkeys and outbreaks of jungle yellow fever in man.

In Bolivia, some of the cases occurred in the center of the country and others in the west of the Andes; in both instances, in the basins of tributaries of the Amazon.

In Colombia, most of the cases occurred in the valley

### TABLE 2. SUMMARY OF EXPENDITURES FOR MALARIA ERADICATION IN THE AMERICAS ACCORDING TO SOURCE OF FUNDS, 1962-1965 (in thousands of U.S. dollars)

<table>
<thead>
<tr>
<th>Source</th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>National</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governments</td>
<td>34,242.7</td>
<td>45,171.9</td>
<td>41,288.3</td>
<td>45,278.9</td>
<td>165,981.8</td>
</tr>
<tr>
<td>PASB............</td>
<td>22,993.0</td>
<td>31,249.0</td>
<td>31,749.7</td>
<td>36,878.0</td>
<td>122,868.7</td>
</tr>
<tr>
<td>WHO..............</td>
<td>2,843.6</td>
<td>2,910.4</td>
<td>2,155.1</td>
<td>1,897.2*</td>
<td>9,806.3</td>
</tr>
<tr>
<td>UNICEF...........</td>
<td>172.2</td>
<td>185.1</td>
<td>425.4</td>
<td>915.7*</td>
<td>1,698.4</td>
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<tr>
<td>AID..............</td>
<td>3,449.9</td>
<td>3,406.4</td>
<td>3,857.1</td>
<td>3,013.0*</td>
<td>13,709.4</td>
</tr>
<tr>
<td>Total............</td>
<td>36,863.7</td>
<td>45,882.9</td>
<td>41,827.9</td>
<td>45,278.9</td>
<td>165,981.8</td>
</tr>
</tbody>
</table>

* Estimates.

### TABLE 3. REPORTED CASES OF JUNGLE YELLOW FEVER IN THE AMERICAS, 1962-1965

<table>
<thead>
<tr>
<th>Country</th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Bolivia</td>
<td></td>
<td></td>
<td>13</td>
<td></td>
<td>113</td>
</tr>
<tr>
<td>Brazil</td>
<td>1</td>
<td></td>
<td>14</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Colombia</td>
<td>10</td>
<td>10</td>
<td>2</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Peru</td>
<td>40</td>
<td>60</td>
<td>37</td>
<td></td>
<td>166</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>141</td>
<td>98</td>
<td>79</td>
<td>370</td>
</tr>
</tbody>
</table>

* Estimates.
of the Magdalena River and others in a southern area forming part of the Amazon Basin.

In Peru, cases were reported from areas extending from north to south in the Andean Cordillera. All occurred in valleys of the tributaries of the Amazon.

In Venezuela, most of the cases occurred in the valleys of tributaries of the Orinoco.

In Brazil, some of the cases were localized in the northern part of the Amazon Basin but most of them occurred in valleys of the Amazon River tributaries in the State of Mato Grosso and in valleys of faraway tributaries of the Paraná River, in the States of Goiás, Mato Grosso, and Minas Gerais.

From time to time there is a spill-over of the yellow fever virus from the Amazon Basin into the southern and southeastern areas of Brazil. When this occurs, the first cases usually appear in the States of Goiás and Mato Grosso (Campo Grande and Dourado areas) and then, according to ecological factors, the virus travels in a southerly direction, to the Province of Misiones in Argentina, and/or southeastward to the States of Minas Gerais, São Paulo, Paraná, and Espírito Santo in Brazil.

In view of the occurrence of cases of jungle yellow fever early in 1963 in Goiás and Mato Grosso, the Organization alerted the Brazilian health authorities and suggested the intensification of vigilance, through viscerectomy and virus isolation in animals in these areas and through the vaccination of the population. This step was justified by the occurrence in 1964 of cases farther south in the State of Mato Grosso and in Minas Gerais.

Throughout the period covered by this Report, the Organization continued to cooperate with the National Institute of Health of Colombia and the Oswaldo Cruz Institute of Brazil, both of which produce 17D yellow fever vaccine and provide all the countries of the Americas with free diagnostic services.

### Aedes aegypti Eradication

In the period covered by this Report, the eradication of *Aedes aegypti* encountered a number of difficulties that hindered progress in most of the countries and territories still infested by this vector. The status of the campaign in 1957 and in 1965 is shown in Figures 3 and 4.

The main developments in the different areas of the Americas during the period are described below.

#### Northern America

The Congress of the United States of America included in the national budget for 1963-1964 the first funds for the *A. aegypti* eradication campaign in the country. At the end of 1963 there was set up in the Communicable Disease Center of the Public Health Service an *A. aegypti* eradication department charged with the eradication of the mosquito not only in the continental territory of the United States but also in Puerto Rico and the U.S. Virgin Islands.

As soon as the preparatory phase of the program was completed in May 1964, field operations were begun in the area presumed infested by *A. aegypti*. The area, which measures approximately 1,550,000 km², comprises part or all of the territory of nine states in the southeastern part of the United States, in addition to Puerto Rico and the Virgin Islands. By December 1965, the initial survey had been carried out in 644 localities in the United States, 48 in Puerto Rico, and three in the Virgin Islands. According to the latest verification in December 1965, all the localities were still positive.

In Mexico a special verification was begun in October 1961 with the cooperation of PASB technical staff and completed in August 1963. The results confirmed that the mosquito had been eradicated. At the XIV Meeting
of the Directing Council (1963)\textsuperscript{1} Mexico was formally declared free of \textit{A. aegypti}.

In June 1965 the vigilance service that the country had established found the city of Nuevo Laredo, on the United States border, to be reinfested. The reinfestation was limited to a small sector of the city and was rapidly eliminated.

**Central America**

Although all the countries and territories of Central America had successfully eradicated \textit{A. aegypti}, El Salvador, which had been negative since 1957, was found to be reinfested in 1965.

In June of that year, several houses in the city of San Salvador were found to be infested with \textit{A. aegypti} in the course of a routine vigilance inspection. A broad survey of the city and neighboring areas confirmed that San Salvador was extensively infested and several localities in the immediate neighborhood were also positive.\textsuperscript{1}

\textsuperscript{1} Resolution XIII. Official Document PAHO 54, 12.

The Government therefore decided immediately to resume the eradication campaign and by the end of 1965 the city of San Salvador was already being treated.

An investigation of the cause of that reinfestation showed that it was possibly due to mosquito eggs having been brought into San Salvador in used motor tires imported from a country still infested.

The other countries and territories of Central America are still negative although, in view of the threat of reinfestation to which they are exposed and of what has happened in El Salvador, a state of alert has been declared.

**South America**

Prior to 1962 Bolivia, Brazil, Chile, Ecuador, Peru, and Uruguay were declared free of the mosquito.

In Argentina eradication activities were completed in 1962 and in 1964 the special verification of the country was carried out in collaboration with the Organization. It confirmed that \textit{A. aegypti} had been eradicated and at
the XVI Meeting of the Directing Council in 1965. Argentina was formally declared free of the vector.

In South America A. aegypti remains a problem only in Colombia, Venezuela, and the Guianas. In Colombia eradication was completed in 1961, but in September of the same year the city of Cúcuta near the Venezuelan border was found to be reinfested and, in the following year, a small locality situated about one kilometer from Cúcuta on the highway to Venezuela was likewise found to be infested.

These two foci of reinfestation were eliminated in 1963, but in the same year a small focus of A. aegypti was found in the port of Santa Marta on the northern coast of the country. This focus, like that which was found in the same port in the following year (both originating from mosquitoes carried by shipping from the Caribbean area), was promptly eliminated, and by the beginning of 1965 the entire territory of Colombia was considered to be free of the vector.

However, toward the end of that year Cúcuta was again found to be reinfested despite the fact that from January 1964 to July 1965 it had been inspected seven times with negative results. With a view to eliminating this reinfection a new treatment of the city was begun in November 1965.

In Venezuela technical and administrative difficulties, during the quadrennium, have hampered the campaign, the results of which have been very limited. These difficulties include the following: (a) insufficient funds to permit appropriate coverage of the infested area; (b) problems with field personnel; (c) reinfestation of negative localities by A. aegypti transported from other areas in Venezuela or imported from the Caribbean area; (d) mosquito resistance to chlorinated insecticides, which has spread to almost all parts of Venezuela and has made it necessary to use an insecticide with a shorter residual action than that of DDT or dieldrin.

Guyana, after being free of the mosquito for several years, was found to be extensively reinfested in 1962. However, it was not until March 1965 that the Government managed to reinitiate eradication activities, although up to December of that year activities were limited to Georgetown. Despite repeated treatments of that city, the results were unsatisfactory owing to administrative difficulties as well as the very slight susceptibility of the mosquito to chlorinated insecticides.

Eradication activities in Surinam were begun in July 1963. Up to December 1965 the campaign concentrated its efforts mainly on the city of Paramaribo, but the results were very limited owing to the resistance of the mosquito to chlorinated insecticides and administrative problems. In addition to Paramaribo, the campaign in-

\(^2\) Resolution XXVIII. Official Document PAHO 66, 80.

spected and treated the international airport of Surinam and the frontier localities of Alpina and Nickerie and nine small localities near the capital. As in Paramaribo, the results obtained were not very satisfactory.

French Guiana was reinfested in 1960 after being negative for several years. The reinfestation was eliminated, but in September 1963 A. aegypti were again found in the capital of the Department. In 1964 the Government carried out an investigation which showed that the infestation extended to the whole of the city of Cayenne and its environs as well as several localities in the interior. However, up to December 1965 the eradication campaign had not yet been resumed.

\textit{Caribbean Area}

Bermuda, which for practical reasons is included in the Caribbean area, had been considered negative for many years; a special verification made in 1963, with the assistance of PASB technical staff, confirmed that A. aegypti had been eradicated.

In Cuba, activities are still confined almost exclusively to the Provinces of Havana, Matanzas, and Pinar del Río; outside that area the only work carried out was the survey and treatment of five municipalities in the Provinces of Las Villas, Camagüey, and Oriente.

During the last four years the results were far below what had been expected, mainly because of repeated reinfestation of the area due to the introduction of old motor tires from infested parts of the country still not covered by the campaign.

The reinfestations reached alarming proportions in the period 1962-1963, when a great many motor tires harboring A. aegypti entered Greater Havana and several other localities nearby. Since 1964 there has been a considerable reduction in the number of motor tires arriving in that city and as a result of measures taken to control the existing stocks of such tires the situation has somewhat improved. Nevertheless, by the end of 1965 the problem had not been completely solved.

Trinidad was found to be reinfested in 1961 after being negative for some time. This reinfestation was eliminated, but in the following year foci of A. aegypti were repeatedly found on the wharfs of Port-of-Spain and in its immediate neighborhood, which seemed to indicate that the mosquito was being introduced by ships coming from other Caribbean ports. But in August of the same year it was discovered that the source of these reinfestations was a few small summer vacation islands belonging to Trinidad and situated near Port-of-Spain which had never been inspected or treated. The problem was solved by spraying those islands and eliminating the foci found in Port-of-Spain.

Nevertheless, in the following year, the port area of
the city was again found to be reinfested. At the same time in the harbor of Port-of-Spain, *A. aegypti* were found in small craft coming from Venezuelan ports that were still infested, and the reintroduction of the mosquito into Trinidad was attributed to these small craft.

This new reinfestation of the country was eliminated, but in 1964 and 1965 *A. aegypti* breeding places continued to be found in the port area of Port-of-Spain as well as in small craft coming from Venezuelan ports.

To prevent further reinfestations of this type the campaign authorities of Venezuela and Trinidad met in Port-of-Spain in 1963 and agreed to institute measures aimed at preventing these small crafts from continuing to transport *A. aegypti*. However, up to the end of 1965 no definitive solution of this problem had been achieved.

In Barbados, very little headway was made in eradication in the last four years. In 1962 the campaign did not have enough staff and the results were unsatisfactory. In the following year the number of staff was increased as were their wages, and as a result the quality of work improved. However, the results obtained in that year and in 1964 were still rather limited owing to the development by strains of the mosquito of resistance to chlorinated insecticides. In 1965, the results obtained in the first half of the year were better, thanks to the replacement of chlorinated insecticides by fenthion.

The new insecticide was first employed in Bridgetown at the beginning of 1965 and in the remainder of the island from April onward. In December 1964, positive localities on the island numbered 54, in which there were 1,435 houses infested with *A. aegypti*; in July 1965, the number of positive localities had fallen to 24, with 120 houses infested with the mosquito.

However, in October of the same year *A. aegypti* was found in 644 houses distributed in 30 localities. This increase in infestation after the initial success of the new insecticide was attributed to technical and administrative obstacles which could not be overcome; they included a reduction in funds; a large number of houses kept locked, which could not be inspected or treated; inadequate treatment of many potential breeding places; and non-observance of laws and regulations supporting the campaign.

In the Dominican Republic, a survey made in 1962 disclosed that strains of *A. aegypti* in the country had become resistant to chlorinated insecticides; the campaign was therefore suspended until such time as a new insecticide becomes available.

The campaign in Jamaica is still in suspense. In 1961, the Government decided to suspend it in view of the unsatisfactory results obtained, and to resume it at a later date when it had been properly reorganized. An assessment of the situation in the island in 1962 showed that it was extensively infested with strains resistant to DDT and dieldrin and that it would be better to postpone eradication activities until such time as a replacement for the chlorinated insecticides was available.

In the remaining part of the Caribbean area, the situation may be summarized as follows: (a) eradication activities continued interrupted in Dominica, Guadeloupe, Haiti, and the British Virgin Islands; (b) in the other islands, the campaign is bogged down or proceeding very slowly, and the results obtained have not been satisfactory.

Among the obstacles that continue to delay or hamper the campaign in the Caribbean and in the extreme north of South America, one of the most important was the resistance of *A. aegypti* to chlorinated insecticides.

In order to solve the resistance problem, the Organization established in Kingston, in 1962, in collaboration with the Government of Jamaica and the University of the West Indies, a laboratory to investigate the susceptibility of strains of *A. aegypti* from the Caribbean area and from South America to various insecticides and to evaluate new products that might be substituted for chlorinated insecticides in the eradication of the mosquito.

By December 1965, the laboratory had tested the susceptibility to chlorinated insecticides of *A. aegypti* coming from 66 localities in 18 countries and territories of the above-mentioned areas; the results of these tests, as well as earlier information, show that with few exceptions the strains of the mosquito in those areas are resistant to DDT or to dieldrin, or to both.

At the same time, the laboratory investigated the susceptibility of several of these strains to certain insecticides that might possibly replace the chlorinated ones and assessed the residual action of these products in various types of receptacles in which the *A. aegypti* breeding places in the Caribbean area and in South America are usually found.

Of these new insecticides, one in particular was found to be very effective against strains resistant to chlorinated insecticides. This product, a phosphorus compound, which is only slightly toxic for mammals and has a long residual action, is being manufactured commercially and will soon be submitted to more extensive field trials. If the results are satisfactory, it may be in use on a large scale, possibly by the middle of 1966.

In addition, for some time another phosphorous insecticide, fenthion, has been used with satisfactory results in Venezuela and Barbados. This product has a shorter residual action than DDT or dieldrin but the results obtained in those countries showed that it is effective against *A. aegypti* resistant to chlorinated insecticides.

However, it must be borne in mind that the solution of the resistance problem alone will not clear the obstacles to eradicating the mosquito in the Caribbean area or in
the northern part of South America. The campaign there will not be successful unless the other difficulties referred to are also overcome.

SMALLPOX

The countries of the Americas reported 9,719 cases of smallpox to the Pan American Sanitary Bureau in 1962, 7,126 in 1963, 3,218 in 1964, and 1,547 in 1965.

Smallpox disappeared from Mexico in 1952. Excepting Guatemala, where a single case was reported in 1953; Panama, where cases occurred in 1947 and 1958; and British Honduras, which reported cases in 1948, the disease has been absent from the other countries of Central America.

In the Caribbean area, cases occurred in Martinique in 1951, in the Netherlands Antilles in 1951, and in Trinidad and Tobago in 1948.

In South America, smallpox disappeared in Bolivia in 1961; subsequently five cases were reported in 1964 but none in 1965. In Chile smallpox was eliminated in 1954; in 1959 a secondary case resulting from an imported case was reported. Since then the country has been free of the disease. Ecuador has reported no cases of smallpox since 1964. No cases were reported by Uruguay in 1965. Venezuela has been free of smallpox since 1957, with the exception of 1962 when 11 cases were reported.

In 1965 smallpox was still present in Argentina, Brazil, Colombia, Paraguay, and Peru (Table 4).

In Paraguay (1964) and Peru (1962) smallpox was eliminated as a result of national smallpox vaccination campaigns covering more than 80 per cent of the population of the various geographic sectors. Subsequently the disease was reintroduced into both countries.

In Colombia a national vaccination program, begun in 1955, was completed in 1961. While it did not succeed in eliminating the disease, cases of smallpox having been reported uninterruptedly since 1957, the program has undoubtedly reduced the incidence of smallpox. In 1948 Colombia reported 7,356 cases, and in 1965 only 149. The smallest number of cases of smallpox reported in Colombia was four, in 1963. Since then the incidence has again increased.

In the period covered by this Report, Ecuador completed its smallpox eradication campaign. It was begun in 1958 and completed in 1964. More than 80 per cent of the population of the country was vaccinated. Table 5 shows the proportion of the population vaccinated by province. The total number of persons vaccinated was 3,531,989.

As soon as the intensive vaccination program was completed, a maintenance program was begun and the necessary measures were adopted for the early notification and investigation of every suspected case of smallpox. The Pan American Sanitary Bureau provided a physician and a health inspector who were permanently assigned to the program. In addition, through the United Nations Expanded Program of Technical Assistance nine vehicles were provided to Ecuador for the transport of personnel, equipment, and field supplies.

The dried vaccine used in the eradication campaign and the subsequent maintenance program was prepared in Ecuador. The equipment and material of the laboratory

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**Table 4. Reported Cases of Smallpox in the Americas, 1965**

<table>
<thead>
<tr>
<th>Country</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>15*</td>
</tr>
<tr>
<td>Brazil</td>
<td>1,382*</td>
</tr>
<tr>
<td>Colombia</td>
<td>149</td>
</tr>
<tr>
<td>Paraguay</td>
<td>22</td>
</tr>
<tr>
<td>Peru</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,547</strong></td>
</tr>
</tbody>
</table>

* Includes one imported case.
* Data cover 11 states and capitals of two other states.

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**Fig. 5. Reported Cases of Smallpox in the Americas, by Major Political Divisions of Each Country, 1962-1965**
TABLE 5. VACCINATIONS MADE DURING THE NATIONAL SMALLPOX ERADICATION CAMPAIGN IN ECUADOR, 1958-1964

<table>
<thead>
<tr>
<th>Province</th>
<th>Number of vaccinations</th>
<th>Population</th>
<th>Percentage vaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azuay</td>
<td>272,636</td>
<td>275,757</td>
<td>98.9</td>
</tr>
<tr>
<td>Bolívar</td>
<td>133,222</td>
<td>127,998</td>
<td>82.0</td>
</tr>
<tr>
<td>Carchi</td>
<td>105,035</td>
<td>112,618</td>
<td>93.6</td>
</tr>
<tr>
<td>Chimborazo</td>
<td>82,481</td>
<td>93,834</td>
<td>87.9</td>
</tr>
<tr>
<td>Cotopaxi</td>
<td>232,031</td>
<td>279,607</td>
<td>83.0</td>
</tr>
<tr>
<td>El Oro</td>
<td>116,772</td>
<td>150,605</td>
<td>79.3</td>
</tr>
<tr>
<td>Esmeraldas</td>
<td>90,738</td>
<td>108,000</td>
<td>84.0</td>
</tr>
<tr>
<td>Galápagos Islands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guayas</td>
<td>641,138</td>
<td>770,707</td>
<td>82.6</td>
</tr>
<tr>
<td>Imbabura</td>
<td>155,075</td>
<td>174,141</td>
<td>89.1</td>
</tr>
<tr>
<td>Loja</td>
<td>212,682</td>
<td>270,229</td>
<td>78.7</td>
</tr>
<tr>
<td>Los Ríos</td>
<td>201,829</td>
<td>240,410</td>
<td>84.0</td>
</tr>
<tr>
<td>Manabí</td>
<td>458,914</td>
<td>587,567</td>
<td>78.3</td>
</tr>
<tr>
<td>Morona-Santiago</td>
<td>21,097</td>
<td>26,040</td>
<td>81.0</td>
</tr>
<tr>
<td>Napo</td>
<td>20,652</td>
<td>24,487</td>
<td>85.2</td>
</tr>
<tr>
<td>Pastaza</td>
<td>15,949</td>
<td>15,840</td>
<td>100.7</td>
</tr>
<tr>
<td>Pichincha</td>
<td>403,064</td>
<td>469,077</td>
<td>87.2</td>
</tr>
<tr>
<td>Tungurahua</td>
<td>206,688</td>
<td>221,350</td>
<td>93.2</td>
</tr>
<tr>
<td>Zamora Chinchipe</td>
<td>8,670</td>
<td>11,672</td>
<td>74.3</td>
</tr>
<tr>
<td>Total</td>
<td>3,531,089</td>
<td>4,169,170</td>
<td>84.8</td>
</tr>
</tbody>
</table>

... Data not available.

producing the vaccine was supplied by PASB, which also awarded fellowships for the training of the necessary staff.

In Bolivia the smallpox vaccination program was resumed in 1963. It was hoped that the program would be completed by the end of 1965, but owing to difficulties it is not likely to be completed before 1967. From 1962 to 1965, 1,634,553 persons had been vaccinated. Vaccinations were given during house-to-house visits. In the period from 1963 to December 1965, a total of 229,042 houses were visited. Dried vaccine used in the campaign was produced in a local laboratory. The laboratory equipment was supplied by the Pan American Sanitary Bureau, which also awarded fellowships for the training of medical personnel responsible for vaccine production. The Bureau also assists the program by permanently assigning a health inspector to the project. In addition, the United Nations Expanded Program of Technical Assistance provided seven vehicles for the transportation of personnel, supplies, and field equipment.

In 1965 an agreement was signed with the Government of Brazil for a smallpox vaccination program in seven states in the northwestern part of the country, which was to cover more than 80 per cent of the population of the different geographic sectors and the various age groups. Smallpox vaccination activities in the seven states men-

tioned is the first part of a national smallpox eradication program, and for that purpose PASB has provided the Government of Brazil with 27 vehicles for the transportation of personnel and 80 jet-injectors.

Because smallpox eradication programs have not been organized, have been prematurely terminated, or have not been efficiently conducted, smallpox persists in Argentina, Uruguay, and Brazil.

Generally speaking, eradication programs have not been followed up with maintenance or consolidation programs, nor have appropriate epidemiological surveillance services been organized.

The concern of the Governing Bodies of the Pan American Health Organization and their interest in the eradication of smallpox has been expressed in a series of resolutions adopted by the Executive Committee, the Directing Council, and the Pan American Sanitary Conference, all of which recommend to the countries that they adopt the necessary measures to achieve that goal. They also ask the Pan American Sanitary Bureau to collaborate with the countries by providing them with technical assistance for:

a) studying the problem;

b) the organization, conduct, and evaluation of eradication programs;

c) the organization of consolidation programs;

d) the organization of epidemiological surveillance services;

e) the preparation of smallpox vaccine, in particular lyophilized (freeze-dried) vaccine;

f) technical advisory services in connection with the laboratory diagnosis of smallpox;

g) exceptionally, a limited amount of field supplies and personnel.

Furthermore, the World Health Organization, from the Third World Health Assembly onward, has highlighted the problem of smallpox in the world. The Eleventh World Health Assembly called upon the Governments to eradicate smallpox. The Twelfth World Health Assembly emphasized the urgent need to eradicate smallpox and the Sixteenth Assembly requested the Member States to make voluntary contributions to a world smallpox eradication program.

The assistance provided by PAHO/WHO, in accordance with the instructions of their Governing Bodies, may be summarized as follows:

a) Organization of laboratories for the production of lyophilized smallpox vaccine. Local personnel have been given training in large-scale production methods; labora-

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4 Resolution WHA12.54. Off. Rec. Wild Hlth Org. 95, 47.
tory equipment has been supplied in varying amounts according to the needs of the countries. As a result, Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Peru, Uruguay, and Venezuela now have laboratories, appropriate equipment, and trained staff capable of producing a sufficient amount of glycerinated and dried smallpox vaccine to meet their own needs and those of countries that do not produce it but need it. Moreover, the services of the Serum Institute of Copenhagen, Denmark, have been made available to national laboratories for the quality and potency testing of the vaccines they prepare.

b) Consultant services for the study of the smallpox problem, as well as the organization, conduct, and evaluation of eradication programs. Short-term and long-term consultant services have been provided. Medical officers and health inspectors have worked side by side with national technicians to ensure the success of eradication programs.

c) Supplies and equipment have been provided through the United Nations Expanded Program of Technical Assistance.

d) Progress has been made in studying the use of jet-injectors for administering smallpox vaccine in both urban and rural areas. A study of this type was carried out with the collaboration of short-term consultants in Brazil, in 1965. The experience gained there will be of use in further programs.

On more than one occasion it has been said that the countries need more external assistance in order to eradicate smallpox. To ascertain the resources available to Governments for smallpox eradication programs and the kind and amount of international assistance needed, the Pan American Sanitary Bureau, following a resolution of the XVI Meeting of the Directing Council, undertook a survey at the beginning of 1966 in the countries of Middle America, the Caribbean area, and South America; a preliminary report on the survey was submitted to the 54th Meeting of the Executive Committee in April 1966 and showed how these countries wished to deal with the smallpox eradication program, the international assistance needed for that purpose, as well as for vaccination programs and maintenance programs in countries free of smallpox.

Most of the countries stated that they would like to use jet-injectors in smallpox vaccination programs, even though the use of these new tools would require a change in the traditional method of work of vaccination programs.

All the countries of the Americas have expressed the

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Table 6. Reported Production of Smallpox Vaccine in the Americas, 1963-1965

<table>
<thead>
<tr>
<th>Country</th>
<th>1963 Doses</th>
<th>1964 Doses</th>
<th>1965 Doses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Glycerinated</td>
<td>Lyophilized</td>
<td>Glycerinated</td>
</tr>
<tr>
<td>Argentina</td>
<td>13,300,000</td>
<td>—</td>
<td>5,190,000*</td>
</tr>
<tr>
<td>Bolivia</td>
<td>—</td>
<td>377,000</td>
<td>—</td>
</tr>
<tr>
<td>Brazil</td>
<td>6,432,000</td>
<td>14,485,000</td>
<td>—</td>
</tr>
<tr>
<td>Chile</td>
<td>1,730,000</td>
<td>460,000</td>
<td>3,075,000b</td>
</tr>
<tr>
<td>Colombia</td>
<td>—</td>
<td>2,584,000</td>
<td>—</td>
</tr>
<tr>
<td>Cuba</td>
<td>350,000</td>
<td>—</td>
<td>666,600</td>
</tr>
<tr>
<td>Ecuador</td>
<td>—</td>
<td>1,400,000</td>
<td>—</td>
</tr>
<tr>
<td>El Salvador</td>
<td>100,000</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Guatemala</td>
<td>500,000</td>
<td>1,000,000</td>
<td>1,417,165</td>
</tr>
<tr>
<td>Mexico</td>
<td>18,000,000</td>
<td>19,000</td>
<td>10,754,400</td>
</tr>
<tr>
<td>Peru</td>
<td>1,069,060</td>
<td>2,594,600</td>
<td>2,884,000*</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1,874,000</td>
<td>—</td>
<td>2,100,000</td>
</tr>
<tr>
<td>Venezuela</td>
<td>4,300,000</td>
<td>700,000</td>
<td>2,834,000</td>
</tr>
<tr>
<td>Total</td>
<td>47,655,060</td>
<td>23,619,600</td>
<td>28,701,165</td>
</tr>
</tbody>
</table>

- None.
- January-July.
- January-October.
- January-August.

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Official Document PAHO 66, 81-82.
Document CES4/3 and Addendum (mimeographed).
<table>
<thead>
<tr>
<th>Area</th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>1,351,772</td>
<td>631,445</td>
<td>284,239</td>
<td>3,686,569</td>
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<td>Bolivia</td>
<td>164,449</td>
<td>517,270</td>
<td>535,040</td>
<td>417,785</td>
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<td>Brazil</td>
<td>5,557,127</td>
<td>8,016,713</td>
<td>5,930,540</td>
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<td>Chile</td>
<td>703,362</td>
<td>988,457</td>
<td>1,482,113</td>
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<td>Colombia</td>
<td>1,377,001</td>
<td>1,701,972</td>
<td>5,408,721</td>
<td></td>
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<tr>
<td>Costa Rica</td>
<td>107,588</td>
<td>198,407</td>
<td>32,680*</td>
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<td>Cuba</td>
<td>39,224</td>
<td>63,173</td>
<td>75,213*</td>
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<td>Dominican Republic</td>
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<td>31,383</td>
<td>29,249</td>
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<td>Ecuador</td>
<td>1,180,000</td>
<td>642,977</td>
<td>919,472</td>
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<tr>
<td>El Salvador</td>
<td>133,606</td>
<td>435,389</td>
<td>396,759*</td>
<td></td>
</tr>
<tr>
<td>Guatemala</td>
<td>127,004</td>
<td>544,385</td>
<td>264,120*</td>
<td></td>
</tr>
<tr>
<td>Haiti</td>
<td>180,719</td>
<td>419,702</td>
<td>426,623</td>
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</tr>
<tr>
<td>Honduras</td>
<td>120,549</td>
<td>91,105</td>
<td>293,578</td>
<td></td>
</tr>
<tr>
<td>Jamaica</td>
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<td>86,316*</td>
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</tr>
<tr>
<td>Mexico</td>
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<td>7,329,964</td>
<td>2,278,807</td>
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<tr>
<td>Nicaragua</td>
<td>28,930</td>
<td>94,752</td>
<td>173,308</td>
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<tr>
<td>Panama</td>
<td>21,411</td>
<td>39,716</td>
<td>43,457*</td>
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</tr>
<tr>
<td>Paraguay</td>
<td>175,705</td>
<td>157,665</td>
<td>928,662</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>591,750</td>
<td>3,355,119</td>
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</tr>
<tr>
<td>Trinidad and Tobago</td>
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<td>44,901</td>
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<tr>
<td>United States of America</td>
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<td></td>
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<tr>
<td>Uruguay</td>
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<td>Bermudas</td>
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<td>3,700</td>
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<td>850</td>
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<td>Dominica</td>
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<td>Falkland Islands</td>
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<td>Guadeloupe</td>
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<td></td>
</tr>
<tr>
<td>Guyana</td>
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<tr>
<td>Montserrat</td>
<td>569</td>
<td>458</td>
<td>432</td>
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<tr>
<td>Netherlands Antilles</td>
<td>...</td>
<td>10,250*</td>
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<td>St. Kitts-Nevis-Anguilla</td>
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<td>St. Lucia</td>
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<td>...</td>
<td></td>
</tr>
<tr>
<td>St. Pierre and Miquelon</td>
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<td>...</td>
<td></td>
</tr>
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<td>St. Vincent</td>
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<tr>
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<td>...</td>
<td></td>
</tr>
<tr>
<td>Virgin Islands (U.K.)</td>
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<td>104</td>
<td>...</td>
<td></td>
</tr>
<tr>
<td>Virgin Islands (U.S.A.)</td>
<td>8,081</td>
<td>823</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

... Data not available.
* Incomplete data.
Excludes vaccinations given by general practitioners or in nongovernmental institutions.
Estimated from studies carried out by Census Bureau and the Communicable Disease Center, Atlanta, Georgia U.S.A.

* Aruba.
wish to see smallpox eradicated from the Americas and have stated that they are in a position to carry out their respective programs in periods ranging from two to four years, provided they receive international assistance of the kind and in the amount they request.

As mentioned earlier, the PASB has helped to equip 11 laboratories capable of producing a sufficient amount of lyophilized smallpox vaccine to meet the needs of the producing countries and of the Americas as a whole. The countries supply one another, free of charge, with the vaccine they need for their programs. In the period covered by this Report, freeze-drying equipment was supplied to the Oswaldo Cruz Institute in Brazil, and to the National Microbiology Institute in Argentina.

The vaccine produced in national laboratories has been shown to be of good quality. The services of the Serum Institute of Copenhagen, Denmark, have been available to countries for the quality and potency testing of vaccine produced in local laboratories. The amount of smallpox vaccine produced in the years 1963, 1964, and 1965 is shown in Table 6. Table 7 gives the number of persons vaccinated in the same years.

TUBERCULOSIS

As far as tuberculosis is concerned, a tendency that emerged during the previous quadrennium has become more marked since 1962 and, in many instances, is not only a well-defined trend but also the most significant event in this field: the change of attitude on the part of national authorities toward the tuberculosis problem and the change in approach to tuberculosis control in the countries of the Hemisphere.

The effectiveness of chemotherapy, which appeared to have solved the problem, renewed the flagging interest of the authorities and of the community in tuberculosis. The Technical Discussions at the meeting of the Directing Council in 1964 examined the practical problems that led to failures, from the epidemiological point of view, in the protective and curative procedures whose effectiveness has been proven in specially observed groups.

The topic of the Technical Discussions at the XV Meeting of the Directing Council of PAHO, “Tuberculosis Eradication: A Task for Present Planning and Future Action,” offered the representatives of the Member Governments an opportunity to re-examine the problem. As a result, they produced a report which is the first document of its kind to examine all aspects of tuberculosis control from a realistic epidemiological and administrative point of view, more in key with the conditions and resources of most of the countries of the Americas.

In 1963, PASB prepared a new statement of its internal policy on tuberculosis, in which special importance was given to the bacteriological diagnosis of cases; the need for regular health services in which to incorporate tuberculosis control activities; the definition of program priorities, among which a prominent place should be given to the administration of a complete and adequate chemotherapy as the basis of all tuberculosis control work; and finally, the need to reorient existing tuberculosis services and revise the budgets for hospital beds so as to obtain a better yield from these investments by using them to improve and expand outpatient services. This document was modified in August 1964, after a meeting of PASB tuberculosis advisers, who, together with epidemiologists, statisticians, and health administrators, made a detailed study of it.
Orientation prior to the Technical Discussions mentioned above was carried out by PASB tuberculosis advisers and consultants through the careful distribution of documents and papers on the problem, prepared by internationally renowned authorities in the field. This system, which was surely an important factor in bringing about the change mentioned above, has been continued since then.

Experience shows that for any public health action to advance, it must have the support not only of the higher health authorities but also of the authorities in charge of the specialized programs, as well as the good will of educators and professional health workers engaged in this specialty. The idea of bringing together health administrators, chiefs of tuberculosis programs, and professors of phthisiology of the countries of the Americas to examine the health and social aspects of tuberculosis and to explore ways of setting up an adequate control program, was put into practice at the Regional Seminar on Tuberculosis held in Maracay and Caracas from 29 November to 5 December 1964. It was attended by 51 persons from 28 countries and other areas, two international consultants, and PASB staff, who examined the following three topics: basic data for measuring the tuberculosis problem in a community; planning of tuberculosis control activities; and organization of tuberculosis control services. The final report of the Seminar provides an appropriate outline for the planning and execution of tuberculosis control programs and thus supplements the report of the Technical Discussions.

PASB published the documents and final reports of these two meetings in Spanish under the title of Tuberculosis (Scientific Publication 112) and gave wide distribution to it.

These documents, to which were added (since the approach is the same as that of PAHO) the documents of the UNICEF/WHO Joint Committee on Health Policy and the Eighth Report of the WHO Expert Committee on Tuberculosis, were used to again revise the statement of PAHO policy on tuberculosis, which was distributed to all staff, and on the basis of this third revision the draft of the tripartite agreement for tuberculosis control verification areas was modified.

The internal policy statements and the above-mentioned draft definitively emphasize the need for bacteriological diagnosis; incorporation of tuberculosis control programs into those of the general health services through training their staff and priority of treatment; establishment of limited areas in which operational targets may be reasonably calculated; and uniform recording of data and regular reporting of activities and achievements as a basis for the continuous evaluation of the program and, where applicable, its modification.

This change of attitude and shift in the approach to tuberculosis explains why demonstration programs or areas in different countries are not always identical, since, when initiated, they reflected the stage reached in the changes in the practical application of concepts. Because of this, the annual reports in this four-year period frequently mention revisions and modifications in the programs under way and announce the establishment of new verification areas, the hope being that the established goals would be achieved and the applicability and effectiveness of the principles laid down in the final reports of the two 1964 meetings, and in the internal working documents of PAHO, would be confirmed.

In the course of the last four years, serious difficulties have arisen in obtaining tuberculosis experts with experience in public health to fill the posts provided for in the PAHO budget. However, it has been possible to make good use of short-term consultants, both from the Americas and from Europe, who have been extremely helpful in reviewing programs in health administration, organization of programs in verification areas, and their extension to the rest of the country concerned, as well as in the vital aspect of bacteriological diagnosis, in which astonishing progress was made in 1965.

Most countries suffer from a shortage of personnel; program directors are mainly persons working in the clinical specialty and their professional background does not permit them to rapidly and enthusiastically accept the technical and administrative simplifications imposed on them by the complexity and extension of the problem on the one hand, and by the scarcity of resources, on the other. In most countries, lack of stability of tenure and too small a salary to justify full and exclusive dedication to the programs is another intractable obstacle in recruiting highly qualified staff. Finally, the neglect of the theoretical and practical aspects of tuberculosis in medical schools and schools of public health, does not hold out better prospects in the future, unless the schools change this state of affairs.

In view of the situation with respect to program directors, it is not surprising to find that there are very few programs providing training in tuberculosis for auxiliary personnel who will be the most important working element in tuberculosis control programs. Experience with the intensive training of auxiliary personnel of health services and laboratory assistants in various countries in the Americas, which has been very satisfying, shows that this type of training must be planned systematically if it is to be increased.

Only by training of personnel in tuberculosis control methods, informing them about the epidemiological
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<td>67,149</td>
<td>62,534</td>
<td>57,535</td>
<td>55,494</td>
<td>53,727</td>
<td>53,758</td>
<td>64,062</td>
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<tr>
<td>Uruguay</td>
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<td>2,104</td>
<td>2,112</td>
<td>1,928</td>
<td>2,044</td>
<td>1,836</td>
<td>2,248</td>
<td>1,968</td>
</tr>
<tr>
<td>Venezuela</td>
<td>7,521</td>
<td>7,644</td>
<td>7,577</td>
<td>9,729</td>
<td>8,457</td>
<td>8,125</td>
<td>7,602</td>
<td>7,521</td>
</tr>
</tbody>
</table>

**Note:** The table outlines reported cases of tuberculosis with rates per 100,000 population in the Americas from 1937 to 1964. Rates are presented for various countries and areas, indicating trends and variations over the years.

**Source:** CDC Vital Statistics Reports, 1937-1964.
aspects of the disease and motivating them by a proper presentation of the problem, will it be possible to put into practice the doctrine of the integration or incorporation of tuberculosis activities into the general health services, and thereby bring about an increase in the population covered by a regular activity.

With respect to tuberculosis case-finding, PAHO has emphasized the need for the diagnosis of active cases to be confirmed by the bacteriological demonstration of Koch's bacillus. The purpose is to ensure that efforts and resources do not continue to be devoted to the multitude of persons with radiographic "shadows" of unknown etiology, classified as tuberculosis (so-called "minimal" in most cases), while cases found to be bacteriologically positive and therefore of epidemiological importance, on which efforts should be concentrated, become the object of routine attention which leads to slap-shod treatment and the multiplication of resistant strains.

In several countries considerable efforts have been made to devise procedures that can be applied at a lower cost to a larger number of people. Regular courses have been organized for laboratory technicians; programs conducted with the assistance of PAHO have provided in-service training for a large number of laboratory assistants; and in Venezuela a course of mycobacteria, for bacteriologists, was conducted by a WHO consultant in January and February 1966. Experience to date in three different centers in the Hemisphere with the Sula lyophilized medium and the possible use of laryngeal swabblings for cases without expectoration have been very satisfactory, from both the technical and the administrative point of view. Probably a better knowledge of the prevalence of contagious cases will result from development in this aspect of diagnosis.

In view of this theoretical change and these vital advances, thought has been given to the possibility of undertaking, as a next step, a study of the forms to be used for the uniform recording of data and the regular reporting on activities, which will make it possible to evaluate not only the quantitative performance of personnel but also the effectiveness of the program.

Tables 8 and 9 give the number of tuberculosis cases and deaths in the Americas, with rates per 100,000 population, for the period 1957-1964.

LEPROSY

The changes in ideas about leprosy and its control, which were the subject of lengthy discussions in past years, today find unanimous approval in the Hemisphere. Leprosaria are gradually being transformed into hospitals in which the sick enter as voluntary or temporary patients, and patients are receiving outpatient or home care. Special cases require other types of medication in hospital services.

Epidemiological and administrative problems have been brought into relief as a result of these developments in leprosy control programs.

The size of the leprosy problem in the countries and territories of the Americas is known only in part. Because of the long period of incubation of the disease it is not possible in practice to ascertain its incidence; on the other hand, it is possible to calculate its prevalence and that index is used to measure the magnitude and seriousness of the problem. However, prevalence data lose much of their value because of failures in the diagnosis of the disease, generalizations based on incomplete studies, deficient coverage of programs, etc. In most countries there are no complete data-registration systems for collecting, tabulating, analyzing, interpreting, and publishing the information obtained by control programs.

In the period covered by this Report, PAHO, while not neglecting the specific technical aspects of leprosy, has placed special emphasis on the administration of control programs. In 1963 a Seminar on Leprosy was held in Cuernavaca, Mexico, and attended by professional health workers from the countries and territories of the Americas. The purpose of the Seminar was to systematize health administration as applied to leprosy control programs, and the recommendations and conclusions of the meeting⁶ constitute a guide to action in preparing and conducting leprosy control programs. The program in Ecuador, which was begun in 1963, was closely patterned on the recommendations of the Seminar. Earlier, in 1962, the Bureau prepared a manual for the registration of data which was used as a reference document during the Seminar. The manual was first tried out in Argentina, Ecuador, and Venezuela. In addition to collecting the minimum technical information necessary about leprosy, information was also obtained about the performance of personnel and of elements working in the program. Experience shows that this system is useful and helps the local administrator to obtain a more complete and detailed view of the problem in its day-to-day development and thus to direct it in a more logical manner.

The several chapters of the manual were written by well-known scientific authorities in the Hemisphere and by staff members of the Pan American Sanitary Bureau.

Earlier seminars on leprosy had dealt with subjects of considerable interest, but mainly from the theoretical standpoint. It has therefore been thought advisable to

⁶ Published in Spanish in Scientific Publication PAHO 85 (1963).
organize a seminar to examine the results of the application of the recommendations of the Cuernavaca Seminar. The Governments of Argentina, Ecuador, and Venezuela agreed to organize leprosy control activities strictly in accordance with the recommendations of the Cuernavaca Seminar. As it will not be possible for these programs to cover the whole country in so short a period, they will be undertaken in limited geographic areas, in two forms: in one, the leprosy control program will be a vertical program, and in the other leprosy control will be part of the general health program.

In recent years, attention has turned to the prevention of deformities and the physical rehabilitation of leprosy patients. It is acknowledged that not less than 45 percent of leprosy patients suffer from some type of physical incapacity, ranging from slight to serious. In 1965 a course on the prevention of deformities and the physical rehabilitation of leprosy patients, with special emphasis on non-surgical methods, was held in Venezuela under the auspices of PAHO and the Government of Venezuela and with the cooperation of the American Leprosy Missions, the Department of Physical Medicine and Rehabilitation of New York University, the World Rehabilitation Fund, and the International Society for Rehabilitation of the Disabled. It was attended by 2 physicians from Argentina, 3 from Colombia, 2 from Ecuador, 1 from Mexico, 2 from Paraguay, and 5 from Venezuela, all of whom were already engaged in the physical rehabilitation of leprosy patients or intended to do so on their return to their countries.

PAHO also supported research in the field of leprosy. In 1962 two special consultants visited the countries in the Region to exchange ideas with local scientists concerning the research they were carrying out in this field and their future plans, and in 1963 their report was submitted to the PAHO Advisory Committee on Medical Research. In earlier years the Bureau had turned its attention to the needs of research programs, especially of applied research in the field of epidemiology and

10 Document RES 2/19 (14 May 1963), mimeographed.
<table>
<thead>
<tr>
<th>Country</th>
<th>Date to which inf. relates</th>
<th>Cases in the active register</th>
<th>Sex</th>
<th>Age</th>
<th>Clinical form</th>
<th>Treatment</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Under surveillance</td>
<td>Without surveillance</td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Under 15 years and over</td>
</tr>
<tr>
<td>Argentina b</td>
<td>30-IX-65</td>
<td>5,190</td>
<td>3,707a</td>
<td>8,897</td>
<td>2,952</td>
<td>2,238</td>
<td>117</td>
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<tr>
<td>Brazil</td>
<td>31-XII-64</td>
<td>74,560</td>
<td>26,919a</td>
<td>101,479</td>
<td>...</td>
<td>...</td>
<td>...</td>
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<tr>
<td>Costa Rica</td>
<td>30-VI-65</td>
<td>447</td>
<td>35</td>
<td>482</td>
<td>301</td>
<td>181</td>
<td>14</td>
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<tr>
<td>Cuba</td>
<td>30-VI-65</td>
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<td>4,212</td>
<td>2,491</td>
<td>1,721</td>
<td>87</td>
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<tr>
<td>Dominican Republic</td>
<td>31-XII-64</td>
<td>596</td>
<td>43</td>
<td>644</td>
<td>413</td>
<td>231</td>
<td>34</td>
</tr>
<tr>
<td>Ecuador</td>
<td>31-XII-64</td>
<td>856</td>
<td>20</td>
<td>885</td>
<td>503a</td>
<td>255a</td>
<td>101a</td>
</tr>
<tr>
<td>El Salvador</td>
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<td>150</td>
<td>68</td>
<td>218</td>
<td>161</td>
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<td>...</td>
</tr>
<tr>
<td>Honduras</td>
<td>30-VI-65</td>
<td>163</td>
<td>53</td>
<td>216</td>
<td>144</td>
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<td>15</td>
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<tr>
<td>Mexico</td>
<td>30-VI-65</td>
<td>10,389</td>
<td>4,520</td>
<td>14,909</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Panama</td>
<td>30-VI-65</td>
<td>155</td>
<td>20</td>
<td>154</td>
<td>151</td>
<td>63</td>
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<tr>
<td>Paraguay</td>
<td>X-65</td>
<td>2,722</td>
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<td>3,862</td>
<td>1,901</td>
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<td>808</td>
</tr>
<tr>
<td>Peru</td>
<td>30-VI-65</td>
<td>1,493</td>
<td>1,393b</td>
<td>2,886</td>
<td>1,000</td>
<td>484</td>
<td>104</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>30-VI-65</td>
<td>691</td>
<td>749</td>
<td>1,356</td>
<td>729</td>
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<td>109</td>
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<tr>
<td>Venezuela</td>
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<td>8,979</td>
<td>2,980</td>
<td>11,959</td>
<td>7,798</td>
<td>4,161</td>
<td>1,195</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>110,113</td>
<td>42,076</td>
<td>152,189</td>
<td>16,622</td>
<td>10,090</td>
<td>1,780</td>
</tr>
</tbody>
</table>

- Data not available.
- None.
- Based on official information received at FABB through 30 April 1966.
- Data refer to Provinces of Buenos Aires, Córdoba (except contacts), Entre Ríos, Formosa, Misiones, Salta, Santa Fe, and Tucumán.
- Cases not classified by sex, age, clinical form, or treatment.
- Partial information.
- Excluding 127 cases not classified by sex.
- Excluding 160 cases not classified by age or clinical form.
- Including mixed forms.
- Cases not classified by sex, age, or clinical form.
- Excluding Paraguay.
health administration. The activities carried out in these fields in Argentina, Ecuador, and Venezuela are an expression of this concern.

PAHO gave assistance to most of the countries in the Region with the development of leprosy control programs either in virtue of specific agreements or as a result of advisory services to the countries. For these activities four zone experts were available, and short-term consultants were used in the fields of statistics, administration, and physical rehabilitation. In 1963 the number of permanent specialized consultants attached to the Zones was reduced to two. It is hoped that, in the near future, a new consultant will be appointed to cope with the needs of both Zone II and III programs.

Table 10 shows the status of leprosy in 14 countries of the Americas in 1964 and 1965.

Leprosy control programs have been making slow progress. With a strict application of administrative methods and more epidemiological knowledge of the problem, it would be possible to reduce the risk of infection and, consequently, the incidence of the disease. An important factor in achieving this goal would be the training of personnel. Activities in this field are already being undertaken in Argentina, Ecuador, and the countries of Central America and Panama, and the result has been an immediate improvement in the programs.

### VENEREAL DISEASES

An outstanding event in the venereal disease control program was the Seminar on Venereal Diseases which was held in Washington, D.C., in 1965, under the auspices of the Pan American Sanitary Bureau and with the cooperation of the United States Public Health Service. The Seminar was attended by the directors-general of health and the chiefs of the departments of epidemiology of all the countries in the Hemisphere.

The four main topics of the Seminar were as follows: importance and epidemiological characteristics of venereal diseases; importance of case-finding in venereal disease control; clinical and laboratory diagnosis of venereal disease; and professional education and training. Each day the presentation of a paper on a selected topic was followed by comments by a person with experience in public health or in venereal disease control. The discussions during the Seminar, together with its conclusions and recommendations, were published in the Boletín de la Oficina Sanitaria Panamericana and were later compiled in a separate publication. They constitute a guide for the future conduct of venereal disease control programs in the Hemisphere. A measure of the interest the Seminar aroused in the health services of the countries in the Region is to be seen in the number of requests for assistance that have been received. The most frequent are requests for the training of personnel, especially in laboratory techniques for the diagnosis of venereal diseases.

The Bureau is prepared to give the countries the necessary technical assistance for studying the venereal disease problem and for the organization, conduct, and evaluation of control programs. Special attention is being given to the training of personnel in various control techniques.

The Bureau is assisting the Government of Chile with a venereal disease control program. It has provided fellowships for the training of medical personnel in control techniques; laboratory personnel in techniques for the diagnosis of venereal disease; and health educators. In addition, in 1965, two successive courses on laboratory techniques for the diagnosis of venereal diseases were held in Santiago, Chile, with the collaboration of the Venereal Diseases Branch of the Communicable Disease Center of the United States Public Health Service. These courses were attended by 20 physicians from Chile and a laboratory expert from Argentina. In addition, the Bureau will provide the Government of Chile with a sufficient amount of VDRL test antigen to meet the needs of the program for the next five years.

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11 Scientific Publication PAHO 137 (published in Spanish only).
YAWS

The Organization gave assistance in conducting yaws eradication programs to the Governments of Haiti and the Dominican Republic, and also to the Government of Jamaica in designing a study and in carrying out a program to ascertain the frequency of the disease in that country. A similar study was made in Surinam. Advice was also given in connection with the study of the problem and the conduct of eradication programs in the countries and territories in the eastern Caribbean. Among the achievements of the period covered by this Report, mention should be made of the design of the survey to ascertain the frequency and distribution of infectious forms of yaws in Haiti and the Dominican Republic. At the request of the Governments of Colombia and Ecuador, similar studies were made in those countries.

The yaws eradication program was begun in Haiti in 1950. Since then, there has been a progressive fall in the incidence and also in the prevalence of the disease, which in 1962 was 0.6 per 100,000 persons examined. Owing to changes in the structure of the yaws eradication service and other incidents, not to mention financial and administrative difficulties, interest in this program has been waning. Forty-three cases of infectious yaws were reported between January 1962 and August 1964, and 23 between January and July 1965.

In the Dominican Republic, 45 cases of infectious yaws were confirmed in 1962, and 28 in 1963, which represents a rate of 1.6 cases per 100,000 population examined. At the end of 1963 the program was suspended, and no further data have been received.

The fact that cases of yaws continued to occur in Haiti and the Dominican Republic after years of work made it necessary to carry out a study to ascertain the cause of this phenomenon and the present status of the problem in those countries.

In 1962, PAHO/WHO sent a team consisting of a medical epidemiologist and a statistician, with the assistance of a laboratory expert, to make the above-mentioned study. When the sample for the study in Haiti and the Dominican Republic was designed, it was hoped that it would be possible to carry it out in Haiti in 1963 and then in the Dominican Republic. Unfortunately, for reasons over which PAHO/WHO had no control, it has not yet been possible to do so in either country.

Colombia and Ecuador, which undertook yaws eradication programs with the assistance of the Government of the United States of America, asked PAHO/WHO to provide assistance in making a study of the status of the problem. The team, which was to have worked in Haiti and the Dominican Republic, took on this task and designed the sample in each of the countries.

Recently, in 1965, PAHO/WHO recruited a consultant to review the study proposed for Haiti and the Dominican Republic and to see whether it could be carried out in 1966. In response to a request from the Government of Brazil, a preliminary study was made to ascertain the status of the problem in an area in that country.

In Jamaica a survey covering 12 of the 13 parishes of the country was carried out with the assistance of a PAHO/WHO consultant. A total of 673 persons suffering from yaws were discovered; of these, 265 were infectious cases. A report was prepared and transmitted to the Government, with recommendations on how the yaws eradication program should be continued. Since that date, cases of yaws have continued to be reported in Jamaica.

In Grenada, St. Lucia, St. Vincent, and Trinidad cases of yaws have been reported in each of the years covered by this Report.

ZOONOSES

The public health agencies of the Hemisphere have been giving increasing importance to zoonoses control. In most countries veterinary public health services have been established for that purpose, with the assistance of the Organization. In addition, zoonoses statistics have become part of the regular case-reporting systems, in connection with which PASB has given the countries considerable assistance.

The information provided by the countries reflects growing interest in zoonoses, even though it is still very incomplete, as may be seen from Tables 11 to 15. But even if accurate information about the prevalence of rabies, brucellosis, anthrax, bovine tuberculosis, hydatidosis, and leptospirosis is lacking, clinical observations indicate that these zoonoses are widespread in many countries.

Not all the zoonoses are to be found in the Americas; nevertheless, those known to exist in the Hemisphere pose a series of problems whose solution is beyond the scope of the program and the budget of the Organization. The
assistance given by PAHO to the Governments in the control of these diseases consisted primarily of the provision of technical advisory services; antigens and strains for the production or control of biological products; standards and minimum specifications for the control of foodstuffs of animal origin; and preliminary schemes for the control or prevention of zoonoses.

In the various countries, progress has been made in the storage of protein foodstuffs; this activity, like those carried out in the field of rabies, brucellosis, tuberculosis, and other zoonoses, in cooperation with the Organization, has led to an improvement in the economic situation of large sectors of the population. In this connection, the important assistance given to the countries by the Pan American Foot-and-Mouth Disease Center and the Pan American Zoonoses Center should not be overlooked. The work of these two institutions is described later in this chapter.

Rabies

The data contained in Figures 10 and 11 show that, in the period 1954-1964, there was an increase in both the incidence and the prevalence of rabies. Although rabies occurs in many countries in the Americas, present control measures are palliatives, and there are very few countries that have a national program aimed at controlling this disease. However, with the assistance of the Organization, it has been possible to achieve substantial results in the rabies control programs along the United States-Mexican border, as well as in the Central American regional program. The Pan American Zoonoses Center has helped several countries to improve the testing and production of rabies vaccines and has supplied strains, biological standards, and technical assistance.

The advisers in veterinary public health devoted themselves to stimulating and coordinating technical guidance given to control programs.

Thanks to energetic action by the Governments of Costa Rica and Nicaragua, a border outbreak of rabies in May 1962 was brought under control, as was another in March 1965; there were no human cases in either of these outbreaks. Studies on rabies in wild animals in Argentina, Guyana, Guatemala, Mexico, and Peru were continued.

In October 1964 Uruguay suffered an outbreak of rabies in animals, with some human cases, after almost 16 years of freedom from the disease. The Organization provided the Government with a consultant, as well as with vaccine, supplies and equipment, and vehicles. At the present time, a vigorous control campaign is being carried out in that country.

The high incidence of the disease in Cuba and in the Dominican Republic led to the intensification of the rabies control campaign in those countries. Venezuela reorganized and expanded its national rabies control program. In Argentina, Brazil, Colombia, Ecuador, and Peru, the incidence of rabies remained as high as in
previous years, despite reorganization and expansion of control measures.

Assistance was given to the Government of Grenada in connection with a rabies control program aimed principally at eliminating mongooses, the main reservoir of the disease on the island. The program has succeeded in reducing the mongoose population by more than 60 percent. A program for the vaccination and control of dogs has also been organized. At the request of the Government of Brazil, a consultant was sent to investigate the principal aspects of the rabies problem in all the states and federal territories of that country.

In Mexico City, personnel were trained in the fluorescent antibody technique for the diagnosis of rabies, and similar courses were held, with the assistance of the Organization, in Argentina, Costa Rica, and Peru.

The Organization sponsored various international meetings on rabies on the United States-Mexican border, in the cities of Nogales, Arizona (1963), and Monterrey, Ciudad Juárez, and Mexico, Mexico (1964).

In response to requests by countries, the Organization supplied various rabies control materials, such as vaccines, vaccine standards, and virus strains for the production and assay of vaccines. The lack of a supply of safe and potent rabies vaccine continued to be one of the major problems facing the countries; to help to solve it the Organization provided the services of consultants to the Oswaldo Cruz Institute in Rio de Janeiro and the Butantan Institute in São Paulo, Brazil, and to the Institutes of Public Health in Lima, Peru, La Paz, Bolivia, and Montevideo, Uruguay. The Organization also helped the Governments to purchase vaccines and poisons for their rabies control programs.

In addition to assistance in achieving more effective rabies control programs in urban areas, special attention has been given to the conduct of programs for the control of predatory animals, in particular in Mexico, where significant progress has been made in the States of Sonora and Chihuahua. The Organization undertook to train the personnel who would be responsible for these activities and provided technical assistance and supplies for the programs.

Brucellosis

Of all the zoonoses in the Americas, brucellosis probably causes the greatest amount of sickness in man and the heaviest losses to the economy. It has been estimated that the number of human cases in the Americas exceeds 250,000 a year. Although incomplete, information on the number of cases reported from 1962 to 1965 is given in Table 11. The total for five countries (Argentina, Canada, Mexico, Peru, and the United States of America) was 13,102. The gradual reduction of the number of human cases in Canada and the United States of America is a reflection of the impact of the brucellosis eradication programs carried out there.

During this period PASB consultants and the Pan American Zoonoses Center assisted Governments in dealing with brucellosis problems. Special attention was given to control measures, and some progress was made in reducing its incidence, especially Brucella abortus infection.

With the exception of the eradication programs in the United States of America and Canada, there was no significant progress in brucellosis control on a continental scale. Financial considerations made it very difficult to eliminate infected animals, which thus remain as continuing sources of infection for man and for lower animals.

In certain countries, such as El Salvador, Guatemala, and Panama, the ring test, using a specific antigen for the diagnosis of the disease in milk, has been introduced into their control programs. They are being carried out in the large urban centers in order to control the infection in the public milk supply. In Brazil (Rio Grande do Sul), Costa Rica, Panama, and Venezuela the programs for the vaccination of calves and the gradual elimination of positive reactors were continued. The eradication program was continued in an experimental area in Argentina, and the Pan American Zoonoses Center continued to supply laboratory services and assistance. In this program, 300,000 blood specimens were examined in the period 1962-1965, and thousands of calves were vaccinated with strain 19 vaccine. The excellent results obtained in this experimental program justified the extension of control activities on a national scale; in July 1965, with this in mind, the Argentine authorities signed an agreement with the Organization for a nation-wide program. Recent studies show that the loss to Argentina's animal industry caused by brucellosis amounts to more than 183 million dollars a year.

During the quadrennium the Organization, mainly through the Pan American Zoonoses Center, continued to supply standard strains, vaccines, and Brucella antigens to countries to enable them to produce and test their vaccines and biological reagents. In addition, the Center made a study for the evaluation and standardization of brucellosis antigens and tests in the Americas.

Bovine Tuberculosis

Recent studies on bovine tuberculosis in certain selected areas of Latin America report infection rates in
### Table 11. Reported Cases of Brucellosis in Man (1962-1965) and in Animals (1961-1964) in the Americas

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Cases in Man</th>
<th>Number of Cases in Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuba</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecuador</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador</td>
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</tr>
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<td>Guatemala</td>
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<td>Honduras</td>
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</tr>
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<td>Mexico</td>
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</tr>
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<td>Nicaragua</td>
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</tr>
<tr>
<td>Panama</td>
<td></td>
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</tr>
<tr>
<td>Paraguay</td>
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<tr>
<td>Peru</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States of America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uruguay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venezuela</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guyana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands Antilles</td>
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<td></td>
</tr>
<tr>
<td>Panama Canal Zone</td>
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<td>Puerto Rico</td>
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</tr>
<tr>
<td>Virgin Islands (U.S.A.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

... No data available.
- None.
( ) Disease not notifiable.
* Provisional data.
* Reporting area until 1963, inclusive, for cases in man.
* Reporting area until 1962, inclusive, for cases in man.
* Hospital data.
* Incomplete data.
* Reporting area, for cases in man.
* Year 1953-1954.

excess of 40 per cent in dairy herds. However, knowledge of the true status of this disease, both in man and in animals, is incomplete. In countries such as Argentina, Brazil, and Mexico, where bacilli isolated from human cases have been typed, infections that may be of bovine origin have run as high as 6 per cent. Apart from the programs in Canada, the United States of America, and Venezuela, which have reached the point where the eradication of bovine tuberculosis may be considered imminent, little or nothing has been done in the other countries of the Americas. As in the case of brucellosis, these programs are costly, since they involve the identification and elimination of reactor animals and the payment of compensation.

Table 12 summarizes the available statistical information on reported cases of bovine tuberculosis.

### Anthrax

Anthrax is present in all the countries of Latin America, but the highest incidence is found in Argentina, Chile, Mexico, and certain areas of Central America, as may be seen from Table 13 (p. 26). Most of these countries have undertaken vigorous vaccination programs. These, together with strict control of imported products and animals, are gradually reducing the incidence of this disease, which is a serious danger for public health and a heavy financial burden for agriculture.

### Hydatidosis

Few of the persistent diseases pose so difficult a problem as hydatidosis, despite the fact that the disease can
be satisfactorily controlled by two practical measures: the control of the parasite in dogs, and the health supervision of animals slaughtered for human consumption. However, lack of resources has prevented adequate control of the disease because preventive measures have not been appropriate to the magnitude of the problem. In Argentina, Brazil, Chile, Peru, and Uruguay hydatidosis is an important disease in man and in animals. In Paraguay and Venezuela the incidence of the disease has been low, whereas that recorded by Guatemala and other Central American Republics in recent years has been relatively high. The Pan American Zoonoses Center has continued its research on an effective teniacide for use in mass campaigns for the elimination of the parasite in dogs; on new diagnostic tests; and on the identification of hydatidosis in wildlife and its epidemiological importance.

A summary on the reported cases of this zoonosis is given in Table 14 (p. 26).

### Leptospirosis

In the last 10 years, health authorities have considerably modified their views about the importance of *Leptospira* infections and the diseases they cause in man and in animals. Recent studies show that this group of diseases is a serious public health problem. Many domesticated and wild animals that live in close contact with man transmit the infection directly or indirectly.

The Organization has been assisting the countries in the development of techniques and methods for the diagnosis of this disease, which is being increasingly recognized in the Hemisphere. The importance of leptospirosis as a serious public health problem and a major cause of losses to the livestock industry of the countries is now appreciated. Although incomplete, the information available is given in Table 15 (p. 27).

### Pan American Zoonoses Center

In 1956, the Government of Argentina and the Pan American Sanitary Bureau, aware of the serious public health problem that the zoonoses represent in both rural and urban areas and the influence they exert on the agricultural and stock-raising sectors of the economy, decided to establish the Pan American Zoonoses Center.

The basic laboratories and facilities of the Center were gradually built up in the period 1957-1964. Its teaching, laboratory reference, and research services were developed encompassing work in bacteriology, virology, parasitology, and epidemiology. In 1964 the staff consisted of five full-time international professional and administrative members and 37 para-professional and auxiliary personnel. In 1965, recognizing that the importance and magnitude of the problem of the zoonoses called for more services and activities, the Pan American Health Organization decided to expand the operations of the Center. As a result, the Government of Argentina submitted to the United Nations Special Fund a project for strengthening the Center, and at the same time the Ministry of Social Welfare and Public Health of Argentina donated a new site for the Center in Ramos Mejía, near the capital, Buenos Aires.

### Education

During the four-year period 1962-1965 the Center provided special training in one or more of the zoonoses to a total of 46 students. The studies of 12 of these students, from nine different Latin American countries, were for periods ranging from six to 12 months, while those of the other 34 were for shorter periods of time. A two-week course on laboratory techniques and the
### Table 13. Reported Cases of Anthrax in Man (1962–1965) and in Animals (1961–1964) in the Americas

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Cases in Man</th>
<th>Number of Cases in Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>52</td>
<td>247</td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>334</td>
<td>277</td>
</tr>
<tr>
<td>Colombia*</td>
<td>9</td>
<td>43</td>
</tr>
<tr>
<td>Costa Rica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecuador</td>
<td>7 e</td>
<td>98</td>
</tr>
<tr>
<td>Guatemala</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haiti</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Honduras</td>
<td>174</td>
<td>120</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>Panama</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Paraguay*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>United States of America</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Uruguay</td>
<td>54</td>
<td>45</td>
</tr>
<tr>
<td>Venezuela*</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Guyana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puerto Rico</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

... No data available.
— None.
* Disease not notifiable.
( ) Number of foci or infected herds.
* Provisional data.
Hospital data.
Reporting area, for cases in man.
Incomplete data.

### Table 14. Reported Cases of Hydatidosis in Man (1962–1965) and in Animals (1961–1964) in the Americas

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Cases in Man</th>
<th>Number of Cases in Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>259</td>
<td>238</td>
</tr>
<tr>
<td>Costa Rica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecuador</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemala</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraguay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>159</td>
<td>121</td>
</tr>
<tr>
<td>Uruguay</td>
<td>389</td>
<td>321</td>
</tr>
<tr>
<td>Venezuela*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surinam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

... No data available.
— None.
* Disease not notifiable.
* Provisional data.
Hospital data.
Reporting area, for cases in man.
Incomplete data.
### Table 15. Reported Cases of Leptospirosis in Man (1962-1965) and in Animals (1961-1964) in the Americas

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Cases in Man</th>
<th>Number of Cases in Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>...</td>
<td>4</td>
</tr>
<tr>
<td>Canada</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Chile</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Ecuador</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Guatemala</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Haiti</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Honduras</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Jamaica</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Panama</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Peru</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>United States of America</td>
<td>79</td>
<td>89</td>
</tr>
<tr>
<td>Venezuela*</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Barbados</td>
<td>9</td>
<td>42</td>
</tr>
<tr>
<td>French Guiana</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Martinique</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Panama Canal Zone</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>St. Kitts-Nevis-Anguilla</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- No data available.
- None.
- Disease not notifiable.
- Provisional data.
- Hospital data.
- Incomplete data.
- Reporting area.

![Graph showing the number of students](image)

**Research Program**

During the last five years more than 60 separate investigations on 11 different zoonotic diseases were conducted at the Center: of these, 13 were on brucellosis, 10 on hydatidosis, 9 on rabies, and 5 on tuberculosis. More than half (31) of the studies were devoted to epidemiological investigations, 12 to diagnosis, and 10 to vaccine studies. In the canine anti-echinococcal drug study, a statistical evaluation of 10 trials involving 165 treated
TABLE 16. SAMPLES RECEIVED AT THE PAN AMERICAN ZOONOSES CENTER LABORATORIES, 1959-1965

<table>
<thead>
<tr>
<th>Material</th>
<th>Number of individual specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>For diagnosis</td>
<td></td>
</tr>
<tr>
<td>Whole animals</td>
<td>149</td>
</tr>
<tr>
<td>Other specimens *</td>
<td>4,980</td>
</tr>
<tr>
<td>Biological products for testing</td>
<td>108</td>
</tr>
<tr>
<td>Biological agents for identification</td>
<td>27</td>
</tr>
<tr>
<td>Zoological specimens</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>5,214</td>
</tr>
</tbody>
</table>

- None.
* Including 370,452 specimens received from the brucellosis control pilot program, Province of Buenos Aires, Argentina.

dogs and 126 controls showed the naphthalene compound No. 62-415 to be a highly effective teniacide. Among the studies undertaken on rabies were: the evaluation of rabies vaccine for use in cattle; the transmission of rabies in the laboratory via the respiratory route; and the adaptation of rabies virus of bovine origin to different types of tissue culture cells. Safety trials (made in 1964) on the Philip-Duphar brucellosis bacterin were repeated in 1965. Research was carried out on echinococcosis, brucellosis, leptospirosis, and tuberculosis in wildlife.

Technical Services

The Center has assisted the countries in all matters relating to the diagnosis, investigation, and control of the zoonoses, including specialized training, consultation and technical information services, supply of biologicals, and control of certain antigens and vaccines (see Tables 16 and 17).

Field demonstrations and evaluation studies of rabies, anthrax, and leptospirosis vaccines were conducted in 1962 in two countries.

In 1964 and 1965 specialists from the Center visited nine countries and gave consultations on problems relating to the diagnosis of rabies; the production and control of rabies vaccines, control of tuberculosis and brucellosis in animals; and hydatidosis. Two countries were provided with the services of short-term consultants on tuberculosis control, the ecology of bats as related to rabies transmission, and rabies control planning. The Center continued to give technical advice and laboratory services to

TABLE 17. BIOLOGICAL PRODUCTS PROVIDED TO VARIOUS COUNTRIES, 1962-1965

<table>
<thead>
<tr>
<th>Material</th>
<th>Strains *</th>
<th>Antigens b</th>
<th>Sera</th>
<th>Vaccine *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthrax</td>
<td>58 cultures</td>
<td>44,984 ml</td>
<td>132 (vials)</td>
<td>20 ml</td>
</tr>
<tr>
<td>Brucellosis</td>
<td>308 cultures</td>
<td>9,557 ml</td>
<td></td>
<td>4,500 ml</td>
</tr>
<tr>
<td>Hydatidiosis</td>
<td>141 cultures</td>
<td>151 ml</td>
<td>27 ml</td>
<td></td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>174 ampules</td>
<td>182 ml</td>
<td></td>
<td>17 doses</td>
</tr>
<tr>
<td>Q Fever</td>
<td>32 cultures</td>
<td>10 ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rabies</td>
<td></td>
<td>40 ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuberculosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material for research and demonstration</td>
<td>946 influenza, toxoplasmosis, Chagas disease, Newcastle disease and trichinosis sera.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 soil samples for anthrax research.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brain samples for rabies research.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Strains for vaccine production and diagnosis, typing, and control tests.
* Antigens for reference, surveys, training, and control programs.
* Standard Reference Vaccines.
the brucellosis control pilot project in Buenos Aires Province, Argentina.

A Technical Services and Training Department was established at the Center in 1965 to enable it to better fulfill its service obligations to the countries.

In that year, the Quarterly Information Bulletin was revised to meet the increasing demand of both Spanish and English readers for epidemiological and research information on the zoonoses.

Pan American Foot-and-Mouth Disease Center

The Pan American Foot-and-Mouth Disease Center, whose headquarters are in Rio de Janeiro, Brazil, continued to be financed by the Program of Technical Cooperation of the Organization of American States and supported by the Government of that country. The U.S. Agency for International Development provided funds for the construction of new animal quarters, and the Brazilian National Research Council made a contribution for modified live virus studies.

During the last four years the main activities of the Center continued to be focused on: training, technical assistance, diagnosis, and research. Considerable work was done in all of these fields in response to requests by the countries.

One of the most outstanding features of the quadrennium was the development, planning, and intercountry coordination of national foot-and-mouth disease campaigns. In that regard the work of the Center included the following activities.

Training

Campaigns cannot be carried out in the countries unless the personnel of their official services have been properly trained in laboratory work and field activities. Since its establishment, the Center has organized 21 training courses; in addition, 44 experts from all the countries afflicted with foot-and-mouth disease have received special training on an individual basis. Table 18 and Figure 13 show the number of professional personnel trained, as well as the increase in the number of experts given individual training in the last four years in response to the needs of the countries for additional specialized personnel.

Technical Assistance

One of the basic goals of the Center’s research programs is to improve the vaccines to be used in the campaigns. A modified live virus vaccine developed at the Center was put into use in several countries in 1963. The campaigns in Venezuela and Ecuador are based on this vaccine, and Colombia and Chile have established pilot programs. This type of vaccine was supplied to Venezuela when a subtype of virus A18 (A Zulia) appeared in 1962 and threatened to spread throughout the country, since the inactivated vaccines being produced at that time did not confer adequate protection against this subtype. It was possible to prevent the spread of the disease outside the initially affected area by using A Cruzeiro strain modified live virus vaccine. In June 1965 an outbreak due to Type O virus occurred for the first time in the south of Ecuador, and was brought under control by means of a vaccine prepared from modified O Campos virus provided by the Center; a vaccine prepared from this strain was produced on a large scale in the official laboratory. During the quadrennium the Center also

<table>
<thead>
<tr>
<th>Period</th>
<th>Total Course participants</th>
<th>Individual training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>360</td>
<td>316</td>
</tr>
<tr>
<td>1954-1957</td>
<td>168</td>
<td>165</td>
</tr>
<tr>
<td>1958-1961</td>
<td>104</td>
<td>97</td>
</tr>
<tr>
<td>1962-1965</td>
<td>88</td>
<td>54</td>
</tr>
</tbody>
</table>

Table 18. Professional Personnel Trained at the Foot-and-Mouth Disease Center, 1954-1965

FIG. 13. Professional Personnel Trained at the Pan American Foot-and-Mouth Disease Center, 1954-1965
collaborated in pilot vaccination programs using inactivated vaccine in Brazil and Bolivia.

As part of the assistance given to other countries, mention should be made of that rendered to Argentina in various aspects of its foot-and-mouth disease campaign, and the initiation of studies for the evaluation of campaigns. Bolivia, Brazil, Chile, Paraguay, and Uruguay were provided with considerable help in the planning of their campaigns and in the preparation of applications for financial assistance for those programs.

As for intercountry coordination, mention should be made of the implementation of two agreements. The first between Colombia, the International Regional Organization for Health in Agriculture and Livestock (OIRSA)—which includes Mexico, the countries of Central America, and Panama—and the Pan American Sanitary Bureau for the prevention of foot-and-mouth disease in El Chocó, Colombia; the second, between Ecuador, Colombia, and the Pan American Sanitary Bureau for control activities in border areas. In addition, two similar agreements are being negotiated between Peru, Ecuador, and PASB and between Bolivia, Peru, and PASB. Furthermore, in 1964 a health agreement was signed in Rio de Janeiro, Brazil, between the countries of the Southern Cone and resulted in the establishment of the Regional Technical Commission on Animal Health, one of whose main aims is the intercountry coordination of foot-and-mouth disease campaigns.

Another program which deserves mention was that carried out during the quadrennium, with considerable assistance from the Center, by the Joint Argentina-United States Commission for an epizootiological survey of Tierra del Fuego (including the part belonging to Chile) and the investigation of the survival of foot-and-mouth disease virus in processed meat from vaccinated and unvaccinated animals.

The First South American Foot-and-Mouth Disease Conference at the technical and the ministerial level was sponsored by the Pan American Sanitary Bureau and organized by the Center in Rio de Janeiro in 1964. Its purpose was to study and discuss plans for effective national campaigns, including the financial assistance they would require and their coordination on a multinational basis.

The economic and social importance of foot-and-mouth disease was acknowledged by the Inter-American Economic and Social Council (IA-ECOSOC) and by the Inter-American Committee on the Alliance of Progress (CIAP); with a view to sponsoring an effective program in the affected countries, the latter studied the problem in conjunction with the Inter-American Development Bank and the International Bank for Reconstruction and Development, which are financing livestock management programs. Both banks have informed CIAP that they would be prepared to collaborate in financing the campaigns.

That the countries are now in a position to conduct national campaigns is shown by Table 19, where it will be seen that vaccine production in the countries affected doubled between 1962 and 1965. The amount of vaccine used has continued to increase as the result of the campaigns initiated in the quadrennium in Argentina, Brazil, Ecuador, and Peru, in addition to that already under way in Venezuela. There was also some increase in the use of vaccines in Bolivia, Chile, Colombia, and Paraguay. In Uruguay a high level of vaccination has been maintained and will rise even higher when the final phase of the campaign is begun.

Consultant, Reference, and Information Services

As part of the assistance to countries, consultant services have been provided on various aspects of foot-and-mouth disease and vesicular stomatitis. The Center maintained close contact with research laboratories and other institutions, both in America and in other parts of the world, and regularly sent information to the countries concerning the most recent advances in foot-and-mouth disease and vesicular stomatitis. At the request of countries, or because of the needs of the Center's programs, experts from the Center made a total of 246 visits to 21 countries in the period covered by the Report.

<table>
<thead>
<tr>
<th>Country</th>
<th>1962</th>
<th>1965</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>60,000,000</td>
<td>140,000,000</td>
</tr>
<tr>
<td>Bolivia</td>
<td>—</td>
<td>25,000</td>
</tr>
<tr>
<td>Brasil</td>
<td>15,000,000</td>
<td>25,000,000</td>
</tr>
<tr>
<td>Chile</td>
<td>1,500,000</td>
<td>4,000,000</td>
</tr>
<tr>
<td>Colombia</td>
<td>5,000,000</td>
<td>8,000,000</td>
</tr>
<tr>
<td>Ecuador</td>
<td>—</td>
<td>420,000</td>
</tr>
<tr>
<td>Paraguay</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Peru</td>
<td>250,000</td>
<td>3,400,000</td>
</tr>
<tr>
<td>Uruguay</td>
<td>13,000,000</td>
<td>13,000,000</td>
</tr>
<tr>
<td>Venezuela</td>
<td>6,600,000</td>
<td>9,400,000</td>
</tr>
<tr>
<td>Total</td>
<td>101,350,000</td>
<td>203,245,000</td>
</tr>
</tbody>
</table>

— None.
Research

Diagnosis

As a diagnosis and reference laboratory, the Center serves the different countries in the diagnosis and typing of field specimens, as well as of viruses used in the production and control of foot-and-mouth disease vaccine. Since the establishment of the Center, the number of samples received from the countries has gradually been increasing and totaled 2,750 in the last four years (Figure 14).

Virus Isolation and Identification

The work of the Center in identifying subtypes of foot-and-mouth disease virus deserves mention. The recognition of these strains, the behavior of which, from the serological and the immunological point of view, sometimes differs markedly from the prototypes used for classification purposes, is acquiring major importance in many countries owing to the expansion of vaccination campaigns and the growth of official control activities.

Research has led to the identification of six subtypes of foot-and-mouth disease virus, and two subtypes of vesicular stomatitis virus, which are distributed in the various South American countries as shown in Table 20.

Vaccines

One of the activities to which major efforts were devoted was that of producing greater immunity in susceptible animals by means of inactivated vaccines or modified live virus vaccines. Satisfactory results have been obtained with modified live virus vaccines prepared from strains adapted to chick embryos and rabbits. Research has been carried out, both in the laboratory and in the field, on the duration of immunity, the survival of modified live virus in vaccinated animals, etc. To improve present techniques so as to have more homogeneous strains, a study was begun on clones of strains, in various phases of modification, in BHK-21 cell monolayers. The same is being done with markers for these virus strains so as to be able to differentiate them from field strains. So much progress has been made in this area that in Venezuela only modified live virus vaccines are at present being used against foot-and-mouth disease, and that is also the only type that is being prepared in Ecuador.

![Figure 14. Biological samples forwarded for diagnosis by countries of the Americas to the Pan American Foot-and-Mouth Disease Center, 1954-1965](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample Forwarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954-1957</td>
<td>1500</td>
</tr>
<tr>
<td>1962-1965</td>
<td>2500</td>
</tr>
</tbody>
</table>

Subtypes of foot-and-mouth disease virus identified for the first time.

<table>
<thead>
<tr>
<th>Country</th>
<th>Subtypes of foot-and-mouth disease virus</th>
<th>Subtypes of vesicular stomatitis virus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O₂ (Bahia) A₁₀ (Santo) A₁₄ (Belém) A₁₉ (Guarulhos) A₂₅ (Zulia) A₃₀ (Schipach)</td>
<td>Indiana*</td>
</tr>
<tr>
<td>Venezuela</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Subtypes of vesicular stomatitis virus identified for the first time.
One of the limitations on the wide-scale application of potency tests in the countries is the difficulty in obtaining a sufficient number of susceptible cattle. For this reason, the research program included a study of the use of young adult mice for this type of test. It has been shown that the subcutaneous inoculation of foot-and-mouth disease vaccines confers protection against the intraperitoneal inoculation of virus strains adapted to these animals.

Serum-Protection and Serum-Neutralization Tests

A series of experiments using unweaned mice and, more recently, BHK-21 Cl.13 cell lines have been made to determine and evaluate antibodies against foot-and-mouth disease virus in the sera of cattle. Protection and neutralization indices have been established to determine and evaluate the antibodies released in response to various vaccines, and a relationship has been established between the protection index and the resistance of vaccinated animals to experimental infection. These indices are currently being used at the Center and in laboratories in other countries.

Serum and Blood on Blotting Paper

Because of the problems encountered in the field in shipping and storing refrigerated serum and blood samples, studies were begun on the possibility of using the method of drying on blotting paper for antibody determinations. A preliminary study showed that this method can be used without refrigeration for a period of 60 days and without detriment to antibody determination.

Wildlife

Possible sources of the spread of the virus of foot-and-mouth disease and vesicular stomatitis include species of wild animals that are naturally susceptible and that cohabit on occasion with domesticated animals suffering from these diseases and thus possibly become a factor in the epizootiology of the disease. The Center has been investigating the susceptibility of *Dasyprocta agoutis* to foot-and-mouth disease and vesicular stomatitis virus. The results show that the rodent is highly susceptible and can be infected by different routes.

Virus Carriers

The Center has been investigating the problem of healthy animals that are carriers of foot-and-mouth disease virus. To find a better method for isolating virus, various techniques for collecting and treating specimens from the mouth, pharynx, and esophagus were studied and compared, and various cell systems and unweaned mice were used for virus isolation. It was observed that A and C virus strains isolated from cattle that had been sick in the preceding months had a low titer in susceptible cattle and high pathogenicity for pigs, and recovered their titer in cattle once the virus had been passaged in pigs. These results suggest that virus from carrier cattle may be capable of giving rise to an outbreak in susceptible animals, especially when they are in contact with pigs.

Joint Argentine-United States Commission for the Study of Foot-and-Mouth Disease

An epizootiological survey was made on the island of Tierra del Fuego, in collaboration with the Joint Argentine-United States Commission for the Study of Foot-and-Mouth Disease. The Center examined specimens of serum from 8,761 sheep and 1,491 cattle. For this purpose, BHK-21 cells were used in the neutralization test against O, A, and C type virus. Subsequently, 828 specimens were examined in unweaned mice. Another important project was the investigation of the survival of virus in processed meat from vaccinated and unvaccinated cattle. The results of these studies have been published in a monograph by the National Academy of Sciences of the United States of America.

In 1962, following a recommendation of the Joint Argentine-United States Commission, a food technology laboratory was established at the Center. The object of the research in this laboratory is to learn, by applying the principles of modern food science and technology, how to destroy foot-and-mouth disease virus and how to inactivate it in fresh meat and its by-products. At present this problem is being investigated by comparative studies of heat inactivation under various environmental conditions (temperature, pH, suspensions) of natural and modified strains of the three types of virus present in South America. This basic information is vital for subsequent research to determine methods of inactivating virus in fresh meat. Furthermore, these studies could provide very valuable information for the identification of natural and modified strains.

PLAQUE

The Pan American Health Organization, since its foundation, has recognized that plague is an important problem for its Member Governments. The first meeting of the Organization was the First International Sanitary Con-
vention held in Washington, D.C., in December 1902. One of the main concerns of the founders was: "The adoption of measures for the disposal of garbage and wastes to prevent the spread of bubonic plague and other diseases." 12

Plague is at present manifest in the western part of the United States of America as well as in Bolivia, Brazil, Ecuador, Peru, and Venezuela. The incidence of the disease is continuing to increase, following the trend that began in 1960. In 1965, 848 cases were reported to the Organization, an increase of 61 per cent over the number notified in 1962. The number of cases reported in the period 1962-1965 (2,451) was three times greater than in the period 1958-1961 (756 cases).

Table 21 shows the incidence of the disease in the Americas in the period 1962-1965.

Generally speaking, the ecology of the disease follows a uniform pattern that is characteristic also of countries with a vast hinterland that became plague-infected during the present pandemic: entering through seaports, the infection first involved the rat population of the urban areas and then that of more or less distant cities and towns, the rat epizootics invariably leading to considerable epidemics. However, the infection inexorably spread, albeit often slowly, to the rural areas of the hinterland, where, owing to the presence of susceptible wild rodent species, it found conditions for its persistence comparable in principle to those in the ancient plague foci of Central Asia. Though in some of the affected South American countries or parts of them the common rats are still involved in the manifestations of plague, in other foci

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### Table 21. Reported Cases of Plague in the Americas, 1962-1965

<table>
<thead>
<tr>
<th>Country</th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>-</td>
<td>53</td>
<td>49</td>
<td>149</td>
<td>251</td>
</tr>
<tr>
<td>Brazil</td>
<td>36</td>
<td>39</td>
<td>285</td>
<td>119</td>
<td>479</td>
</tr>
<tr>
<td>Ecuador</td>
<td>326</td>
<td>258</td>
<td>194</td>
<td>374</td>
<td>1,182</td>
</tr>
<tr>
<td>Peru</td>
<td>164</td>
<td>72</td>
<td>125</td>
<td>200</td>
<td>551</td>
</tr>
<tr>
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<td>1</td>
<td>1</td>
<td>-</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>527</td>
<td>423</td>
<td>653</td>
<td>843</td>
<td>2,451</td>
</tr>
</tbody>
</table>

- None.
these rodents have ceased to play a role or have been relegated to a secondary role. They become but temporarily affected when the disease is rampant among the wild rodents and thus, like house mice and, more often, the domesticated guinea pigs, serve merely as links in the chain of events that carry the infection from the wild-rodent reservoir to man (who, however, may also be affected through direct contact with wild rodents or through their fleas).

In the 63 years of its existence, the Organization has assisted the Member Governments in the application of the classical control methods that have driven plague into the epizootic foci of today. While current control and containment measures have been more or less successful, it has become obvious that before further progress can be made against plague it will be necessary to undertake a thorough study of the nature of the disease and its present circumstances.

As a first step in a program that will include the necessary ecological studies, a thorough study and evaluation was begun of all the information on plague in the Americas contained in the technical literature, official reports, and other sources. On the basis of these data and observations made in the plague foci, a series of ecological research studies will be designed.

A publication entitled Plague in the Americas (Scientific Publication PAHO 115), prepared for the Organization by Drs. Robert Pollitzer and K. F. Meyer, was issued in 1965. The publication contains a summary of the basic information available on plague in Argentina, Bolivia, Brazil, Ecuador, Peru, the United States of America, and Venezuela.

At the request of the Government of Brazil, the Organization in 1965 recruited a short-term consultant who cooperated with the health authorities in the development of a research project on plague in the northeastern region, one of the most important foci of plague in Brazil. The consultant visited five of the most important plague foci in the country and assisted the health authorities in the preparation of a comprehensive research program to be carried out by the Ministry of Health in cooperation with PAHO, beginning in April 1966. This program will include ecological studies, research on the natural infection of wild rodents and fleas, sensitivity to plague of different species of rodents, study of the strains of plague bacillus isolated, research on the intradomestic flea fauna and on some methods of control.

Late in 1964, at the request of the Government of Venezuela, a consultant of the Organization began an epidemiological study in collaboration with the national health authorities; the first part of the study revealed that the rodent fauna had been greatly reduced, particularly Sigmodon hispidus hirsutus, the species previously most abundant. Xenopsylla cheopis had also disappeared. It was planned to continue the study in 1965, but at the request of the Government it was put off to the first quarter of 1966.

Outlines prepared by the Organization for collaborative international-national investigations on plague in the Ecuador-Peru foci included the study of the ecology of the various species of rodents and Lagomorpha involved in the plague outbreaks; systematic studies on the occurrence of plague in the various species of rodents and Lagomorpha; studies of susceptibility to plague infection; distribution of the various flea species; occurrence of plague in the various species of fleas, domestic rats, and domesticated guinea pigs; and epidemiological observations.

In 1964 two consultants of the Organization visited the Huancabamba plague focus in the northern part of Peru in order to prepare plans for these epidemiological studies. Unfortunately, for lack of funds, these plans could not be implemented and had to be postponed.

The incidence of plague is increasing in Bolivia. As in the past, cases of plague have been reported from the Departments of Chuquisaca and Santa Cruz. In 1962 plague was suspected in the Department of Beni, which, if true, would portend a serious retrogression in plague-containment efforts because a Beni focus could well lead to the entrance of plague into the extensive area of the Amazon Basin, with its abundant rodent population. Investigations made at that time by a consultant of the Organization did not reveal any evidence of plague in the Department of Beni.

Plague has been eliminated from Brazilian ports and cities and is localized in the rural portions of certain areas, where it is endemic. After more or less quiescent periods, the disease has become rather more frequent since 1961. Plague is endemic in the northeast, where the infected region extends along the border between the States of Piauí and Ceará to the State of Bahia. The infected area has three recognized foci: a part of Ceará and the westernmost portion of Pernambuco; a coastal belt in the States of Pernambuco, Paraíba, and Alagoas; and the central part of Bahia, related to which is the focus in the State of Minas Gerais. Epidemiological studies made with the cooperation of the Organization indicated that the domestic rat has no role in the maintenance of plague infection in Brazil and that, as in other countries of the Americas, the disease is maintained owing to its presence in wild species of Rodentia and Lagomorpha. At the request of the Government, the Organization is cooperating with the health authorities in epidemiological studies aimed at establishing an adequate plague control program in the enzootic and endemic areas of the country.
In Ecuador, beginning in 1960 and continuing into 1963, a serious spill-over of sylvatic plague to domestic rats occurred in the Provinces of Manabi, Chimborazo, Loja, and El Oro. Particularly affected was the Province of Manabi, where the disease is present in 10 of its 12 cantons, including the city of Portoviejo, capital of the Province, and its two maritime ports, Manta and Bahía de Caráquez. Although several cases have occurred around the port of Manta, the risk to international shipping is relatively slight, for all ocean-going ships anchor at a considerable distance off-shore because of the lack of port facilities. The focus in Manabi is of special importance because of the danger that the disease might spread to other areas, especially the city of Guayaquil, with which there is commercial traffic by road. At the request of the Government, short-term consultants provided by the Organization visited the country in 1963 and 1964 and cooperated with the health authorities in the preparation of a detailed control program.

In order to establish effective control of plague in all endemic areas, as a pre-condition for the economic development of the zones currently infected, whose products are exported through the ports of Guayaquil, Manta, Bahía, and Puerto Bolivar, the Government and the Organization signed an agreement in 1965 for the control of the disease. The Organization was to provide a medical officer, a sanitarian, and some supplies and equipment. The program started in the first quarter of 1965, with the training of personnel and the purchase of supplies and equipment. Field operations increased substantially during the third quarter with the incorporation of new trained personnel for the Provinces of Pichincha, Esmeralda, Loja, and Guayas.

In Peru the majority of cases occurred in the Provinces of Huancabamba and Ayabaca in the Department of Piura, which borders on the Province of Loja, Ecuador, and is part of the focus which exists along the border of the two countries. However, there is particular concern because the disease is spreading toward the east. The disease is already present in the Department of Cajamarca (Tabaconas) and of Amazonas (Copalin and Bagua) on the banks of tributaries to the Alto Marañón River which, joined by the Ucayali, flows into Brazil as the Amazon River.

Concerned over the increased incidence of plague in their countries and the spread of the disease toward the east, the Ministers of Health of Ecuador and Peru met in Quito in April 1964 and agreed to coordinate their control programs. During that year a consultant of the Organization assisted the Peruvian health authorities in the preparation of a detailed control program. It was not possible to implement the agreement between the Government of Peru and the Organization for this program or to provide services of a short-term consultant and one sanitarian budgeted for 1965 by the Organization.

The seven cases of plague reported from the United States of America during the period 1962-1965 occurred in the States of Arizona (1), California (1), and New Mexico (5). The low incidence of human infections derived directly from the wild rodents or through their fleas is in striking contrast to the large area, comprising 131 counties in 15 states, where evidence of plague among those animals has been found. The disease occurs among wild rodents in wooded or rural districts uninhabited or only sparsely inhabited by man, but human contact with the infection agent is probably established in exceptional instances.

Plague was identified in a dead rat in San Francisco, California, in March 1963 and fleas from a dead rat collected on the southwest slope of San Bruno Mountain, San Mateo County, California, were found to be infected with plague. This finding is important because wild rodents are sedentary and of relatively little danger to man, whereas the domestic rat can travel and is a direct danger to man.

The incidence of human plague has declined in Venezuela in recent years, although the disease still exists in the wild rodent population of a limited area of the States of Aragua and Miranda. As stated above, the epidemiological studies carried out in 1964 by the Government with the cooperation of the Organization revealed that the rodent fauna has been greatly reduced and that X. cheopis had also disappeared, which explains the decline of the disease in the area.

POLIOMYELITIS

The rapid spread of enteroviruses, especially among the socially and economically underprivileged, has led to rates of infection as high as 50 per cent in the child population. When contact is made early in life, 90 per cent of the population may be immune to these agents by the time they are five years old. As hygiene conditions improve, the spread of enteroviruses is reduced and a large number of people reach adulthood without having been exposed to infection and, therefore, without acquiring any immunity.

As soon as an effective and harmless vaccine became available, most of the countries in the Hemisphere made the administration of oral poliomyelitis vaccine prepared from attenuated live virus a routine activity of the health services.

13 Case registered in New Mexico.
In countries in which poliomyelitis vaccination was systematically given, the incidence of the disease has fallen. An impressive example of this fact is to be found in the attached graph (Figure 17), which shows the annual incidence of poliomyelitis in the United States of America in the period 1935-1965.

Unfortunately, not all countries have been able to make use of oral vaccination, for various reasons, and have suffered outbreaks of poliomyelitis that have caused them to adopt emergency control measures.

In Guyana some 500 cases were recorded in an outbreak of poliomyelitis that began in 1962 and continued into 1963. The Organization helped the local health authorities to evaluate the situation and to plan a program for the vaccination of children under six years of age. With the cooperation of the U.S. Agency for International Development, approximately 120,000 children were vaccinated.

The Government of Costa Rica launched a national immunization program in 1963. Immunization activities were carried out on a smaller scale in El Salvador and Honduras through regular health programs; the same applied to British Honduras, Guatemala, Nicaragua, and Panama.

In the Dominican Republic 357 cases of paralytic poliomyelitis occurred in an outbreak that flared up in 1963; of these, 91 per cent were in children under seven years of age. Fifteen deaths were recorded. Laboratory examinations showed that the prevalent virus was Type 1. The outbreak was brought under control as a result of an active immunization campaign carried out with the cooperation of the Organization, the Department of Health of Puerto Rico, the Communicable Disease Center of the U.S. Public Health Service, AID, Lederle Laboratories, Connaught Laboratories, and the Government of Mexico.

INFLUENZA

The objectives of the Organization's program in the field of virus diseases is to study the ecology of the
causative agents, especially their relationships with man, in order to achieve proper control over the diseases they produce. A large part of the program is carried out through the influenza reference centers, which in this Region form a network consisting of the International Influenza Center for the Americas at the U.S. Communicable Disease Center in Atlanta, Georgia, and the national influenza centers: they are situated in the National Microbiology Institute, Argentina; the Oswaldo Cruz Institute and the Adolfo Lutz Institute, Brazil; the Bacteriological Institute, Chile; the University College of the West Indies, Jamaica; the School of Tropical Medicine, Puerto Rico; the National Institute of Health, Venezuela; the Institute of Health, Uruguay; the Institute of Virology, Argentina; and the National Virology Institute, Mexico. Information about the strains isolated from different outbreaks, especially about antigenic variants, is disseminated by the network and thus makes it possible to set up proper control measures.

The year 1962 was marked by the appearance of small outbreaks of a benign disease caused by Type B virus. It occurred solely in the United States of America and Canada, and was in fact the tail-end of an epidemic which had occurred in these countries in 1961. From the antigenic viewpoint, the viruses isolated did not differ significantly from those that predominated in 1959; they were difficult to isolate in chick embryo, and tissue cultures were used for that purpose. There was no outbreak of Type A2 influenza in the countries of the Region.

In 1963 a syndrome similar to influenza occurred in different areas in the east and middlewest of the United States of America. The disease tended to spread toward the west, although the outbreaks were never important and never affected an entire state. Generally speaking, the epidemic had none of the characteristic features of the 1959 outbreaks. The Type A2 virus isolated showed only slight antigenic variations from the strains isolated in 1957. In Argentina, Brazil, Canada, Chile, Jamaica, and Venezuela there were outbreaks of varying magnitudes; Type A2 viruses were found in all of them, as were significant increases in the antibodies for those viruses.

In 1964 influenza outbreaks caused by Type A2 virus occurred in 26 counties in the State of Washington, U.S.A. At first the disease was confined to small communities, but later it spread to neighboring communities in other states, although it was never very extensive. In Puerto Rico influenza outbreaks affected the whole island. Virus A2 was isolated from clinical cases.

In 1965, in the United States of America, outbreaks in New England spread toward the middle west and to the southern part of the country. The disease was identified clinically and epidemiologically in 37 states and was confirmed by laboratory tests in all of them. A characteristic of the disease in that year was the existence of large completely free areas, a lack of uniformity in the spread of the disease which was repeatedly demonstrated in several of the states affected. Strains of A2 virus were isolated in 19 states and Type A virus activity was confirmed serologically. Although related antigenically, the strains isolated showed slight variation from those isolated in 1957, but that variation did not make it possible to determine an antigenic type characteristic of the group. In some of the states, Type B influenza virus was isolated.

Virus A2 was found in isolated influenza outbreaks in Brazil, Chile, and Venezuela, and in some of the cases there was a significant rise in antibody response.

**ARBOVIRUS INFECTIONS**

The countries of the Americas offer almost unlimited ecological conditions for the persistence and spread of arthropod-borne viruses. Of the 170 agents already classified in that group, more than half have been isolated in countries in the Region from human specimens, from arthropods, or from other animals. Although many of these viruses have not been shown to be pathogenic for man, the opening up of highways and new land-settlement schemes are bringing man into contact with new ecological niches and are thus increasing the danger of infection by these agents. An example of this is the proposal to open up the fertile eastern plains of Bolivia to ranching. Outbreaks of hemorrhagic fever there in most of the population have been an insuperable obstacle for this ambitious project. The opening up of a highway bordering the jungle, which will unite the Bolivarian countries (Venezuela, Colombia, Ecuador, and Peru), may create a similar situation with incalculable consequences and losses. It is therefore necessary, before that is done, to investigate the factors involved in the transmission of arbovirus infections and to adopt the necessary control measures to prevent their spread.

**Encephalitis**

In 1962 cases of human encephalitis began to appear in the State of Zulia, Venezuela, and in the Department of La Guajira, Colombia. In both areas the outbreaks reached epidemic proportions. There were 6,340 cases reported in Venezuela; of these, 397 had neurological symptoms and 42 of them were fatal. The epidemic persisted up to the month of December. The agent of Venezuelan equine encephalitis was isolated from the blood and brain of human cases and of donkeys. Although
the exact number of cases in La Guajira, Colombia, was not known, it was estimated to have been about 3,000, with a 1 per cent case-fatality rate.

In Jamaica (1962) an epizootic of Eastern equine encephalitis gave rise to 11 human cases, of which nine were fatal.

In Tampa, Florida, U.S.A., there was an outbreak involving 231 confirmed human cases. The symptomatology of the infection varied but it produced 20 fatal cases. In most of the cases, the St. Louis virus was serologically confirmed as the etiological agent.

These outbreaks indicated an increase in the transmission of encephalitis viruses in the Caribbean area. The magnitude of the problem was such that the Government of Venezuela decided to set up a commission to study the many unknown factors surrounding Venezuelan equine encephalitis. The commission was composed of research workers from the Ministry of Health, and representatives of the National Institute of Health, the Venezuelan Institute for Scientific Research, the Institute of Veterinary Research, and other institutions interested in the program. A PAHO consultant gave advice on the formulation of a general plan of action comprising research and control activities.

**Dengue**

In Jamaica, an outbreak of dengue which flared up in March 1963 continued throughout the rest of the year. It produced a total of 1,578 cases in all parts of the island. It was not possible to isolate the causal agent by means of laboratory studies, but it was possible to observe a significant increase in the hemagglutination inhibiting antibodies against viruses of the dengue complex.

In Puerto Rico, the first cases of the disease began to be reported in July of the same year. The attack rate in some communities was as high as 50 per cent, and in the course of the year 25,737 cases were reported. The organism isolated had characteristics peculiar to dengue Type 1, although subsequent tests did not confirm this. It was possible to demonstrate a significant increase in Group B arbovirus antibodies.

The epidemic continued to spread to other countries and territories in the Caribbean area, and in 1964 721 cases were reported in the islands of St. Kitts, Nevis, and Anguilla. In Antigua, where cases were reported in 1963, new cases continued to occur in 1964; that year, there were 264 cases in all. In Curacao there was an estimated total of 8,000 cases between 1963 and the middle of 1964. In the same period, on the basis of information obtained from Martinique, the total number of cases was estimated at 10,000 although a considerable number of them were considered to be benign or atypical forms of the disease. Serological tests attributed this outbreak to a virus belonging to the arbovirus group, but it was not possible to isolate the agent. In the continental territory of the United States of America, 28 imported cases of dengue occurred in persons who had acquired the infection in the Caribbean islands.

In Venezuela, there was an outbreak of dengue in July 1964, which produced 18,306 cases in the States of Anzoátegui, Bolivar, Miranda, Monagas, Sucre, and Nueva Esparta. In 1965, 18 states reported 4,248 cases.

**Hemorrhagic Fever**

Since 1943, when the first reports of cases began to come in from the northwestern part of Buenos Aires Province in Argentina, there have been outbreaks of a disease known as Argentine hemorrhagic fever, or “cornstubble disease,” because it chiefly attacks agricultural workers engaged in the harvesting of corn. In 1958 a series of investigations were carried out and resulted in the isolation of the etiological agent (Junin virus). Subsequent laboratory studies showed that it belonged to the Junin-Tacaribe-Machupo complex. The case-fatality rate in the first outbreaks was as much as 20 per cent, but better treatment procedures and perhaps the greater sensitivity of diagnostic methods has made it possible to considerably reduce this figure. In 1964 the number of cases reported was 3,026, and in 1965, without any special control measure being adopted, the number of cases fell to 148, a phenomenon which has not yet been clarified.

A clinically very similar disease has been occurring since 1959 in the Department of Beni, in the eastern part of Bolivia. Between September 1959 and May 1962 a total of 362 cases was reported, of which 120 were fatal.
In the 1962 epidemic, the most serious of those which have occurred, the government of Bolivia asked for the assistance of the Organization in coordinating the activities of the U.S. National Institutes of Health (NIH), which made an epidemiological survey of the most affected zones and demonstrated the presence of Junin virus antibodies in the serum of convalescent patients. Because of this, and the high mortality rate and clinical similarities, etc., the same agent was thought to be producing the disease. In 1962 the NIH investigators succeeded in isolating from the spleen of a fatal case a virus whose antigenic properties were common to the Junin virus and the Tacaribe virus. In 1963, using hamster brain as a source of antigen, serological conversion was observed in three MARU (Middle America Research Unit) research workers who had contracted the disease during their field studies, as well as in other patients with typical symptoms of the disease. Epidemiological studies conducted by the MARU group showed that the infection was widespread in lower animals (Proechimys guayanensis and Callomys callosus), which in certain instances and in certain places might threaten to invade human habitats and transmit the virus they eliminate throughout their lives. In order to verify this hypothesis, a control study was begun in Bolivia in May 1964, involving the capture and extermination of peridomestic rodents; although 152 cases had been admitted to the hospital, the incidence of the disease in the area under study fell sharply within 10 days after the control campaign was begun. Control activities in the remaining part of the area led to a reduction in the number of cases of hemorrhagic fever, and although the possibility of other factors cannot be excluded, it would appear that there is a cause-and-effect relationship, since in previous years the incidence increased during the same months and, in 1964, there was a large susceptible population. A project of the Commission which is being carried out at the present time is a survey in a more extensive geographic area that may be or is infected by Bolivian hemorrhagic fever; the study consists in the sampling of both the human and the rodent population in a large area, with San Joaquin as its center. The Organization has cooperated in this project by putting the members of the Commission in touch with the health authorities in institutions and ministries of Peru, Brazil, Paraguay, and Argentina. This field project is being carried out satisfactorily, and will undoubtedly produce extremely valuable material that will be examined in the laboratory. These studies have stilled the fears that the infection had spread to extensive unexplored areas, since up to the present time no new foci have been found.

Field and laboratory investigations have documented beyond all reasonable doubt a fact that characterizes this infection, namely, that certain species of rodents are chronically infected by the virus and eliminate it in large quantities in their urine for several months and perhaps the rest of their lives. This is in essence the fundamental cycle of the transmission of the virus to man in the Bolivian environment. The aim of the present investigations is to study the natural cycle by means of laboratory experiments which it is hoped will give more information on this point.

For this purpose a large number of laboratory animals have been inoculated, and the collaboration of the Rocky Mountain Laboratories in Montana, U.S.A., has been obtained in studying experimental transmission, especially in certain types of ticks, which may perhaps play a role in the spread of this virus disease.

Recently, in the Belém Laboratory in Brazil, strains of viruses that may be included in the group have been isolated from rodents of the genus Oryzomys captured in the forest regions of the Territory of Amapá. Although at the present time there is no evidence of infection in man, this finding widens the over-all picture of the problem even more, and offers new interesting aspects of the natural history of a little known disease.

PARASITIC DISEASES

Parasitic infections are of major importance to the health and welfare of the people of the Americas. Vast numbers of persons are burdened with parasites that sap their energy, decrease their efficiency, and threaten their lives. Chagas' disease, schistosomiasis, intestinal worms, and other highly prevalent parasites can cause serious pathological states and can tax the medical services. The impact of most of the parasites on the human population has not been measured precisely, but it is not small. It is usually underestimated because the symptoms are often not dramatic or characteristic, because the parasites often debilitate their victims instead of killing them, and because the effects are not easily measured.

Because of their potential impact on economic progress, the parasitic diseases are factors to be considered in all development schemes such as irrigation projects and housing programs.

The magnitude of the parasitic disease problem can be illustrated by the prevalence figures. The number of persons in the Americas infected with Chagas' disease is estimated to be at least 7 million. The number of schistosomiasis infections is more than 5 million. The number of infections with intestinal worms is not known, but a large proportion of the population of most countries harbors one or more species.
The parasitic diseases of medical importance are uncontrolled in most countries. Indeed, in some instances they are increasing in prevalence owing to overcrowding in the cities and more intensive water and land use in rural areas. Greater mobility of the people has also increased the possibility of the spread of some of the infections to new areas.

In the field of parasitic diseases the Organization continued in the period 1962-1965 to aid the Member Governments in the conduct of surveys, epidemiological studies, and control programs; to disseminate technical information; to sponsor research; and to train personnel.

Chagas' Disease

Chagas' disease is known to occur in almost all the countries of the Americas, but its true incidence has not yet been determined. The number of persons exposed to infection by Trypanosoma cruzi is estimated, on the basis of existing information, at 35 million; if the average of the infection rates obtained in epidemiological surveys in several countries is taken at 20 per cent, it may be calculated that at present there are at least 7 million people infected with T. cruzi.

As part of its medical research program, the Organization convened a meeting of an Advisory Group on Research in Chagas' Disease, in Rio de Janeiro, Brazil, in 1962. The purpose of the meeting was to evaluate the state of knowledge of the disease, define the most important fields to be studied, and indicate the type of research best suited to the solution of the problem. The Advisory Group recommended these fields of study: improvement and standardization of diagnostic procedures; a broad survey to evaluate the true extent and magnitude of the problem; ecology of vectors; chemotherapy; control; basic research on the nutrition, metabolism, and immunological behavior of T. cruzi.

The report of the Advisory Group was submitted to the PAHO Advisory Committee on Medical Research, which expressed its agreement with the list of priorities and recommended the establishment of centers for the production and control of antigens for the laboratory diagnosis and the promotion of centers to maintain strains of T. cruzi, under known conditions, and to facilitate their exchange among investigators.

Acting upon this recommendation in 1962, the Organization signed an agreement with the School of Medicine of the University of Chile, by which the Department of Parasitology was to undertake studies for the preparation of a standard antigen for use in the complement-fixation test and to assume responsibility for distributing the antigen to countries that requested it. During the four years in which the agreement has been in operation, seven countries have received a standard antigen for the complement-fixation test for the diagnosis of Chagas' disease.

The Organization will continue to provide this type of assistance and is studying the possibility of establishing a similar agreement with another institution, which would also serve as a reference and training center for the serological diagnosis of Chagas' disease.

In 1963 the Organization made a survey of research opportunities in the chemotherapy of the disease and established a Chagas' Disease Chemotherapy Research Group composed of six investigators to comment, advise, exchange information, arrange for clinical trials, and encourage as well as conduct research in this area.

The chronic effects of Chagas' disease are variously described in the different areas where the disease is endemic. In some, the high prevalence of infection is believed to be correlated with high death rates from heart diseases or with sudden death in young adults; in others, excessively high death rates from heart disease are not reported despite high rates of infection. The existence of other chronic effects such as megacolon and mega-esophagus is associated with Chagas' disease in some areas but not in others. To learn more about the etiology involved, comparative longitudinal studies in several areas of the Americas with reportedly differing rates of infection and disease are indicated. In 1964, a PAHO team composed of a cardiologist and a pathologist visited several areas of South America to study and assess methods of diagnosis in current use and to plan recommendations to be made to the Advisory Committee on Medical Research on the methodology and the scope of future epidemiological studies.

Schistosomiasis

Schistosomiasis is a silent and deceptive disease which, persisting over long periods, causes the debilitation of its victims. Usually, it does not kill or incapacitate; victims adapt their working capacity and productivity to the limits of their lowered strength. It thus causes considerable economic loss through diminished productivity. The epidemiological picture of the disease is obscured by malnutrition, poverty, poor hygienic conditions, and certain concomitant diseases such as malaria and other parasitic infections. Because of those concomitant factors, it has been difficult to assess quantitatively the medical, economic, and social effect of schistosomiasis.

Methods are now available for controlling the disease. It has been demonstrated that transmission can be interrupted by mollusciciding, and there is also hope that recent advances in the chemotherapy of schistosomiasis will increase the chance of success even more.
Schistosomiasis, however, is a biomedical problem that still calls for considerable research, including epidemiological and clinical studies, and the development of newer methods of control and treatment.

The Organization has been assisting the countries in appraising their schistosomiasis problem, preparing and developing control programs, planning research projects, and training personnel.

In the Americas the disease is a public health problem in areas of Brazil, Puerto Rico, the Dominican Republic, St. Lucia, and Venezuela.

Research in schistosomiasis is fundamental to the development of effective means of control. Therefore, during the quadrennium the Organization's activities were devoted mainly to supporting research and training. The Organization distributed a questionnaire to ascertain existing research sites and programs and to appraise potential for research. Follow-up visits were made in 1962 by a WHO Bilharziasis Advisory Team which visited all the countries and territories in the Americas where schistosomiasis was known to exist or where ecological characteristics were predisposing to the disease, except the Dominican Republic. The Team reviewed current problems and programs in each area, gave advice when appropriate, and collected a considerable amount of data.

The classification of the intermediate host snails of schistosomiasis in the Americas has been complicated by the fact that malacologists had developed separate taxonomic guides and, as a result, many species of snails appeared in the literature with different designations. To help bring order into this field, the Organization established in 1961 the PAHO/WHO Working Group for the Development of Guidance for Identification of American Planorbidae Involved in Schistosomiasis. This Group has been very active during the quadrennium.

One of the initial tasks preliminary to preparing a guide was to determine which of the hundred species described were valid species as opposed to nominal species that were to be regarded as synonyms. Financial assistance from the Organization permitted a member of the Working Group to visit several European museums in search of type specimens, and live specimens recently collected by other members of the Working Group were contributed for comparisons with type specimens. Other members of the Group collected living specimens from a number of areas in South America, the Caribbean, and the southern part of the United States of America. The Group has reduced the number of species of snails involved in this disease from over 100 to less than 10.

Studies were also made to determine normal variations in various species. One new species, *Australorbis intermedius*, collected from Valparaiso, in the State of São Paulo, Brazil, was described in 1962 by a member of the Group. A member found that *A. glabratus*, the most important intermediate host of *Schistosoma mansoni* in the Western Hemisphere, had a very wide range of susceptibility to infection.

The Group also prepared a preliminary draft of "An Introductory Guide to the Intermediate Hosts of Schistosomiasis in the Americas." The Guide is directed to a wide audience of workers in public health and is tailored to their level of training. Although a certain amount of general biology is required of such an audience, an effort has been made to explain malacological terminology in a minimum of technical terms. The Guide simplifies the identification of snails that serve as real or potential intermediate hosts of *S. mansoni* in Latin America and their differentiation from the several species that can be confused with them. An extensive but selected bibliography has been provided as an aid to further study.

The Guide was duplicated in mimeographed form and distributed in 1965 to a limited group of experts for study and review prior to its printing in 1966.

To assist in the proper identification of snails, the Organization and the Government of Brazil agreed, in 1963, to collaborate in establishing the International Snail Identification Center for the Study of Schistosomiasis, which is located at the National Malacology Research Center of the National Institute of Rural Endemic Diseases, in Belo Horizonte, Brazil.

The International Center is a depository of live and preserved snail vectors of schistosomiasis, some collected by the Center and others received from recognized workers and institutions. The collection at the Center is one of the best for Latin America planorbids. The Center also carries out research on taxonomy, variability, ecology, population dynamics, susceptibility to infection, snail physiology and genetics, and other studies on the snails concerned. The establishment of the Center increased the facilities and services for studies essential to a better understanding of the epidemiology of schistosomiasis and for the training of personnel who will carry out the task of studying and controlling the disease. Although recently established, the Center has already made several studies on planorbids of the Americas.

In 1965 a short-term consultant provided by the Organization visited Brazil and discussed with the national health authorities the planning and execution of a Pilot Control Program on Schistosomiasis. The purpose of this program is to test control methods in a series of typical endemic foci in order to gather the information and experience that would permit the creation of a program for the control of the disease in Brazil.
Onchocerciasis

Human onchocerciasis caused by *Onchocerca volvulus* is a public health problem of great economic importance in circumscribed areas of the Americas. The disease is found in certain coffee plantations on the western slopes of Guatemala, at an altitude of 600 to 2,000 meters; in the southern states of Mexico, including Chiapas and Oaxaca; and in northern and eastern Venezuela at an altitude of 250 to 1,000 meters (States of Monagas, Carabobo, Aragua, Yaracuy, Cojedes, Guarico, Miranda, Anzoátegui, and Sucre). Epidemiological surveys carried out in these countries showed that *Onchocerca* infections are present in a high percentage of the population of these regions.

The disabling effects of onchocerciasis can combine with the nuisance caused by *Simulium* vectors to produce not only human suffering, but also severe economic damage sufficient to hamper the development of the countries affected by this scourge.

As a part of the WHO program for research in onchocerciasis, a population survey was conducted in 1962 in representative areas of endemcity in Guatemala. For this purpose the Organization provided a consultant who, in collaboration with national technical personnel, sampled the populations in three different areas in an attempt to bring forward statistical evidence on the correlation between certain ocular lesions and onchocerciasis, and to provide a better understanding of the etiology of these eye lesions.

The Organization cooperated with the Government of Guatemala, through the provision of consultants, in the planning and organization of a “Symposium on Roble’s Disease,” which was held in Guatemala in 1965 as part of the commemoration of the fiftieth anniversary of the discovery of onchocerciasis in the Americas.

**B. ENVIRONMENTAL SANITATION**

In the previous quadrennial report it was pointed out that in no other period in the history of the Organization had there been so great an increase in environmental sanitation activities as between 1958 and 1961. That progress has continued without interruption during the four subsequent years, among the achievements of which mention must be made of the continental water supply program and the program for education and training in sanitary engineering. The Act of Bogotá and the Charter of Punta del Este have continued to be the basic documents which, together with the directives laid down by the Governing Bodies of the Organization, have set the guidelines for providing the people of Latin America with more healthful environmental conditions.

In the continental water supply program, a great impetus has been given to activities in urban areas, and much progress has been made in the planning and development of programs in the rural areas. The resolutions of the Organization’s Governing Bodies and those of the Task Force on Health at the Ministerial Level (April 1963) gave the highest priority to water and sanitation programs in rural areas. Those directives and recommendations have led to a great increase during the quadrennium in the amounts invested in rural sanitation programs, in the development of community action projects, and in the establishment of revolving funds in various countries to finance these activities.

Another aspect meriting attention is the manifest interest during the quadrennium in research on, and the solution of, problems such as water and air pollution, industrial hygiene, and urbanization and housing, whose emergence has coincided with the growth of urban centers and of industrialization. Those problems, which reflect the recent economic and social development of the countries of the Americas, require the Organization to adopt new policies and initiate new programs in key with the progress of our time.

**WATER SUPPLY**

Since the World Health Organization, in Resolution WHA12.48 of the Twelfth World Health Assembly, and the Pan American Health Organization, in Resolution XVI of the XI Meeting of the Directing Council (1959), decided that priority in the programs of both Organizations should be given to community water supply, and the goals for Latin America were established in the Charter of Punta del Este (1961), significant
progress has been made in supplying water to the people of the Americas.

This progress is exemplified by the increased support the Governments have given to the program at meetings of the PAHO Directing Council and in those of the Inter-American Economic and Social Council (IA-ECOSOC); by the strengthening of the agencies for the design, construction, management, and operation of the water supply systems; by the growth of the funds made available by both international lending agencies and the countries themselves; and by the number of people benefited.

Table 22 shows the contributions made by Governments to the PAHO Community Water Supply Fund.

In accordance with the recommendation of the above-mentioned resolutions that national or provincial water authorities be established and empowered to deal with the various legal, administrative, and fiscal responsibilities involved, four authorities were established in 1961. Six additional authorities have been established since then.

### Table 22. Contributions to the PAHO Community Water Supply Fund, 1960-1965 (U.S. dollars)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia</td>
<td>9,911</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honduras</td>
<td>10,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica</td>
<td>5,040</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Peru</td>
<td>8,383</td>
<td>931</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>5,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States of America</td>
<td>200,000</td>
<td>125,000</td>
<td>300,000</td>
<td>300,000</td>
<td>300,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Venezuela</td>
<td>15,418</td>
<td>125,000</td>
<td>300,000</td>
<td>324,911</td>
<td>323,911</td>
<td>325,971</td>
</tr>
<tr>
<td>Subtotal</td>
<td>216,418</td>
<td>125,000</td>
<td>300,000</td>
<td>324,911</td>
<td>323,911</td>
<td>325,971</td>
</tr>
<tr>
<td>Interest and other</td>
<td>5,559</td>
<td>4,324</td>
<td>7,804</td>
<td>2,870</td>
<td>4,785</td>
<td>5,931</td>
</tr>
<tr>
<td>Total</td>
<td>221,977</td>
<td>129,324</td>
<td>307,804</td>
<td>327,781</td>
<td>328,696</td>
<td>331,902</td>
</tr>
</tbody>
</table>

### Table 23. National Water Authorities (Chronological order of authorizations)

<table>
<thead>
<tr>
<th>Area</th>
<th>Name</th>
<th>Initials</th>
<th>Authorization date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>National Sanitation Works Agency</td>
<td>OSN</td>
<td>July 1912</td>
</tr>
<tr>
<td>Venezuela</td>
<td>National Institute of Sanitary Works</td>
<td>INOS</td>
<td>April 1943</td>
</tr>
<tr>
<td>Uruguay</td>
<td>State Board of Sanitation</td>
<td>OSE</td>
<td>December 1952</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>National Water Supply and Sewerage Service</td>
<td>SNAAN</td>
<td>April 1961</td>
</tr>
<tr>
<td>Honduras</td>
<td>National Water Supply and Sewerage Service</td>
<td>SANAA</td>
<td>April 1961</td>
</tr>
<tr>
<td>El Salvador</td>
<td>National Water Supply and Sewerage Admin</td>
<td>ANDA</td>
<td>October 1961</td>
</tr>
<tr>
<td>Panama</td>
<td>National Water Supply and Sewerage Institute</td>
<td>IDAAN</td>
<td>December 1961</td>
</tr>
<tr>
<td>Paraguay</td>
<td>National Sanitation Service</td>
<td>SANOS</td>
<td>May 1962</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>National Water Supply and Sewerage Institute</td>
<td>INAPA</td>
<td>July 1982</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>Central Water Authority</td>
<td>IEOS</td>
<td>October 1964</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Institute of Sanitary Works of Ecuador</td>
<td>IEO2</td>
<td>January 1965</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>Central Water and Sewerage Authority</td>
<td>ABOS</td>
<td>December 1965</td>
</tr>
<tr>
<td>Bolivia</td>
<td>Bolivian Sanitary Works Administration</td>
<td></td>
<td>Presented to Congress in 1965</td>
</tr>
<tr>
<td>Peru</td>
<td>National Institute of Sanitary Works</td>
<td></td>
<td>Authority being formed</td>
</tr>
<tr>
<td>Dominica</td>
<td>Water Board (Functioning at present)</td>
<td></td>
<td>Authority under consideration</td>
</tr>
<tr>
<td>British Honduras</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montserrat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grenada</td>
<td></td>
<td></td>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International Loans</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter-American Development Bank</td>
<td>25.6</td>
<td>106.3</td>
<td>28.6</td>
<td>39.3</td>
<td>89.4</td>
<td>289.2</td>
</tr>
<tr>
<td>Agency for International Development (U.S.A.)</td>
<td>3.5</td>
<td>17.4</td>
<td>11.0</td>
<td>3.6</td>
<td>1.3</td>
<td>36.8</td>
</tr>
<tr>
<td>International Bank for Reconstruction and Developement</td>
<td>-</td>
<td>-</td>
<td>3.0</td>
<td>-</td>
<td>-</td>
<td>3.0</td>
</tr>
<tr>
<td>Export-Import Bank (U.S.A.)</td>
<td>15.0</td>
<td>14.0</td>
<td>-</td>
<td>0.2</td>
<td>2.3</td>
<td>31.5</td>
</tr>
<tr>
<td><strong>National Funds</strong></td>
<td>59.7</td>
<td>156.5</td>
<td>59.1</td>
<td>74.0</td>
<td>119.8</td>
<td>469.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>103.8</td>
<td>294.2</td>
<td>101.7</td>
<td>117.1</td>
<td>212.8</td>
<td>829.6</td>
</tr>
</tbody>
</table>

* A relatively small portion of these funds has been allocated for sewerage systems.

by law in the period 1962-1965 and five more countries are studying the establishment of such authorities. The details are given in Table 23. In several countries where authorities have not been established, the departments already having jurisdiction over water supply have been given additional authority.

The countries of the Americas and the international lending agencies have responded most effectively to the needs of the water program, as is shown in Table 24. Funds made available for the construction of water supply systems jumped from approximately $104 million in 1961 to $294 million in 1962, and totaled an estimated $725 million in the period 1962-1965 (a small proportion of these funds was allocated for the construction of sewerage systems). Of the total amount, $409 million was made available by the countries themselves and $316 million came from international lending agencies in the form of 74 loans to 20 countries. It is estimated that more than 44 million people will benefit from the systems constructed. Details by country are given in Table 25.

In 1959 there were four PAHO projects that could be regarded as community water supply oriented: Cuba-9, Waterworks Training Course; AMRO-175, Waterworks Training Course, held in Uruguay; AMRO-39, Advisory Committee and Consultants, to advise Member Countries in developing their water supply programs; and AMRO-187, Promotion of Urban Water Supplies. Some general assistance was also provided under the integrated health service projects. By 1965 the PAHO community water supply projects had been expanded to 36, including six regional projects.

By mid-1961 there were three sanitary engineers working full-time on community water supply projects (two of them paid from Community Water Supply funds), and 17 sanitary engineers attached to other environmental sanitation projects were devoting part of their time to the community water supply program. Four years later the number of sanitary engineers in the water supply programs had increased to 40—13 full-time and 27 part-time. In the period 1962-1965, 255 man-months of short-term consultant service were provided.

Short-term consultants have been used in 24 countries to advise on specific problems ranging from preliminary feasibility studies and design methods to administration, operation, and maintenance.

Details of the advisory services to the countries of Latin America by PAHO staff and short-term consultants for community water supply and other environmental sanitation activities in the period 1962-1965 are given in Table 26.

The Organization has maintained close and fruitful liaison with the Inter-American Development Bank in Washington, D.C., and has provided assistance in preparing loan requests in all but two of the countries that have received loans from international lending agencies for community water supply projects. This assistance has varied from assistance with feasibility surveys, preliminary designs, and preparation of loan requests, to complete assistance from the first inception to cooperation in the actual presentation of the loan request.

Even more important than the assistance provided in the preparation of requests for international loans, has been assistance in developing effective institutions and agencies. These are absolutely indispensable for taking full advantage of loans as soon as they are granted and for the operation and management of systems once they are completed and placed in operation. This type of assistance has become increasingly important in the cooperation being provided by the Organization.

A useful new technique has been developed to make the assistance even more effective. Instead of providing the advisory services of one consultant, a group of
TABLE 25. FUNDS ALLOCATED FOR CONSTRUCTION OF WATER SUPPLY AND SEWERAGE SYSTEMS IN LATIN AMERICA, JANUARY 1961-DECEMBER 1965 (U.S. dollars)

<table>
<thead>
<tr>
<th>Country</th>
<th>International loans</th>
<th>Estimated amount of matching domestic funds (estimate)</th>
<th>Population benefited</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inter-American Development Bank</td>
<td>International Bank for Reconstruction and Development</td>
<td>AID</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>Sewerage</td>
<td>Water</td>
</tr>
<tr>
<td>Argentina</td>
<td>29,000,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bolivia</td>
<td>2,600,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Brazil</td>
<td>70,110,000</td>
<td>14,650,000</td>
<td>-</td>
</tr>
<tr>
<td>Chile</td>
<td>26,545,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Colombia</td>
<td>27,751,397</td>
<td>7,233,000</td>
<td>-</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1,400,000</td>
<td>140,000b</td>
<td>-</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1,150,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ecuador</td>
<td>5,200,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>El Salvador</td>
<td>7,650,000</td>
<td>1,520,000</td>
<td>-</td>
</tr>
<tr>
<td>Guatemala</td>
<td>2,717,804</td>
<td>1,200,000</td>
<td>-</td>
</tr>
<tr>
<td>Haiti</td>
<td>2,360,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Honduras</td>
<td>2,550,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jamaica</td>
<td>-</td>
<td>550,000</td>
<td>-</td>
</tr>
<tr>
<td>Mexico</td>
<td>13,474,000</td>
<td>185,000b</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>-</td>
<td>1,713,000</td>
<td>-</td>
</tr>
<tr>
<td>Panama</td>
<td>2,762,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Paraguay</td>
<td>295,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Peru</td>
<td>12,490,539</td>
<td>1,713,000</td>
<td>-</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Uruguay</td>
<td>9,343,000</td>
<td>2,500,000</td>
<td>-</td>
</tr>
<tr>
<td>Venezuela</td>
<td>36,000,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>256,497,740</td>
<td>32,717,360</td>
<td>3,000,000</td>
</tr>
</tbody>
</table>

International loans: $360,527,455
Matching domestic funds: $19,106,300
Other domestic financing: 150,000,000

Total funds allocated: $829,633,755

* None.

* It has not been possible to separate the amount for water supply projects from that for sewerage projects; however, the share allotted to sewerage projects is known to be relatively small.

* These loans are meant solely for studies.

consultants functioning as a team on the various management activities spends up to a month working with the heads of the departments of an organization. The activities are analyzed, improvements are suggested and tried out, and a manual of procedures is developed. Short courses are given to train the personnel involved. Periodic evaluations are made of the progress achieved in adopting the recommended improvements. This approach has been used for the Municipal Water Supply Department of Managua, Nicaragua, and the national water authority of Honduras, with such success that requests have been received from several countries for similar assistance.

**Water Supply in Rural Areas**

During the quadrennium the development and expansion of water supply programs in rural areas of the Region was given strong support by the Organization's Governing Bodies, the Member Governments, the Task Force on Health at the Ministerial Level, and the
<table>
<thead>
<tr>
<th>Consultation or technical assistance on:</th>
<th>Zone I</th>
<th>Zone II</th>
<th>Zone III</th>
<th>Zone IV</th>
<th>Zone V</th>
<th>Zone VI</th>
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<tr>
<td><strong>COMMUNITY WATER SUPPLY</strong></td>
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<tr>
<td>Water authorities—Org. or improvement</td>
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<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
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<td>Water supply system—Design</td>
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<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
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<tr>
<td>Organization and management</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
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<tr>
<td>Problems</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
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<tr>
<td>Planning—National or regional</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Rates—Establish or improve</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Public relations</td>
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<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Rural community water supply</td>
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<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
<td>(x)</td>
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<tr>
<td>Groundwater exploration, drilling</td>
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<td>Community development, self-help</td>
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<td>Fluoridation</td>
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<td>Laboratories—Installation, operation</td>
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<td><strong>OTHER ENVIRONMENTAL SANITATION</strong></td>
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<td>Air pollution control</td>
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<td>Industrial hygiene</td>
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<td>Studies or surveys (other)</td>
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<td>UNDP projects—Supervise or develop</td>
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<td>Centers or institutes</td>
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* Table 26. Countries Receiving Advisory Services from PAHO for Community Water Supply and Environmental Sanitation Activities in Latin America, 1962-1965 *
to be attained by the countries in the decade of the Alliance: the provision of potable water and sewage disposal services to at least 50 per cent of the rural population. The Charter also recommended that the Secretary General of the Organization of American States convene the Task Force on Health to study and make recommendations on health problems and set the most appropriate course in order to meet the objectives established in the Charter.

The Meeting of the Task Force on Health confirmed the interest of the countries in solving water and sanitation problems in rural areas, and adopted Recommendation A.6 (Official Document PAHO 51, 34-36), calling on the Organization to study the possibility of establishing a mechanism that would make possible the creation of a Rural Welfare Fund, with contributions from the countries, the Alliance for Progress, and other international institutions. Such a Fund would serve to make loans to the countries for the establishment of revolving funds to be used by the communities for the construction of their own water supply systems and other sanitation and rural welfare works. That recommendation of the Task Force was ratified subsequently by the PAHO Directing Council at its XIII and XIV Meetings, and was supported by the Second Annual Meetings of the Inter-American Economic and Social Council (IA-ECOSOC) at the Expert and the Ministerial Levels, held in October-November 1963. Resolution 19-M/63 (OAS Official Document Ser. H/XII.6) recommended in addition that the Inter-American Development Bank assume responsibility for the financial aspects and that the Pan American Sanitary Bureau provide the necessary advisory services in the financing, organization, and motivation of the communities as well as in the technical aspects of the program. In accordance with Resolution XX of the XIV Meeting of the PAHO Directing Council, the Director of the Bureau convened in Washington in 1964 three advisory committees to study and make pertinent recommendations on three basic aspects of the development of rural programs: (a) financing; (b) technical aspects; and (c) social aspects and community participation. The committee reports endorsed the original proposals and laid down valuable guidelines for the implementation of those activities in the countries. The participation of representatives of the international lending institutions in those three committees undoubtedly served to pave the way for a clearer understanding of the countries' wishes.

In July 1964 a Regional Conference on Water Supply in Rural Areas was held in Bogotá, Colombia, and was attended by representatives of 27 countries and territories in the Americas, as well as by representatives of the Inter-American Development Bank and the U.S. Agency for International Development. The Conference unanimously ratified the need for establishing a special fund for rural programs, for setting up national revolving funds, and for promoting the concept of self-help on the part of the communities and the establishment of local water boards or commissions.

On the basis of the directives and the support received, the Organization worked actively during the four-year period toward the establishment of a Rural Welfare Fund and of programs in the different countries, the revolving funds being considered as a basis for the success and continuation of the activities in rural areas. By the end of 1965 most of the countries had programs for water supply in rural areas, for which purpose they utilized national and international funds. The following countries have received loans from the international lending agencies: Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Honduras, Nicaragua, Peru, and Venezuela. Since 1961 funds have been allocated from international loans and from local and national governments in the amounts of $136,000,000. Of that total, $32,500,000 represented loans from the Inter-American Development Bank and the Agency for International Development. Those funds stand to benefit approximately 7 million people, out of the 50,000,000 set as the target in the Charter of Punta del Este—that is, about one seventh of the total goal for the Hemisphere.

A number of countries, encouraged by the recommendations and resolutions cited, as well as by the success of activities undertaken, have begun community action programs on a broader scale. The Inter-American Development Bank has granted a loan to the Government of Peru in the amount of $20,000,000, matched by a similar national contribution, for various community works in rural areas, including the establishment of sanitation facilities. In all the programs the communities contribute labor and also help cover the operations and maintenance costs; in many instances they also pay part of the capital and amortization costs. The idea of the revolving fund consists in the formation of a national fund with local and international capital which is used for making loans to the communities; these are refunded within a given number of years and at a certain rate of interest. That idea, endorsed by the Governments through resolutions of the PAHO Governing Bodies, has been introduced in several countries with the assistance of the Organization. Argentina, Brazil, Colombia, and Costa Rica have enacted legislation for the establishment of revolving funds, and three of those countries have already
taken the necessary steps for their creation and implementation. Table 27 summarizes the situation with reference to this aspect of the program.

As for the progress achieved during the quadrennium in relation to the goals of Punta del Este, while in urban areas it has been possible to meet 67 per cent of the goal for 1971 (services for 70 per cent of the population) and 14 countries out of 19 are ahead in their programs, in rural areas it has been possible to achieve only 20 per cent of the 1971 goal (50 per cent coverage of the population) and only two countries have gone beyond estimates made for the end of 1965. However, it should be noted that in 1965 the amounts invested in rural programs were almost double those of the previous year and it is to be hoped that that increase can be maintained and improved in future years and that the program can be accelerated until the goals established in the Charter are met. That would mean that adequate water supply services would have to be provided to some 8,500,000 inhabitants, each year, in the rural areas during the remainder of the decade of the Alliance for Progress. As for the future of this program, which is vital for the social and economic development of the most needy sector of the population of the Hemisphere, the Organization will base its action and assistance to the countries on the following fundamental points:

1. Strengthening of infrastructures, including especially organization, administration, and financing.
2. Expansion of training and education programs for personnel at all levels.
3. Establishment of cooperatives or local boards which in the small communities and rural areas can finance, manage, and operate their water supply systems, based on mutual aid and community participation.
4. Maximum utilization of the experience gained in the revolving funds in various countries so as to extend the activity to other countries with a view to resolving the rural problem on a permanent basis.
5. Establishment of an international fund to serve as a basis for the creation of national revolving funds, which in turn would be used to promote improvement of sanitary conditions in the rural areas.

The coming four-year period will tell whether the rural inhabitant of the Americas is to be integrated fully into the process of economic and social development of the Hemisphere. The experience of the past four years in the field of water supply, as described in this Report, leads to confidence and certainty that the objective can be achieved through the cooperative effort of communities, Governments, international credit agencies, and the Organization.

SEWAGE DISPOSAL AND WATER POLLUTION

In 1961 the goal set by the Charter of Punta del Este for the decade 1961-1971 was to supply sewage disposal systems for at least 70 per cent of the urban population and 50 per cent of the rural population, as a minimum.
In the period covered by this Report, the signatory countries of the Charter have made great efforts to reach this goal, and as far as urban areas are concerned the progress is obvious; but the same does not hold true of rural areas, where very little headway has been made.

Nevertheless, all the countries have been active in this field during the quadrennium. Mention should be made of the part played by the Inter-American Development Bank and other international credit agencies, which up to the end of 1965 had granted loans amounting to $70 million for the construction of sewerage systems and the treatment of sewage. These loans, which have been matched by an approximately equal amount of local funds, were awarded to the following countries: Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Peru, Uruguay, and Venezuela.

The Organization continued to help many countries and cities to solve problems connected with the design and expansion of sewerage systems, the treatment of wastes, and the pollution of water courses.

Details of these activities are given in Table 28.

Many of the requests from the countries were for assistance with the pollution of water courses by domestic and industrial wastes. The PAHO Directing Council, at its XVI Meeting in 1965 (Resolution XXXV), called attention to the urgency of the problem and recommended to the Director that assistance in this particular field and information concerning it be given to the countries. The resolution also recommended to the Governments that, through their ministries of health, they give proper attention to problems of water pollution and, where appropriate, expand their technical staff and related facilities to provide for practical and effective regulatory controls to prevent excessive pollution of water resources.

In 1962 a Symposium was held on New Methods of Sewage Treatment, the purpose of which was to demonstrate to professional health workers from various countries new and economical treatment methods. In recent years considerable interest has been aroused in the so-called oxidation or stabilization ponds as an economical and simple method of treating waste water. Experimental ponds are already in use in Brazil, Colombia, Costa Rica, Mexico, and Venezuela, and it is hoped that in the near future their use can be increased considerably with the assistance of the Organization and the dissemination and exchange of information, especially in medium-sized and small communities.

### Table 28. PAHO Collaboration—Sewerage and Sewage Treatment, 1964–1965

<table>
<thead>
<tr>
<th>Country or Area</th>
<th>City</th>
<th>Collaboration in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Buenos Aires</td>
<td>Sewers and treatment plants</td>
</tr>
<tr>
<td>Brazil</td>
<td>São Paulo</td>
<td>Over-all water and sewerage problem</td>
</tr>
<tr>
<td>Colombia</td>
<td>Porto Alegre</td>
<td>Sewerage design</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Bogotá</td>
<td>Sewerage design</td>
</tr>
<tr>
<td>El Salvador</td>
<td>San Salvador</td>
<td>Channeling of industrial wastes to the sea</td>
</tr>
<tr>
<td>Honduras</td>
<td>San Pedro Sula</td>
<td>Treatment plant</td>
</tr>
<tr>
<td>Peru</td>
<td>Lima</td>
<td>Industrial wastes</td>
</tr>
<tr>
<td>Peru</td>
<td>Lima</td>
<td>Industrial wastes and sewerage system</td>
</tr>
<tr>
<td>Uruguay</td>
<td>Montevideo</td>
<td>Contamination of beaches through sewage</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Caracas</td>
<td>Sewerage system</td>
</tr>
<tr>
<td>Barbados</td>
<td></td>
<td>Contamination of water bodies by industrial wastes</td>
</tr>
<tr>
<td>Curacao</td>
<td></td>
<td>Channeling of sewage to the sea</td>
</tr>
<tr>
<td>Grenada</td>
<td></td>
<td>Sewerage and sewage treatment</td>
</tr>
</tbody>
</table>

### HOUSING

At the beginning of 1965 the Organization recruited an expert in housing and city planning who was temporarily attached to the headquarters of the Economic Commission for Latin America (ECLA) to serve on the technical assistance missions which that agency sends to the countries in the Region. His particular concern was the health and sanitary aspects of housing programs. The consultant was a member of the technical assistance missions to Argentina and Uruguay which reviewed those parts of the national development plans relating to housing and city planning; a request was also handled from the Prefecture of São Paulo, Brazil, and a preliminary report was prepared on the urban and housing situation in that city. The necessary steps have been taken to initiate a study of the experimental neighborhood unit in Lima, in which the Government of Peru has offered to collaborate.

WHO has helped to carry out a study on housing conditions and urbanization in Central America, which is scheduled to end in the second half of 1966.

A seminar on environmental sanitation in shanty towns was held from 22 to 26 November 1965 in Maracaibo, Venezuela. It was organized by the Minis-
try of Public Health and Social Welfare and the Central University of Venezuela, with assistance from the Organization. On the initiative of the Organization of American States, a joint committee was organized in Washington embracing all the agencies interested in, or responsible for, housing and urbanization programs; the committee held two meetings in 1965. The Organization took an active part in the meetings, and it is hoped that they will result in an effective and fruitful coordination of housing construction programs being carried out in the countries of the Region.

In April-May 1963 an Inter-Regional Seminar on the Public Health Aspects of Housing, held in Madrid, Spain, was attended by persons from the Regions of the Americas and of Europe. The report of the Seminar has been published and distributed by both Regional Offices.

In 1963 and 1964, advisory services in the planning of rural communities were given to the Government of Venezuela by three consultants in housing and rural planning provided by the Organization. In view of the results achieved a permanent consultant in that field was attached to the Government of Venezuela in 1965.

### COLLECTION AND DISPOSAL OF SOLID WASTES

The Organization has continued to give assistance to countries and cities, at their request, in activities for the collection and disposal of solid wastes. Details of this assistance are given in Table 29.

The shortage of properly trained professional and auxiliary personnel in this field is manifest, and municipal authorities still fail to realize that this problem should be handled by qualified professional personnel. To help remedy the situation, a short course on refuse collection and disposal was held for the first time in the Region in 1965 at the University of São Paulo, Brazil, and was attended by a considerable number of officials and engineers attached to the several municipalities which make up the metropolitan area of São Paulo. In addition, practical demonstrations of the use of modern sanitary equipment and methods for the disposal of solid wastes were given along the Mexico-United States border.

### OCCUPATIONAL HEALTH

The Ten-Year Public Health Program of the Alliance for Progress calls on the countries of the American cas “to adopt legal and institutional methods to ensure compliance with the principles and standards of individual and collective medicine for the execution of projects of industrialization...”

In compliance with this recommendation, the Pan American Health Organization formally initiated activities in that field by appointing a regional adviser in occupational health to head an office in Santiago, Chile. The Organization, in agreement with the Chilean National Health Service and the United Nations Development Program, helped to develop the Latin American Institute of Occupational Health and Air Pollution Research. The Institute began work in 1963 and is serving as an international training center. Its success has induced other countries to attempt to organize similar institutions, and Brazil has presented an application to the United Nations Development Program for the establishment of an Institute of Industrial Hygiene in São Paulo.

### Advisory Services to Member States

#### Argentina

In 1962 a short course in occupational health was conducted at the School of Preventive Medicine of the University of Córdoba.

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Table 29. PAHO Collaboration—Collection and Disposal of Solid Wastes

<table>
<thead>
<tr>
<th>Country or area</th>
<th>City</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Buenos Aires, Mendoza</td>
<td>Organization of collection and disposal facilities.</td>
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<tr>
<td></td>
<td>San Juan</td>
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</tr>
<tr>
<td>Brazil</td>
<td>São Paulo, Santo André</td>
<td>Organization and administration.</td>
</tr>
<tr>
<td></td>
<td>São Bernardo, do Campo</td>
<td>Technical aspects.</td>
</tr>
<tr>
<td></td>
<td>São Caetão do Sul</td>
<td></td>
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<tr>
<td></td>
<td>Maná</td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>Bogotá</td>
<td>Collection and treatment.</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>Santo Domingo</td>
<td>Organization and administration. Technical aspects.</td>
</tr>
<tr>
<td>Peru</td>
<td>Lima</td>
<td>Collection and sanitary landfill.</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Caracas</td>
<td>Organization. Incinerators.</td>
</tr>
<tr>
<td>U.S.-Mexico border</td>
<td>Border cities</td>
<td>Investigation of the status of collection and disposal of wastes.</td>
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</table>
In 1964 consultation services were given to the Environmental Engineering Research Center, which works in cooperation with the School of Engineering of the National University of Buenos Aires. Recommendations were made regarding the conduct of a preliminary survey of a representative sample of industries in greater Buenos Aires.

In 1965 the Organization helped sponsor and finance a short course in industrial hygiene at the National University of Buenos Aires.

**Bolivia**

In 1962 advisory services were given to the Ministry of Public Health in connection with the creation of an Institute of Occupational Health.

In 1963 regulations for implementing the decree creating the Institute of Occupational Health were drawn up and a project was prepared under which financial assistance was obtained from the Government of the United States of America for a period of five years, so as to enable the Institute to operate effectively. The Institute's program was evaluated in 1965. By then it had its own new building with fully equipped offices and laboratories and was employing 20 professional and an equal number of administrative personnel. The evaluation report emphasized the importance of strengthening the engineering services and the training of personnel.

**Colombia**

In 1963 advisory services were given to the Ministry of Public Health for the improvement of the existing program. Following the program review, the occupational health activities, which had been transferred to another department earlier, were once again placed under the administration of the Public Health Ministry. In 1964 a short-term consultant was sent to Colombia for two months to assist in the reorganization of occupational health activities within the Ministry.

**Jamaica**

In 1962 an exploratory visit was made to the island to determine what assistance the Organization could give in the development of a new program. In 1965 a work program was prepared and recommendations were made for the training of personnel and the conduct of a preliminary survey to define the industrial hygiene problems on the island. In addition, preparations were made to send a consultant for one month in January 1966 to advise on an air pollution problem caused by a cement mill.

**Mexico**

An evaluation of the industrial hygiene program of the Mexican Ministry of Health and Welfare was conducted in 1962.

At the request of the Organization of American States, PAHO provided a lecturer for seven sessions of the course for students at the Inter-American Social Security Center held in 1963.

**Panama**

An evaluation of the problems of occupational health in the cities of Panama and Colón in 1963 resulted in the establishment of an initial program in this field.

In 1965 additional consultation was given to Panama, including a review of a proposed work plan to assist in the implementation of the program.

**Trinidad and Tobago**

An exploratory visit was made by a PAHO consultant in 1962 for the purpose of determining whether there was any need for a program in occupational health. In view of the stage of industrial development on the island, only a very modest program was recommended.

**Venezuela**

Consultant services to review the program in Venezuela were provided in 1962 and again in 1964.

**Latin American Institute of Occupational Health and Air Pollution Research**

In 1962 an agreement was signed between the Pan American Health Organization, the National Health Service of Chile, and the University of Chile for the establishment in Santiago of the Latin American Institute of Occupational Health and Air Pollution Research. In June 1963 the Government of Chile and the United Nations Development Program concluded an agreement under which the United Nations is providing slightly more than $400,000 in cash while the Chilean Government is furnishing about $500,000 in kind. The PAHO is the executing agency for the project, during five years, while the National Health Service is the agency of the Chilean Government responsible for the administration of the project.

By 1965 the laboratories for radiation protection, industrial hygiene, work physiology, and air pollution were in full operation. The first course was organized that year and was attended by 16 students, two of
whom were from abroad. This same course is being repeated over a six-month period in 1966, and at the same time a full academic year course will be given for physicians and engineers. Both of these courses are being conducted in collaboration with the School of Public Health. Various short courses have also been held. In addition, research activities have been undertaken and consultation services have been given to governmental and private institutions. Most of the students trained have been from Chile, but some came from Argentina, Bolivia, Brazil, Costa Rica, El Salvador, Mexico, Nicaragua, Panama, Peru, Uruguay, and Venezuela.

By the end of 1965, five consultants had given advisory services to the Institute, two from the United States of America, one from England, one from Israel, and one from Germany. By the same date the Institute had a full-time staff of 34.

First Latin American Seminar on Occupational Health

The First Latin American Seminar on Occupational Health was held in São Paulo, Brazil, in March 1964. Thirty papers were presented at the Seminar, which was attended by 19 persons from Argentina, Bolivia, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. The proceedings were recently published in Spanish by the Organization. For the first time, the countries conducting occupational health programs were in a position to interchange experience, analyze their work, and jointly prepare recommendations in this field.

AIR POLLUTION

The problem of air pollution is ever increasing in Latin America as a consequence of rapid industrialization and the tendency of communities to attach themselves to metropolitan areas. This process of urbanization, coupled with the high rate of population growth in Latin America, has created many large cities.

At the XVI Meeting of the Directing Council in 1965, the Governments unanimously approved a resolution recommending that the ministries of health give due attention to this problem and that the Organization give technical assistance in this field.

Even before 1965, the Organization had begun to concern itself with air pollution. In 1961 the Pan American Sanitary Bureau appointed a Regional Occupational Health Adviser in Santiago, Chile, who provided technical assistance on air pollution problems, since they are so closely related to a major source of air contamination, namely, industry.

In 1965 a proposal was made to establish a network of air pollution sampling stations in Latin America that would operate in 10 large cities in a uniform manner, with one of them serving as a control. In this way results could be compared and the trends in the indices of air pollution observed. It was planned to put this program into operation during the second half of 1966.

Argentina

Technical advice was given in 1964 to the Environmental Engineering Research Center, which is closely associated with the National University of Buenos Aires in the study of air pollution in that city. After the plan was evaluated, it was recommended that routine air sampling be instituted. Valuable data were obtained in 1965. At the request of the municipal authorities of Mar del Plata, a short-term consultant was sent in 1965 to study the problem of air pollution in that city caused by obnoxious odors from fish-meal plants.

Brazil

At the request of the municipalities adjacent to the city of São Paulo, which are members of the Intermunicipal Commission for the Control of Air and Water Pollution, the Organization provided financial aid for the establishment of an air pollution laboratory. In addition, a short-term consultant was sent to São Paulo for two months to study the problem and develop a work plan. After the acquisition of equipment and the establishment of the laboratory, the Organization assigned a consultant for a two-year period beginning in September 1965 to work with the Intermunicipal Commission in the development of an air pollution sampling program and in the control of sources of pollution.

EDUCATION AND TRAINING

The interest of the Organization in training activities in environmental sanitation was accentuated in the quadrennium. Important resolutions were approved by the Directing Council at its XIV Meeting in 1963 (Resolution IX) and its XV Meeting in 1964 (Reso-
olution XXI). In the latter resolution the Director was requested "to continue the Organization's program of cooperation in research, education, and training and in the strengthening of engineering schools, as a means of fostering progress in the field of water supply and sewerage services."

The Organization's cooperation with engineering schools, which in the past had been limited to isolated activities, was organized during the period through agreements with the Member Countries. These agreements covered consultants for reviewing or initiating programs; advisory services for improving physical facilities or for the preparation of requests to financing agencies; fellowships for the teaching staff; promotion of continuing education activities through the organization of short courses; and promotion of research activities.

Most of the agreements were signed for periods of four or five years and some for shorter periods. In 1963 two agreements were signed; in 1964, five; and in 1965, 18. The total at the end of the period was 25, covering 16 Member Countries since in many instances more than one institution per country was participating in the program. A list of the agreements, together with dates and participating institutions in each country, is set forth in Table 30 (p. 56).

International Seminars

A series of international seminars and conferences were sponsored by the Organization, and lecturers and participants from the Member Countries were invited.

In 1962 a Symposium was held in Cincinnati, Ohio, on New Methods of Sewage Treatment, and a Seminar was held in Buenos Aires, Argentina, on Design of Water Supply Systems.

In 1963, with the cooperation of the Inter-American Development Bank, a Symposium on Administration of Water Supply and Sewerage Services was held in Medellín, Colombia. In the same year the IV Seminar on Sanitary Engineering for Central America and Panama was held in the latter country.

In 1964 a Regional Conference on Water Supply in Rural Areas was held in Bogotá, Colombia.

In 1965 a Regional Conference on Water Supply in the Americas was held in Washington, D.C., and the V Seminar on Sanitary Engineering for Central America and Panama was held in Guatemala.

Table 31 (p. 57) contains a list of the international seminars held during the quadrennium.

Program of Short Courses

With the cooperation of engineering schools in the Region and the financial support of the Organization of American States, PAHO was able to carry out a demonstration project, in accordance with the resolutions of the Directing Council. The emphasis of the project was to secure as large a local contribution as possible. Courses were organized by the local schools and PAHO provided technical and financial assistance, which was limited to about 50 per cent of the cost of any course.

International consultants lectured in the courses or helped organize them, but the local instructors were in charge of 80 per cent or more of the course program.

A second point strongly emphasized was increased availability of technical literature. A technical manual that included all lecture notes in extenso was prepared for each course.

The experience gained in 1963 and 1964 made it possible in 1965 to greatly expand training activities. The number of courses held in the year was 40, more than double the combined activities in the previous three years (Table 31). This upward trend is expected to continue and for 1966 about 60 courses are being organized.

Course subjects were selected by the local schools in consultation with local governmental agencies and other interested institutions. Most of the courses were for engineers, but some were attended also by members of other professions, such as lawyers and administrators. A few courses for subprofessionals were attended by water operators and sanitary inspectors. These courses were short, intensive, and rather specialized.

The number of participants in each course averaged 15 to 20, the number of lecturers 5 to 10, and the average duration was two weeks. Since the beginning of this project approximately 1,200 trainees have attended the courses and approximately 300 professionals have lectured in them.

A decision that has made a significant contribution to the technical literature of the Region was that each course should produce a technical manual on the subject covered in the course. These manuals have been widely distributed and for this purpose there has been an active exchange of information and publications among the cooperating universities. Because of the

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20 Official Document PAHO 58, 74-75.
21 The working papers and final report of the Seminar were published in Spanish in Scientific Publication PAHO 95.
22 The proceedings were published in Spanish in Scientific Publication PAHO 132.
usefulness of the manuals, some of them are being printed in book form.

The grants awarded to the schools were used mainly to supplement payment of local lecturers, coordinators, and auxiliary personnel, to help meet the cost of reproducing the technical manuals, and for improvement of library, laboratory, and printing or reproduction facilities at the schools.

Active training programs are being integrated into the regular activities of several schools which have accepted this new responsibility. In many instances high-level local professionals have returned to the school for refresher training. The opportunities for communication and interchange among different governmental agencies have increased, and in general it is felt that the universities are participating more actively in the solution of national problems.

At the end of the period contacts were being made with the Inter-American Development Bank and the W. K. Kellogg Foundation in order to enlarge support for the program. It is expected that in 1966 training programs in cooperation with these institutions can be initiated.

**Promotion of Research**

The next step toward strengthening university participation will be the stimulation of applied research activities.

The mechanisms already established in the training program, with the consequent establishment of a network of cooperating universities, will greatly facilitate the launching of this program. Initial steps and exploratory contacts were made during the period for the purpose of surveying:

(a) the physical facilities of engineering schools for carrying out an active applied research program;

(b) the personnel capability, interest, and know-how for research activities;

(c) the nature of local problems and the priorities for initiating applied research.

The results of these surveys were being analyzed at the end of the period. Several requests for assistance in research projects were received from some of the cooperating universities and plans were being developed for initiating them.

**Strengthening of Schools**

Studies have been made of the physical and staff resources of typical educational institutions concerned with engineering education in order to determine how students in civil engineering might be given a basic academic training in sanitary engineering as an integral part of their undergraduate preparation. The lack of laboratory facilities and staff to provide the biological and chemical science preparation required in this special field, as well as the cost of providing these essential facilities, present a barrier to the introduction of sanitary engineering instruction, especially in many of the smaller institutions. Nevertheless, it is encouraging to note that financial resources are being made available for the expansion of physical facilities in educational institutions. Among these sources, it is noteworthy that the Inter-American Development Bank has expressed its willingness to extend financing to the universities. This has opened new possibilities which are at present being explored by the Organization.

One of the most promising solutions to the problem of the high cost of providing and improving sanitary engineering laboratories in the universities is to endeavor to arrange for those laboratories to offer service and research facilities to governmental agencies, on a special payment basis. Through special agreements, it has been possible to arrange in some cases for ministries of health and of public works to make use, on a contractual basis, of university laboratories, which are thus able both to fulfill an educational purpose and to give effective service to society.

In furthering this approach, the Organization obtained financial assistance from the United Nations Development Program, and in four universities in Venezuela and in the Institute of Sanitary Engineering of the State of Guanabara, Brazil, the programs for strengthening sanitary engineering education have taken closely into account the fact that such laboratories are in a position to operate as tools for academic instruction, research, and public service.

In Venezuela the universities involved are the Central University and the Andrés Bello Catholic University, in Caracas; the University of Zulia, in Maracaibo; and Los Andes University, in Mérida. The plan of operations, for which the supporting agreement was signed by the Government, the United Nations Development Program, and the Organization, with the latter as executing agency, specifies that the Development Program will contribute $736,400 and the Venezuelan Government $936,275 for a four-year program, which started operations on 8 January 1965. The Government's contribution will cover the provision of laboratory space and regular staff, and the Development Program will provide laboratory equipment and supplies, fellowships, and visiting professors.

The four universities will provide basic courses in sanitary engineering for civil engineering undergraduate
students, to include: hydrology; hydraulics; sanitary science, with laboratory work in bacteriology and chemistry; and, especially, water supply and sewerage. Special assistance will be given to the Central University in developing a graduate program in sanitary engineering with emphasis on research in chemistry and biology, radioactivity, air and water pollution, and other problems of environmental health. According to estimates, approximately 500 students will annually receive training under this program. Provision also has been made for in-service training programs, which will utilize the several sanitary science laboratories and the technical staff of the universities to give specialized instruction to employees of the ministries of health and of public works.

The United Nations Development Program is also collaborating in the establishment of the Institute of Sanitary Engineering of SURSAN (Superintendency of Urban Development and Sanitation), a corporate unit of the Ministry of Public Works of Brazil. The Development Program allocation for a four-year program, which started on 13 July 1965, is $467,700, and the Government's contribution is $1,247,870. The Institute will occupy 3,000 square meters of floor space in the University of Guanabara building. The teaching of sanitary engineering in the University is to be organized and conducted by the Institute. This project intends to combine the existing laboratories of water supply and sewage into a facility that will be equipped not only for service and research, but also for academic and special in-service training.

Similarly, the United Nations Development Program is assisting in the expansion and development of the School of Engineering of the National University of Colombia, in Bogotá. In this project, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) will serve as executing agency. Although much of this project is concerned with the development of programs in electrical, mechanical, and chemical engineering, the civil engineering program is being strengthened in its sanitary engineering option. The Organization has assisted only in connection with staffing and other matters having to do with the sanitary engineering portion of this project.

Preliminary studies on the possibility of establishing sanitary engineering institutes—which would bring together the service and research needs of the ministries of health and of public works with requirements for the teaching of sanitary engineering—have been undertaken in Argentina, Brazil, Guatemala, Mexico, Panama, and Trinidad and Tobago.

OTHER SANITATION ACTIVITIES

During the period covered by this Report two important manuals were prepared: one deals with food hygiene and the other with school hygiene. The manual on food hygiene was completed in 1965 and was used on an experimental basis in a food hygiene course held in Panama in November 1965. It is hoped that, suitably amended, it can be published in 1966. The manual on school hygiene requires revision and further amendment to make it more useful to the countries of the Region.

The Organization took an active part in the planning and conduct of the IV Seminar on Sanitary Engineering for Central America and Panama held in 1963 in Panama City, and the V Seminar held in 1965 in Guatemala City. The Seminars were each attended by more than 100 engineers from the six countries concerned, representing all the institutions responsible for public health and water supply programs. The Organization also collaborated closely with the Inter-American Association of Sanitary Engineering (AIDIS), which held its VIII Congress in Washington, D.C., in 1962 and its IX Congress in Bogotá, Colombia, in 1964. These Congresses were attended by more than 500 sanitary engineers from all the countries of the Region and served to highlight the unity of thought about priorities in environmental sanitation activities in the Hemisphere. The Bogotá Congress agreed upon a program of reciprocal collaboration between the Organization and AIDIS aimed at developing and improving sanitary engineering in the Americas.
### TABLE 30. RESEARCH, EDUCATION, AND TRAINING IN SANITARY ENGINEERING

**List of Project Agreements with Cooperating Universities**

<table>
<thead>
<tr>
<th>Country</th>
<th>Agreement Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil-6401 (Recife)</td>
<td>Ministry of Health. Recife University, Pernambuco School of Engineering. 27 August 1965-27 August 1970.</td>
</tr>
<tr>
<td>Brazil-6401 (Ceará)</td>
<td>Ministry of Health. Ceará University, School of Engineering. 4 October 1965-4 October 1970.</td>
</tr>
<tr>
<td>Chile-6400</td>
<td>Ministry of Public Health. University of Chile, School of Physical Sciences and Mathematics, School of Engineering. University of Chile, Medical School, Public Health School. 12 October 1965-31 December 1970.</td>
</tr>
</tbody>
</table>

* For signature.
### Table 30. List of Project Agreements with Cooperating Universities (continuation)

<table>
<thead>
<tr>
<th>Country</th>
<th>Agreement Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico–6400 (UNAM)</td>
<td>Ministry of Health and Welfare, National Autonomous University of Mexico, School of Engineering, Division of Advanced Studies 26 October 1965-31 December 1969</td>
</tr>
<tr>
<td>Nicaragua–6400</td>
<td>Ministry of Public Health, National Autonomous University of Nicaragua, School of Physical Sciences and Mathematics 6 August 1965-31 December 1970</td>
</tr>
<tr>
<td>Panama–6400</td>
<td>Ministry of Labor, Social Welfare, and Public Health, University of Panama</td>
</tr>
<tr>
<td>Trinidad and Tobago–6400</td>
<td>Ministry of External Affairs, University of the West Indies, School of Engineering 1 November 1965-31 December 1968</td>
</tr>
<tr>
<td>Uruguay–6400</td>
<td>Ministry of Public Health, University of Uruguay, School of Engineering and Land Surveying 14 September 1965-31 December 1966</td>
</tr>
<tr>
<td>Venezuela–6400 (UNSF)</td>
<td>Ministry of Education, Central University of Venezuela, University of the Andes, Zulia University, Andrés Bello Catholic University 8 January 1965-8 January 1969</td>
</tr>
</tbody>
</table>

* For signature.

### Table 31. Education and Training in Sanitary Engineering, 1962-1965

#### Seminars and International Conferences

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>Symposium on New Methods of Sewage Treatment, Cincinnati, Ohio, USA 4-9 June 1962</td>
</tr>
<tr>
<td>1964</td>
<td>Regional Conference on Water Supply in Rural Areas, Bogotá, Colombia 28 June-3 July 1964</td>
</tr>
<tr>
<td>1965</td>
<td>Regional Conference on Water Supply in the Americas, Washington, D.C., USA 18-20 October 1965</td>
</tr>
<tr>
<td>1965</td>
<td>Seminar (V) on Sanitary Engineering for Central America and Panama, Guatemala, Guatemala 28 November-4 December 1965</td>
</tr>
</tbody>
</table>
### Short Courses and Seminars Held in Cooperation with Universities

#### 1962

**Mexico**
- School of Engineering, Doctorate Division, National Autonomous University of Mexico, Mexico, D.F.
- 17 September-21 December 1962
- Water Supply Design

#### 1963

**Brazil**
- School of Hygiene and Public Health, São Paulo University, São Paulo
- 18 November-14 December 1963
- Water Supplies Design

**Guatemala**
- School of Engineering, National Autonomous University of San Carlos of Guatemala, Guatemala
- 1 February-15 March 1963
- Course for Water Works Operators

**Mexico**
- School of Engineering, Doctorate Division, National Autonomous University of Mexico, Mexico, D.F.
- 9-21 December 1963
- Pumping Equipment and its Use in Water Supply Systems

**Trinidad and Tobago**
- School of Engineering, University of the West Indies, Port-of-Spain
- 2-13 December 1963
- Geophysical Exploration of Ground Water

**Venezuela**
- School of Engineering, Central University of Venezuela, Caracas
- 21 October-1 November 1963
- Symposium on the Use of Plastics in Water Supply Systems

#### 1964

**Brazil**
- School of Hygiene and Public Health, São Paulo University, São Paulo
- 7-19 December 1964
- Biological Treatment of Sewage and Water Pollution Control

**Chile**
- School of Physical Sciences and Mathematics, School of Engineering, University of Chile, Santiago
- 9-19 December 1964
- Water Quality and its Relation to the Chemical Treatment and Standards at Present in Use

**Colombia**
- School of Mathematics and Engineering, National University of Colombia, Bogotá
- 7-16 December 1964
- Economic Feasibility of Water Supply Projects

**Costa Rica**
- School of Engineering, University of Costa Rica, San José
- 28 September-6 November 1964
- Course for Water Works Operators
- 9-20 November 1964
- Water Quality Control

**Mexico**
- School of Engineering, Doctorate Division, National Autonomous University of Mexico, Mexico, D.F.
- 22 June-11 July 1964
- Operation of Water Treatment Plants
- 26 October-7 November 1964
- Water Chlorination
- School of Engineering, Nuevo León University, Monterrey
- 7-18 December 1964
- Water Treatment Plants

**Panama**
- School of Engineering and Architecture, University of Panama, Panama
- 23 November-4 December 1964
- Water Quality Control

**Peru**
- School of Sanitary Engineering, National University of Engineering, Lima
- 30 November-12 December 1964
- Economic Principles in the Planning of Joint Water Supply and Sewerage Projects
<table>
<thead>
<tr>
<th>Country</th>
<th>Institution</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Venezuela</td>
<td>School of Engineering, Central University of Venezuela, Caracas</td>
<td>5 October-12 December 1964</td>
<td>Ground Water Development</td>
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<tr>
<td></td>
<td></td>
<td>1965</td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
<td>School of Sanitary Engineering, National University of Buenos Aires, Buenos Aires</td>
<td>11-22 October 1965</td>
<td>Ground Water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 October-20 November 1965</td>
<td>National Plan for Water Supplies in Rural Communities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22 November-4 December 1965</td>
<td>Operation of Water Treatment Plants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-10 December 1965</td>
<td>Industrial Hygiene, Part I</td>
</tr>
<tr>
<td>Bolivia</td>
<td>School of Civil Engineering, San Andrés University, La Paz</td>
<td>19-28 April 1965</td>
<td>Administration of Water Supply Undertakings</td>
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<tr>
<td>Brazil</td>
<td>Institute of Sanitary Engineering (SURSAN), Rio de Janeiro</td>
<td>8-10 November 1965</td>
<td>Biological Aspects of Sea Water Pollution in the Rio de Janeiro Area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-15 December 1965</td>
<td>Operation of Swimming Pools</td>
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<tr>
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<td>6-9 December 1965</td>
<td>Seminar on Chemical Parameters for Water Quality</td>
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<td></td>
<td></td>
<td>27-29 December 1965</td>
<td>Biological Aspects of Water Pollution Control</td>
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<td>18-22 October 1965</td>
<td>Water Quality Control</td>
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<td>29 November-11 December 1965</td>
<td>Operation and Maintenance of Water Treatment Plants</td>
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<td>25 October-5 November 1965</td>
<td>Water Utilities Administration</td>
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<td>5-19 October 1965</td>
<td>Economic Principles in Water Supply Planning</td>
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<td>Chile</td>
<td>School of Physical Sciences and Mathematics, School of Engineering, University of Chile, Santiago</td>
<td>1-11 September 1965</td>
<td>Water Quality Control</td>
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<td>11-20 November 1965</td>
<td>Stabilization Ponds</td>
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<td>Colombia</td>
<td>School of Mathematics and Engineering, National University of Colombia, Bogotá</td>
<td>9-20 August 1965</td>
<td>Criteria for Designing Water Treatment</td>
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<td></td>
<td>15-26 November 1965</td>
<td>Hydrology Fundamentals</td>
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<td>6-17 December 1965</td>
<td>Use of Digital Computers in Sanitary Engineering</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>School of Engineering, University of Costa Rica, San José</td>
<td>27 September-9 October 1965</td>
<td>Economic Principles in Water Supply Planning</td>
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<tr>
<td>Ecuador</td>
<td>School of Physical Sciences and Mathematics, Central University of Ecuador, Quito</td>
<td>18 October-17 December 1965</td>
<td>Water Supply and Sewerage Design</td>
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<td>Country</td>
<td>Institution</td>
<td>Date</td>
<td>Topic</td>
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<tr>
<td>Honduras</td>
<td>School of Engineering, National Autonomous University of Honduras, Tegucigalpa</td>
<td>1-16 October 1965</td>
<td>Economic Principles in Water Supply Planning</td>
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<tr>
<td>Mexico</td>
<td>School of Engineering, Doctorate Division, National Autonomous University of Mexico, Mexico, D.F.</td>
<td>16-28 August 1965</td>
<td>Use of Digital Computers in Sanitary Engineering</td>
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<td>20 September-9 October 1965</td>
<td>Ground Water</td>
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<td>10-30 October 1965</td>
<td>Water Supply Design for Small Communities</td>
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<td>8-20 November 1965</td>
<td>Administration and Financing of Water Supplies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School of Engineering, University of Nuevo León, Monterrey</td>
<td>Ground Water</td>
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<td>15-27 November 1965</td>
<td>Water Supply and Distribution</td>
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<tr>
<td>Nicaragua</td>
<td>School of Physical Sciences and Mathematics, National Autonomous University of Nicaragua, Managua</td>
<td>29 September-13 October 1965</td>
<td>Economic Principles in Water Supply Planning</td>
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<td>Panama</td>
<td>School of Engineering and Architecture, University of Panama, Panama</td>
<td>22 September-5 October 1965</td>
<td>Economic Principles in Water Supply Planning</td>
</tr>
<tr>
<td>Peru</td>
<td>School of Sanitary Engineering, National University of Engineering, Lima</td>
<td>15-27 November 1965</td>
<td>Food Control</td>
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<td>Panama</td>
<td>School of Engineering and Architecture, University of Panama, Panama</td>
<td>22 September-5 October 1965</td>
<td>Economic Principles in Water Supply Planning</td>
</tr>
<tr>
<td>Uruguay</td>
<td>School of Engineering and Land Surveying, University of Uruguay, Montevideo</td>
<td>14-23 October 1965</td>
<td>Operation and Maintenance of Water Supplies</td>
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<td>Venezuela</td>
<td>School of Civil Engineering, Zulia University, Maracaibo</td>
<td>22-26 November 1965</td>
<td>Seminar on Environmental Sanitation in Slum Areas</td>
</tr>
</tbody>
</table>
II. HEALTH PROMOTION

A. GENERAL SERVICES

GENERAL HEALTH SERVICES

There has been a rapid growth in the number of general health service programs, the first of which was begun in 1950 in the demonstration area in Quezaltepeque, El Salvador. This growth has of course been accompanied by changes in both the level and the extent of program activities, although the general principles underlying them have not undergone any substantial modification.

In 1961 the Organization was assisting 15 Governments with 16 general health service programs. In 1962 the number of projects had risen to 21 and the number of countries to 19. The number of projects was the same in 1963, but by 1964 it had increased to 26 in 22 countries, and by 1965 there was a total of 31 projects in 27 countries or territories of the Hemisphere (Figure 19). Most of the projects were national in scope, and for that reason the advisory services of the Organization were rendered to the ministry or department of health. However, some projects were of a regional nature, or encompassed states, provinces, and regions of the country, including the local health services. Several countries are carrying out more than one project of this type in particular areas where they can no longer be considered demonstration projects (since the techniques of health work have already been tried out and made known in all the countries); and their purpose is rather to gradually develop modern health practices as the material, and especially the human, resources become available and conditions in the area concerned are favorable.

International personnel have been assigned on a permanent basis to most of the general health projects. However, as the number of trained national personnel increases and service organization improves, the need for permanent advisory services in each one of the fields comprising the complex system known as the general health services, is replaced by a need for short-term advisory services by highly qualified specialists. For that reason, whereas in 1962 there were 78 consultants—of which 20 were physicians, 15 sanitary engineers, 17 public health nurses, and 26 other specialists including health educators, statisticians, health inspectors and the like—by 1965 the total number of permanent advisers assisting the Governments in this type of program had dropped to 70, which is a substantial decrease considering that the number of projects had risen from 21 to 31. Of the 70 consultants, 27 were physicians, 18 sanitary engineers, 16 nurses, and 7 specialists in other fields. Furthermore, in the last-mentioned year, other services were rendered by 14 short-term consultants.

![Graph showing the number of countries and territories with projects of general health services, 1961-1965](image)
With the growing acceptance during the decade of the idea of health planning as an integral part of economic and social planning (a subject which is dealt with in the chapter on Planning), general health services have slowly been directing their attention to the goals and priorities established in the various health plans as and when they are prepared.

Three fundamental ideas underlie all projects of this type: integration of services, regionalization, and training. The idea of integration of services is now generally accepted; however, for various reasons, which differ from country to country, the acceptance of these ideas has been a slow and difficult process. The usual pattern is separation of preventive and curative services and lack of coordination with teaching institutions. Moreover, the idea of vertical programs, though less widely embraced, still persists, despite the fact that in many countries they are being taken over by the general health services. Campaigns aimed at solving certain specific problems such as malaria, smallpox, tuberculosis, yaws, and the like have almost always been successful, but the responsibility for maintaining the benefits and continuing to maintain the levels achieved during the campaigns has already been taken over in many instances by the general network of health services. This responsibility will continue to increase in the future as the functions of those services are enlarged.

The regionalization of services consists in the coordination of the total resources of an area at different levels of organization with a view to coping with the basic health needs of the population within the framework of a single system and with a view to preventing duplication of effort. This is the policy which the Organization has advocated in its advisory services to the Governments. This idea, together with that of integration of services, is being applied in a considerable number of general health service projects at the national level or on an experimental basis at the regional and local levels.

Regionalization brings to the fore the problem of total coverage of the population by the health services. However, despite the incompleteness of the information available, it is known that so far health services have not been able to cover the whole population, especially in the rural areas. The reasons are many and include the lack of a sufficient number of properly trained technicians and especially their unequal distribution in the countries. Generally speaking, there is an excessive concentration of technicians in the urban centers and a shortage, or complete absence, of them in the rural areas. Another factor affecting coverage is the scarcity of means of transport and the inadequacy of the road network, which, although it is gradually improving, does not yet cover the entire territory of the countries. In addition to the problem of coverage, difficulties have arisen in connection with the organization and administration of services, which are the result of the lack of integration mentioned above. It has repeatedly been emphasized, and is now accepted, that in the health field the family is the work unit, and its needs, both for maintaining health and for curing diseases, are the basis for the organization of preventive and curative activities; however, true integration is the exception rather than the rule.

The third basic aspect is the continuing education of professional and auxiliary personnel. Although we still do not have an exact knowledge of health manpower needs and potentialities in Latin America, it is acknowledged that the training of professional and auxiliary health workers in the various fields must continue and that it is especially necessary to organize continuing education in the form of short courses, refresher courses, and in-service training for personnel already working in the health services. In another chapter of this Report, mention is made of a study on health manpower being carried out in Colombia with the assistance of the Government of that country, the Milbank Memorial Fund, and the Organization, which will throw light on the advisable pace and characteristics of training in Latin American countries (see p. 98).

The training of professional and auxiliary health workers has been an important component of all general health service projects. It is of course supplemented by the specific education and training projects that have been conducted by the countries with or without the assistance of the Organization in the last four years. These projects are dealt with in the chapter on Education and Training.

Nevertheless, it should be emphasized that an appreciable number of health officers are trained in the type of projects we are dealing with here. Although the information is not always complete, the figures available show that in 1962 the number trained was 3,715, including 115 physicians, 262 nurses, 672 health inspectors, 2,290 auxiliaries, for most part nursing auxiliaries, and 376 persons from other health fields. In 1963, the total number trained was 6,212, of whom 196 were physicians, 442 nurses, 553 health inspectors, 1,115 schoolteachers and other persons who were trained in nutrition, 3,054 nursing auxiliaries, and 852 workers from other fields. In 1964 training was given to 4,224 health workers, including 148 physicians, 368 nurses, 577 health inspectors, 2,374 nursing auxiliaries, 376 schoolteachers and auxiliaries who were trained in nutrition, and 381 persons from other fields.

In 1965 trainees numbered 4,159, including 41 physicians, 154 nurses, 218 health inspectors, 1,765 nursing
auxiliaries, and the remainder from other health disciplines. Although it is brought out in the chapter on Education and Training, it is worthwhile mentioning that the training of professional and auxiliary health workers in the countries has increased markedly and that the numbers given above represent only a small part of what is being done in this area, since most training is provided in specific education and training programs and in institutions specially designed for that purpose.

**NURSING**

The Governments of Middle and South America continued to receive assistance in the development and improvement of a system of nursing services adapted to their needs and within their social, economic, and cultural possibilities. Full-time nursing advisers were assigned to a country or on an intercountry basis, the former collaborating on the national, regional, and local levels or in special areas such as midwifery or hospital services. The number of full-time advisers remained more or less constant, varying from 23 to 26. While the number of countries to which a full-time adviser was assigned varied from 17 to 14 during the quadrennium, all countries received some assistance from the intercountry nursing advisers or from consultants appointed on a short-term basis.

There is an increasing trend to request assistance for hospital nursing, and in the last two years of the period the majority of nursing advisers were involved to some degree with hospital nursing services. Increasing use is being made of short-term advisers; whereas there were none at the beginning of the quadrennium, there were 10 by 1965, usually giving assistance in a specific area or program, such as pediatrics, operating room, manpower studies, short courses in administration, etc.

The increase in the number and type of health care programs has necessitated a concomitant rise in both the number and qualifications of the nursing staff. The total number of nursing personnel—graduate nurses and nursing auxiliaries—in the countries of Middle and South America is shown in Table 32.

Figure 20 shows the situation in each country in two years between 1960 and 1965, the trend being demonstrated by their comparison.

There has been an increase in the number of nurses per 10,000 population, except in Bolivia, Haiti, and Panama. The decrease in the last-mentioned country is probably due to improved data rather than an actual drop in the numbers. The great increase in Argentina is due to reclassification, for the total increase in nursing personnel is 2.4 per 10,000 inhabitants, whereas the increase in graduate nurses has been 7.5.

The ratio of nursing auxiliaries per graduate nurse ranges from 12.3 in the Dominican Republic to 0.1 in Jamaica. Twelve countries have ratios under 4, five countries have ratios that range from 4 to 7.9, and five countries from 8 to 12. To ensure safe patient care and good quality service, adequate supervision of nursing auxiliaries is essential. The foregoing figures show that in 10 countries the ratio of nursing auxiliaries per graduate nurse is too high to permit the required supervision, not to mention good organization and administration of nursing services.

However, quality of care may also be measured by the preparation of the nursing personnel. Of the nursing auxiliaries employed in the services, only 31.2 per cent have had any formal preparation. Whereas considerable progress has been made in some countries, there is little to report in others, as is to be seen in Table 33.

In Cuba all nursing auxiliaries in the services are trained; in Honduras, Uruguay, and Jamaica, 75-99 per

**Table 32. Total Number of Graduate Nurses and Nursing Auxiliaries, with Ratios per 10,000 Population, in Middle and South America, 1964 or 1965**

<table>
<thead>
<tr>
<th>Region</th>
<th>Year</th>
<th>Graduate nurses</th>
<th>Nursing auxiliaries</th>
<th>Total number of nursing personnel</th>
<th>Nursing auxiliaries per graduate nurse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total number</td>
<td>Ratio per 10,000</td>
<td>Total number</td>
<td>Ratio per 10,000</td>
</tr>
<tr>
<td>Middle America</td>
<td>1965</td>
<td>21,344</td>
<td>2.9</td>
<td>57,197</td>
<td>7.8</td>
</tr>
<tr>
<td>South America</td>
<td>1964</td>
<td>41,457</td>
<td>2.6</td>
<td>113,150</td>
<td>7.2</td>
</tr>
</tbody>
</table>

* Excluding territories.
The operation of health services and the maximum utilization of limited resources require an efficiently organized administrative structure. In nursing, considerable progress has been made in the establishment of the necessary structure on the national and intermediate level. In Latin America, in 20 out of 22 countries, there is a nursing unit on the national level. Although the over-all health structure allows for a nursing unit on the intermediate level, only 60 per cent of them have at least one nurse. In 16 countries the units on the national level are responsible for the over-all development of nursing, and 14 of them have direct responsibility for the development of both hospital and public health nursing services. Of the nurses assigned to the unit on the national level, at least 80 per cent have had postbasic preparation either within or outside their country.

Since 1956, 10 countries have carried out a study on nursing manpower, six since 1961. Of the 10, only six are considered up-to-date.

Fifty per cent of the countries possess some detailed information about the distribution of their nursing resources. According to the available data, at least 53 per cent are working in the hospital field, but this figure is an underestimate since detailed information on private or semiautonomous hospitals was not complete in some countries. The remainder are working in educational, public health, or industrial institutions, and a very small number are in private duty.

From activity studies carried out in six countries in hospital nursing services and from opinions expressed, it would appear that the time of graduate nurses is principally spent in administration and supervision and in office work but very little in direct patient care, which is provided by nursing auxiliaries. In the assignment of functions to nursing auxiliaries in the services have any formal preparation.

The finding of the efficient utilization of nursing personnel in accordance with their preparation and the needs of the projects. They point to the need for the comprehensive planning of nursing care in the services. During the past few years many of

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**TABLE 33. DISTRIBUTION OF COUNTRIES BY PERCENTAGE OF NURSING AUXILIARIES WITH FORMAL TRAINING, MIDDLE AND SOUTH AMERICA, 1964 OR 1965**

<table>
<thead>
<tr>
<th>Percentage of nursing auxiliaries with training</th>
<th>Number of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
</tr>
<tr>
<td>Less than 25</td>
<td>7</td>
</tr>
<tr>
<td>25 to 49</td>
<td>6</td>
</tr>
<tr>
<td>50 to 74</td>
<td>3</td>
</tr>
<tr>
<td>75 to 99</td>
<td>4</td>
</tr>
<tr>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>Not specified</td>
<td>1</td>
</tr>
</tbody>
</table>
the countries have embarked on national health planning. However, only in six countries has nursing taken a direct part in the planning process; in seven others its role has been limited to consultations.

**VETERINARY PUBLIC HEALTH**

During the period covered by this Report, the PAHO has continued to provide assistance in this field through its own veterinary public health services and those of the Pan American Zoonoses Center and the Pan American Foot-and-Mouth Disease Center. Advisory services were given to the countries in connection with the establishment of veterinary services; the study and control of zoonoses; the improvement of laboratory services; food and drug control; and the teaching of veterinary medicine. Local and international training courses were given at universities and for the staff of public health services.

Between 1962 and 1965, Chile, Colombia, Mexico, Panama, and Venezuela, as well as the countries of Central America, expanded their veterinary public health services. There was an increase in the number of veterinarians in the regular public health services (from 81 in 1957 to 310 in 1965) as well as in the number of veterinarians who completed public health studies under fellowships awarded by the Organization.

The main concern of veterinary public health services has been with diagnosis, epidemiology, control and surveillance of zoonoses, including the related aspect of food hygiene. In the period 1962-1965 these services, in collaboration with the Organization, undertook national surveys and investigations to ascertain the true incidence and prevalence of zoonoses and their impact on the economic and social development of the countries.

In August 1963 the first seminar on veterinary public health for the countries in Central America and Panama was held under the auspices of the Organization in Panama City and was attended by both physicians and veterinarians from those countries. The main topics of the discussions were the use of veterinarians in public health programs and the planning of health activities.

It is to be noted that the number of veterinarians taking part in food and drug control programs, as for example, in Central America and Panama, has gradually been increasing. In Venezuela the Division of Veterinary Public Health has expanded food inspection and control activities at both the federal and the local levels. In Chile the food hygiene activities of the National Health Service are under the supervision of veterinarians, as they are in Argentina, Brazil, Costa Rica, Guatemala, and Mexico.

Despite the expansion of the veterinary public health services, there are still too few veterinarians serving in the health services of the countries to meet the needs of the programs, and the Organization is therefore giving special attention to programs of assistance in veterinary medical education as well as the public health training of veterinarians. These activities are dealt with in the chapter on Education and Training.

**PUBLIC HEALTH LABORATORIES**

Because of the role they play in the diagnosis, control, and prevention of diseases, as well as in the investigation of environmental factors and in research, public health laboratories are key elements in all national health plans.

Advances in the eradication and control of communicable diseases and the appearance of an increasing number of neoplasms and degenerative diseases has been paralleled by the growing importance of public health laboratories.

The preparation of national health plans by various countries brought to light weak points in the organization of their public health laboratory services. In order to improve the situation, several countries such as El Salvador, Guatemala, Honduras, and Peru asked the Organization for technical assistance for the purpose of establishing new services and reorganizing existing ones. The advisory services requested were provided through permanent staff members and long-term and short-term consultants.

At the IX Meeting of the Ministers of Public Health of Central America and Panama (1964), the desire of the countries to promote laboratory activities was expressed by the adoption of a resolution recommending that a seminar be held on laboratory services in the Central American Isthmus. That meeting was held in Managua, Nicaragua, from 22 to 26 June 1965, with the cooperation of the Organization, and was attended by representatives of all the Central American countries. The discussion resulted in a series of recommendations, which were submitted to the X Meeting of Ministers of Central America and Panama, on the following subjects: organization and functions of a network of laboratories adapted to the health services of each of the countries; establishment of reference centers; standardization of methods and techniques; and preparation and utilization of personnel of all types. The seminar also recommended the establishment of a standing committee composed of
directors of the laboratory services of the isthmian countries which would be responsible for studying and implementing the resolutions adopted.

In 1962 a consultant was sent to the Dominican Republic to assist with the organization of the Laboratory Division and the establishment of a network of peripheral laboratories to cope with the demands of the health services. During his stay in that country, he gave assistance in connection with courses on serology and on laboratory techniques, for which financial assistance was received from UNICEF.

Paraguay implemented the recommendations made in 1961 by a consultant, and organized training courses for the laboratory technicians who were to fill the posts created in the national laboratory network.

The quadrennium also saw the achievement of the goals fixed in the agreement between the Organization and the Government of Haiti, namely, the establishment of diagnostic sections, the conduct of epidemiological inquiries, and the training of personnel responsible for carrying them out. It was also possible to establish a laboratory organization tailored to the national network of health services, in which the National Health Laboratory acts as the reference center for the peripheral laboratories and, in addition, trains personnel and carries out research on the epidemiology of treponematoses, leptospirosis, brucellosis, and tuberculosis.

The National Institute of Microbiology in Buenos Aires, Argentina, embarked on the implementation of the recommendations of a consultant who visited the country in 1962. Active reorganization of services was begun and the Institute became responsible for the multiple functions incumbent on a center of this type.

In 1964 a consultant drew up a plan of work for expanding laboratory services in El Salvador. In 1965 new recommendations geared to the resources of the country were made after a review of the activities undertaken.

In Guatemala a consultant has been providing the Department of Central Health Laboratories and the Biological Institute with advisory services since 1965; in accordance with his recommendations the Government has taken steps to increase and diversify the manufacture of biological products, to extend laboratory services at the regional and local level, to establish new units, and to train the necessary personnel.

In 1965 assistance was given to the laboratory services of Panama by a consultant of the Organization, who recommended a series of measures designed to achieve more effective coordination, increase material resources, promote training programs, and systematize standardization activities.

The Government of Venezuela asked for assistance from the Organization in 1965 in making a detailed survey of resources and facilities in the country, so as to obtain a better distribution of national laboratory services and make it possible to meet the growing demands of the national health services.

In 1965 a consultant visited Trinidad and Tobago, Barbados, Grenada, St. Vincent, St. Lucia, Dominica, Montserrat, Antigua, and St. Kitts to study the status of laboratories and their future needs. With the assistance of the Organization a general plan is being drawn up, covering coordination of the services in the whole area and a more rational use of the resources in each of the territories.

In the United States of America, the Organization provided consultants in 1965 to visit the federal laboratories (National Institutes of Health, Communicable Disease Center), state laboratories, and the laboratories of certain universities to discuss with the authorities concerned hospital infections, the importance of infection caused by *Listeria monocytogenes* in man and in animals, and the establishment of surveillance services against virus diseases.

In addition to the activities concerning the organization and planning of laboratory services, the Organization has furnished consultants to assist in introducing specific techniques for the diagnosis or the control of diseases. A course on the use of fluorescent antibody techniques in the diagnosis of communicable diseases, held at the University of Costa Rica in 1963, was attended by 15 persons. In Chile three courses on laboratory methods in the diagnosis of venereal diseases were organized in 1965; they were attended by personnel from the central and peripheral laboratories of the National Health Service and by health workers from Argentina, Ecuador, and Paraguay. In 1965 technical assistance to Brazil included the introduction at the Institute of Microbiology of the University of Brazil, Rio de Janeiro, of fluorescent antibody techniques in programs for the diagnosis and investigation of communicable diseases.

The Organization invited the countries of the Hemisphere to take part in a program for the evaluation of syphilis serology which is being carried out by the Communicable Disease Center of the United States Public Health Service. At the present time the following countries are participating in this program: Argentina, El Salvador, Jamaica, Mexico, Nicaragua, Trinidad and Tobago, Uruguay, Venezuela, Curacao, and Guyana. The negotiations are very well advanced, and it is expected that the remaining countries of the Region will join the program in 1966.

Many of the laboratories in the Americas are capable of coping with the needs of the countries in whole or in part. On the other hand, there are some in which certain laboratory studies and epidemiological investigations

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cannot be carried out for want of good-quality reagents. To remedy this situation the Organization has made arrangements for the United States Public Health Service to supply suitable quantities of reference reagents to countries in the Hemisphere that need them. The Organization is providing reference reagents (antigens, antisera, virus and bacterial strains) as well as standard substances and standardized preparations which make it possible to obtain comparable laboratory results in various countries and to standardize the biological products prepared. In addition to these reagents, the Organization has provided laboratory animals, cell lines for the establishment of tissue cultures, and information on the planning of new laboratory units, bibliographical references, etc. Table 34 shows the reagents and other biological products supplied to the countries during the period covered by this Report.

The Organization asked the Inter-American Development Bank for assistance in making a survey of the use and production of immunizing agents. In 1962 two PAHO consultants visited 10 countries to study the administrative, technical, and financial aspects of the program, and their recommendations now serve as a basis for assistance to the countries in the formulation of plans to increase the use and improve the quality of biological products.

In implementation of Recommendation C.1 of the Task Force on Health at the Ministerial Level (Washington, D.C., April 1963), a study group met in Washington from 3 to 6 August 1964 to examine the possibility of establishing a Latin American Common Market for Biological Products. The group, which was composed of scientists from several countries of the Americas, as well as representatives of the Inter-American Development Bank, the Economic Commission for Latin America, the Organization of American States, and the Pharmaceutical Manufacturers’ Association of the United States, made a careful examination of the production and use of immunizing agents in the countries of the Hemisphere. They recommended measures for speeding up the training of personnel; giving greater assistance to research for improving the production techniques; modernization of installations, equipment, and methods; adoption of uniform, high-quality control procedures; and greater use of the reference services which the Organization makes available to the countries.

The Organization continued to provide the Governments with technical advice on the planning of new units for the preparation of biological products; for this purpose, it made available short-term consultants as well as laboratory equipment for the preparation and freeze-drying of products. The Oswaldo Cruz Institute in Rio de Janeiro, Brazil, was given technical assistance, supplies, and equipment to help it increase its production of lyophilized smallpox vaccine. The Biological Institute in Guatemala was also given technical assistance and laboratory equipment for the production of rabies vaccine and lyophilized smallpox vaccine. Technical assistance in planning the new biological products laboratory was rendered to the Government of Mexico.

In 1964, in order to evaluate the production of biological agents, a consultant visited Brazil, Chile, Guatemala, Uruguay, and Venezuela—all of which had previously received technical assistance from the Organization—and gave advice on the production and control of immunizing agents.

A consultant on the production and control of the components of DPT vaccine has been attached to the National Institute of Health of Colombia.

The Organization has continued to offer the countries reference services for the assay of biological agents, so as to ensure the quality of biological products, stimulate the use of appropriate control techniques in production.

Table 34. REAGENTS AND OTHER BIOLOGICAL PRODUCTS
Furnished by PAHO to Countries of the Americas, 1962–1965

<table>
<thead>
<tr>
<th>Country</th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>52</td>
<td>46</td>
<td>79</td>
<td>262</td>
<td>439</td>
</tr>
<tr>
<td>Bolivia</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Brazil</td>
<td>106</td>
<td>174</td>
<td>188</td>
<td>224</td>
<td>752</td>
</tr>
<tr>
<td>Canada</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Chile</td>
<td>1</td>
<td>2</td>
<td>14</td>
<td>33</td>
<td>50</td>
</tr>
<tr>
<td>Colombia</td>
<td>7</td>
<td>5</td>
<td>11</td>
<td>75</td>
<td>98</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>2</td>
<td>0</td>
<td>16</td>
<td>24</td>
<td>42</td>
</tr>
<tr>
<td>Cuba</td>
<td>5</td>
<td>2</td>
<td>22</td>
<td>114</td>
<td>143</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Ecuador</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>El Salvador</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Guatemala</td>
<td>19</td>
<td>23</td>
<td>25</td>
<td>164</td>
<td>231</td>
</tr>
<tr>
<td>Guyana</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Haiti</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
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<tr>
<td>Honduras</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Jamaica</td>
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<td>0</td>
<td>2</td>
<td>40</td>
<td>51</td>
</tr>
<tr>
<td>Mexico</td>
<td>75</td>
<td>90</td>
<td>52</td>
<td>66</td>
<td>283</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>Panama</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>34</td>
<td>39</td>
</tr>
<tr>
<td>Paraguay</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Peru</td>
<td>0</td>
<td>1</td>
<td>13</td>
<td>19</td>
<td>33</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>United States of America</td>
<td>5</td>
<td>2</td>
<td>55</td>
<td>21</td>
<td>88</td>
</tr>
<tr>
<td>Uruguay</td>
<td>23</td>
<td>2</td>
<td>7</td>
<td>141</td>
<td>173</td>
</tr>
<tr>
<td>Venezuela</td>
<td>17</td>
<td>10</td>
<td>16</td>
<td>149</td>
<td>192</td>
</tr>
<tr>
<td>Total</td>
<td>391</td>
<td>374</td>
<td>509</td>
<td>1,454</td>
<td>2,728</td>
</tr>
</tbody>
</table>

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laboratories, and promote changes necessary to obtain more economical and efficient production procedures.

The National Institute of Health of Colombia, and the Oswaldo Cruz Institute of Brazil, continued to receive assistance from the Organization for the production of yellow fever vaccine and its distribution to the countries of the Hemisphere, as well as for the provision of diagnostic services. The production and distribution of yellow fever vaccine in the period 1962-1965 is shown in Table 35.

The simplification of tissue culture methods, the use of new species of unweaned animals, and the introduction of new immunological methods have been determining factors in the discovery and classification of virus and have led to what might be called the virological explosion. The application of these procedures in public health laboratories has made possible relatively simple techniques for the isolation and typing of long-known agents (poliomyelitis, mixovirus, arbovirus) and of new agents that are being increasingly discovered (adenovirus, echovirus, etc.). The interest of the Governments has been quickened as a result of the administration of virus vaccines to large segments of the population (poliomyelitis, measles) and has stimulated them to establish virological diagnostic units to carry out epidemiological surveillance activities.

Since 1960 the Organization has been helping to establish a virological diagnostic laboratory at the Oswaldo Cruz Institute in Rio de Janeiro, Brazil. The training of personnel has made it possible to isolate and type enteroviruses and respiratory viruses other than those of influenza. The laboratory is acting as a reference center for the hospitals in Rio de Janeiro, and in other states in the country. In addition to teaching programs, the laboratory has been responsible for research on continuing cell lines, procedures for the titration of attenuated poliomyelitis vaccines, and applied research on the epidemiology of poliomyelitis in certain areas in Brazil.

With assistance from the Organization, the National Health Laboratory of Costa Rica set up a section for the diagnosis of virus diseases, for which purpose it was assisted by a short-term consultant (1964). Fellowships were also awarded for the training of scientific personnel.

In Venezuela a consultant provided by the Organization (1962) introduced tissue culture techniques at the National Institute of Health as a first step toward the isolation and typing of respiratory and enteroviruses in an epidemiological study in the country.

The Organization continued to assist a program of research and training at the Institute of Virology of Mexico in which Cornell University is cooperating. The object of this program is to determine the role of birds in the intercontinental spread of arbovirus and to provide training for research on their ecology. In 1963 the Venezuelan encephalitis virus was isolated in Mexico for the first time from mosquitoes and sentinel animals, and that discovery has made it possible to begin work on delimiting the distribution of the virus in mosquitoes and domestic and wild animals, and to ascertain its prevalence in human cases in a given zone in Mexico. The program is concentrating its efforts on the study of the ecology of the Venezuelan encephalitis virus so as to determine which are the vector mosquitoes, the intermediate hosts, and the possibility of the spread of the disease by migratory birds.

In Bolivia the Middle America Research Unit (MARU) of the National Institutes of Health of the United States, has continued to coordinate its activities with those of the Organization to determine various aspects of the entity known as Bolivian hemorrhagic fever. In 1963 MARU research workers succeeded in isolating the causative agent (the Machupo virus), determining its physical properties and antigenic structure, developing a plate neutralization test (which will make it possible to undertake epidemiological studies), and identifying a primate, the titi of Panama, which shows great susceptibility to the infec-

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oswaldo Cruz Institute (Brazil)</td>
<td>4,958,000</td>
<td>620,000</td>
<td>4,743,000</td>
<td>597,000</td>
<td>2,774,000</td>
<td>558,000</td>
<td>5,000,000</td>
<td>776,000</td>
</tr>
<tr>
<td>National Institute of Health</td>
<td>716,000</td>
<td>275,000</td>
<td>654,000</td>
<td>303,000</td>
<td>250,000</td>
<td>223,000</td>
<td>884,000</td>
<td>358,000</td>
</tr>
<tr>
<td>Total</td>
<td>5,674,000</td>
<td>895,000</td>
<td>5,397,000</td>
<td>900,000</td>
<td>3,024,000</td>
<td>781,000</td>
<td>5,884,000</td>
<td>1,134,000</td>
</tr>
</tbody>
</table>

68
tion by the peripheral route. Many aspects of the transmission of the disease have been clarified and it has been observed that the control of the rodent Callomys callosus leads to the disappearance of the disease in man.

In Argentina the establishment of a Commission for the study of hemorrhagic fever, and the coordinated scientific efforts of the National Institute of Microbiology, the Institute of Medical Education and Clinical Research, and the National Institute of Agricultural Technology, have given new impetus to clinical, epidemiological, and ecological investigations. The Junín virus, which is antigenically related to the Machupo virus, has been isolated in four species of rodents (Callomys masculinus, Callomys laucha, Mus musculus, and Akodon azarae); however, the role of the guinea pig in the transmission of this disease is still not clear. The National Institute of Microbiology has launched an extensive study to obtain and classify ectoparasites and thus ascertain the role of certain species in the transmission of the disease to man.

HEALTH EDUCATION

Health education is an integral part of every health program and, as such, has continued to be a prime concern of the Organization in its programs of assistance to the Governments.

The Organization took part in the planning and conduct of the International Conference on Health and Health Education and the First Inter-Regional Conference on Postgraduate Health Education Training of Health Personnel, which were held in Philadelphia, Pennsylvania, in 1962. These meetings were attended by more than 1,000 leaders in the health field from all parts of the world, and the recommendations emanating from them were of particular importance in orienting health education activities in many countries.

During the four years covered by this Report advisory services continued to be given to the School of Public Health of the Central University of Venezuela in connection with the organization of the Department of Health Education and Social Sciences, and the introduction of pertinent concepts into the teaching of preventive medicine in medical schools in the country. In the Caribbean area advisory services were rendered to the Governments of the islands of the Eastern Caribbean to help them incorporate health education into their health service programs, and in 1965 a full-time adviser was appointed and stationed in Barbados.

The Organization has also given assistance in health education aspects of the malaria eradication programs in Central America and Panama, particularly in connection with problems created by the refusal of some segments of the population to have their houses sprayed; in water supply programs for the rural population; and in community development activities.

The Organization continued to cooperate with the Community Development Training Center for Latin America (CREFAL), which is jointly sponsored by UNESCO, FAO, ILO, OAS, and the United Nations, and assigned an adviser to it on a full-time basis. The main course at the Center had 70 students in 1962, 65 in 1963, 63 in 1964, and 60 in 1965. In addition, a considerable number of short courses were organized on community development, in all of which health aspects were duly dealt with.

HEALTH STATISTICS

Activities in health statistics in the four years 1962-1965 reflected the broad emphasis and goals established for health programs in the period as well as continuing efforts to improve the quality and quantity of vital and health statistics for the Americas.

"Methods of Improving Vital and Health Statistics" was the subject of the Technical Discussions held at the XVI Meeting of the PAHO Directing Council in 1965.

During the quadrennium, recommendations on the program of the Organization in hospital statistics, classification of diseases, education and training, improvement of statistical systems, and research were made by the Regional Advisory Committee on Health Statistics and that on the International Classification of Diseases. The field work of a large-scale regional research program on mortality was successfully completed. Education and training programs were expanded to include the preparation of medical-records and auxiliary statistical personnel.

Collection and Dissemination of Statistical Information

Both the collection and the analysis of data in the health field were improved, as is shown by the increase in publications of the countries and the Organization.

In 1962 it was agreed that PAHO would collect the information requested in the Americas for use by WHO as well as by PAHO. The Guide for the Reporting of Statistical Information in the Health Field (Miscellaneous Publication PAHO 78) describes the forms and procedures to be used in weekly, monthly, and annual cable reporting. Data for the Americas for special reports, such as
that on the World Health Situation prepared by WHO, are also collected by PAHO.

The Weekly Epidemiological Report continued to publish the reported cases of quarantinable and other notifiable diseases. Table 36 and Figure 21 show the trends of reported cases of five quarantinable diseases in the period 1954-1965. The variation is due in part to the incompleteness of reporting in several countries, for example, of cases of smallpox in the years 1955-1960, when the disease was more widespread than in the period 1961-1965. Jungle yellow fever continues to be an ever-present problem in jungle areas, and the number of reported cases fluctuated considerably in that period from 28 in 1956 to 141 in 1963. There was a downward trend in the number of reported cases of louse-borne typhus, but a marked increase in reported cases of plague, which increased to 848 in 1965, indicating an international problem of importance.

Data were collected for the WHO Third Report on the World Health Situation and for Health Conditions in the Americas, 1961-1964. In the latter report, the trends in morbidity and mortality show the progress achieved in recent years. Information collected from the countries was also used in the report for the Punta del Este meet-

![Table 36. Reported Cases of Quarantinable Diseases in the Americas, 1954-1965](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Plague</th>
<th>Relapsing fever, louseborne</th>
<th>Smallpox</th>
<th>Typhus, louseborne</th>
<th>Jungle yellow fever</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>171</td>
<td>3</td>
<td>11,979</td>
<td>3,104</td>
<td>95</td>
</tr>
<tr>
<td>1955</td>
<td>87</td>
<td>38</td>
<td>8,348</td>
<td>1,545</td>
<td>39</td>
</tr>
<tr>
<td>1956</td>
<td>115</td>
<td>--</td>
<td>8,398</td>
<td>1,089</td>
<td>28</td>
</tr>
<tr>
<td>1957</td>
<td>154</td>
<td>--</td>
<td>8,220</td>
<td>747</td>
<td>80</td>
</tr>
<tr>
<td>1958</td>
<td>97</td>
<td>6</td>
<td>4,655</td>
<td>818</td>
<td>61</td>
</tr>
<tr>
<td>1959</td>
<td>93</td>
<td>10</td>
<td>5,002</td>
<td>650</td>
<td>30</td>
</tr>
<tr>
<td>1960</td>
<td>258</td>
<td>4</td>
<td>5,324</td>
<td>668</td>
<td>34</td>
</tr>
<tr>
<td>1961</td>
<td>308</td>
<td>1</td>
<td>8,992</td>
<td>474</td>
<td>82</td>
</tr>
<tr>
<td>1962</td>
<td>527</td>
<td>3</td>
<td>9,719</td>
<td>557</td>
<td>52</td>
</tr>
<tr>
<td>1963</td>
<td>423</td>
<td>--</td>
<td>7,126</td>
<td>465</td>
<td>141</td>
</tr>
<tr>
<td>1964</td>
<td>653</td>
<td>--</td>
<td>3,218&lt;sup&gt;b&lt;/sup&gt;</td>
<td>279</td>
<td>98</td>
</tr>
<tr>
<td>1965</td>
<td>848</td>
<td>--</td>
<td>1,547&lt;sup&gt;b&lt;/sup&gt;</td>
<td>427</td>
<td>79</td>
</tr>
</tbody>
</table>

- None.
- Two laboratory infected cases of cholera were reported in 1965, U.S.A.
- Incomplete data for Brazil.

Program for the Improvement of Health Statistics

Activities are directed to the improvement of vital and health statistics systems so as to make data available for local, national, and international health programs. The Charter of Punta del Este, one of whose goals was "to improve the collection and study of vital and health statistics as a basis for the formulation and evaluation of national health programs," has given added impetus to the development and the strengthening of statistical systems.

The Second and Third Meetings of the Regional Advisory Committee on Health Statistics in 1962 and 1964 were devoted to methods of improving statistical systems. At the meeting in 1962 the role of statistics in health planning was discussed, and 10-year goals in health statistics were recommended. In 1964 the Advisory Committee discussed the development of hospital statistics and indices for evaluating progress in health.

During the Technical Discussions at the XVI Meeting of the PAHO Directing Council in 1965 the ministers and directors of health drew up a list of measures to be adopted in order to improve vital and health statistics.
and to provide the data necessary for the administration of programs.

To assist countries in implementing recommendations for the improvement of health statistics, consultants are assigned to Zone and country projects. In the period 1954-1957 only two statistical consultants served in the Zones, but in 1958-1961 there were consultants in five Zones; in 1962-1965 statistical consultants served in all six Zones and, in addition, four were assigned to countries. These consultants worked directly with local statistical personnel and helped them with the improvement of statistics, with the statistical phases of projects of the Organization, and with the development of education and training programs.

In addition to these statistical consultants, by the end of the quadrennium three specialists in medical records and hospital statistics were rendering assistance for the improvement of hospital statistics, and training programs in this field were being established. Furthermore, to improve the quality of local data, the training of auxiliary statistical personnel was expanded.

International Classification of Diseases

Proposals for the 1965 Revision of the International Classification of Diseases were developed by the Organization, primarily through the Latin American Center for Classification of Diseases. Three meetings of the Regional Advisory Committee on the International Classification of Diseases were held in 1961, 1962, and 1963 (Scientific Publications PAHO 53, 66, and 83). The proposals put forward by the Region, which were the result of trials on nutritional and diarrheal diseases, were accepted. The new section on infectious and parasitic diseases approved at the Revision Conference in 1965 is in general accord with the regional proposal and includes the diarrheal diseases.

The Regional Advisory Committee made several recommendations which have been implemented. The Clasificación Internacional de Enfermedades—Adaptada para Índice de Diagnósticos de Hospitales y Clasificación de Operaciones (Scientific Publication PAHO 52), prepared by the Latin American Center, has had three printings since 1961 and has been widely distributed to hospitals in Latin America. The Committee also recommended that the Organization prepare publications in Portuguese. In 1965 Volume I of the International Classification was issued in Portuguese (Classificação Internacional de Doenças) and Volume II is being prepared for publication in 1966. Steps are being taken to have these documents reviewed in Portugal so that they will serve other Portuguese-speaking countries and areas in addition to Brazil.

The Latin American Center has extended its activities to the classification of hospital diagnoses and hospital morbidity statistics. Training courses in this field include instruction for personnel working in hospitals. A publication of the Commission on Professional and Hospital Activities was translated into Spanish under the title Instrucción sistematizada en el uso de la adaptación de la Clasificación Internacional de Enfermedades (Scientific Publication PAHO 101).

Between 1955 and 1965 the Latin American Center conducted an annual course on classification, usually in Caracas, Venezuela. However, the number of applications was so great that beginning in 1958 courses were also given in other countries. In the first six years of the Center's activities, 12 courses were organized for 242 persons. However, in the last five years 713 persons were trained in 33 courses (Figure 22).

The Regional Office and the Center will provide assistance in connection with the Spanish edition of the 1965 Revision and will be responsible for the Portuguese version, which will be prepared when the Revision has been approved by the Nineteenth World Health Assembly in 1966. They will also be adopted for use in hospitals.

Education and Training Programs

One of the most effective measures for developing and improving statistics for local, national, and international use is the training of the personnel the health services need, in health centers, in hospitals, and in registration and statistical offices. A training program at the intermediate level has been in operation since 1953. In the last few years this program has been expanded, as have those for professional and auxiliary personnel and for specialized groups such as hospital personnel and teachers of medical and demographic statistics.

For training at the intermediate level, teachers of statistics attending the Second Conference of Directors of Schools of Public Health of Latin America (Scientific Publication PAHO 60) recommended that courses in

![Figure 22. Number of Persons Trained in Courses on International Classification of Diseases, 1955-1960, 1961-1965](image-url)
vital and health statistics be provided by all public health schools in Latin America. Courses were begun in Chile in 1953 and in Mexico in 1955. The School of Public Health of the National University of Buenos Aires, Argentina, gave its first course of training at the intermediate level in 1962. The first course in Colombia was held in 1963 in Bogotá and was followed by courses at the School of Public Health of the University of Antioquia, Medellín, in 1964 and 1965. The School of Public Health in Lima, Peru, gave its first course for statisticians at the intermediate level in 1964; a second course was organized in 1965. In the same year a course was held by the Department of Preventive Medicine of the University of the West Indies; another was held in Cuba at the Carlos Finlay Institute and still another in Paraguay at the Ministry of Public Health and Social Welfare. The increase in the number of courses held and statisticians trained at the intermediate level is shown in Table 37.

The School of Public Health of the University of Chile, Santiago, has given three 15-month courses for professional statisticians, the first in 1961-1962 (11 students), the second in 1963-1964 (10 students), and the third in 1965-1966 (15 students). Nearly all the students were physicians who specialized in biostatistics after the basic course in public health. The number of personnel trained in courses at the professional, intermediate, and auxiliary levels is shown in Figure 23.

In 1965 emphasis was placed on the training of auxiliary statistical personnel. The Organization helped to set up auxiliary courses in Central America and in Brazil. The School of Public Health in Lima, Peru, also conducted an auxiliary course. In addition, several courses for auxiliary personnel in hospitals were held in Argentina and Venezuela and in Chile training was given to persons who were to serve as instructors for 120 auxiliaries. The estimated number of auxiliaries trained in 1965 was 600.

Special courses for medical records personnel have increased in recent years. The first course conducted with collaboration of PAHO was given in 1961-1962 in Argentina and has been followed by many short courses. Instruction in medical records and hospital statistics was also given in intermediate level courses at the Schools of Public Health in Argentina, Chile, Colombia, and Peru. The 11-month course for medical records librarians conducted by the Ministry of Health and Social Welfare of Venezuela received its first foreign student in 1962. In 1963 Venezuela instituted training courses for auxiliary personnel. In 1965 the Venezuelan Ministry of Health and PAHO sponsored a three-week course for instructors in medical records which was attended by students from Argentina, Chile, Colombia, and Costa Rica as well as from Venezuela.

Figure 23 shows the number of personnel trained in the 11-month courses for medical records librarians in Venezuela and in the six-month course in Argentina. Four courses in statistical methods were organized in 1961 and 1962 by the School of Hygiene and Public Health of the University of São Paulo, Brazil, and were attended by more than 100 physicians, dentists, and statisticians. Several courses in the design of experiments were given by short-term consultants of the Organization.

During 1965 plans were made to add population dynamics to graduate instruction in biostatistics through research training programs in the Universities of Chile, in Santiago, and of São Paulo, Brazil. An announcement of the first four-month course in this new program in Chile was made in 1965.

Table 37. Number of Statistics Courses and Students Trained at the Intermediate Level,* 1953-1965

<table>
<thead>
<tr>
<th>Period</th>
<th>Courses</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953-1960</td>
<td>8</td>
<td>283</td>
</tr>
<tr>
<td>1961-1965</td>
<td>18</td>
<td>448</td>
</tr>
</tbody>
</table>

* No data available for courses given in Mexico from 1955 to 1960.

Figure 23. Number of Persons Trained in Special Courses on Statistics, 1961-1965

Public Health

Research

The Inter-American Investigation of Mortality, financed by a grant from the National Institute of Gen-
eral Medical Sciences of the United States Public Health Service, was successfully carried out during the four years 1962-1965 by 12 principal collaborators in 10 different countries. Questionnaires covering 43,298 deaths in the 12 cities were received. The central review procedures were completed, tabulations are being prepared from punch cards, and the results are being analyzed. The report is to be published in book form in Spanish and English late in 1966.

One of the by-products of this Investigation is the finding that the mortality of the residents of these Latin American cities in early adult life is much less than that of all residents of the countries in which the cities are located. Although death registration is not complete in rural areas, death rates for persons aged 15-44 are much higher in rural areas than in these large cities. The differences in the death rates in these 10 cities and in the eight countries may have been seen in Figure 24. These findings are important evidence that there are much greater health problems in the extensive areas outside the cities than in them. Even allowing for the completeness of registration, some of the rates in areas outside the cities are two to three times as high as in the cities themselves.

This Investigation has demonstrated the feasibility and value of collaborative research on an international scale. In addition to the grant for the Inter-American Investigation of Mortality, research grants were received for a Planning Conference for Epidemiological Research on Cancer in Latin America (National Cancer Institute, USPHS), and for Planning for Research on the Etiology of Congenital Malformations (National Institute of Child Health and Human Development, USPHS).

HEALTH AND POPULATION DYNAMICS

The population policy and program of the Organization had its beginnings at the Third Meeting of the PAHO
Advisory Committee on Medical Research (June 1964, Document RES 3/8). The Committee advised that the immense importance of the problems of the growth of human populations called for "studies of the highest quality"... and should include "studies of human reproduction, hereditary and environmental factors in sterility and fertility, preventable malformations; demographic studies of live births, abortions, fetal and maternal deaths; and studies of family size and constitution in relation to socioeconomic factors in urban and rural communities. It would also necessitate training in epidemiology and demography in relation to socioeconomic development in schools of medicine and public health, and a search for improved methodology in the analysis of demographic data." The Committee concluded that the research "should be very wide in scope... and should be linked to the epidemiological investigation of problems of immediate importance, such as the improvement in maternal and child development, urbanization, natural resources, etc."

Of paramount importance is the pronouncement on population made in May 1965 by the Eighteenth World Health Assembly, entitled "Program Activities in the Health Aspects of World Population Which Might be Developed by WHO," which was approved as Resolution WHA18.49. It established the guidelines to be followed by the Secretariat in expanding the program already initiated and clearly expressed in the Report of the Director-General (Document A18/P & B/40), which served as the basis for the resolution.

The Assembly stated that "it is not the responsibility of WHO to endorse or promote any particular population policy" and that "it is a matter for national administrations to decide whether and to what extent they should support the provision of information and services to their people on the health aspects of human reproduction." In its role as an agency for providing Governments with advice at their request, the Assembly decided that the services to be provided "are related, within the responsibilities of WHO, to technical advice on the health aspects of human reproduction and should not involve operational activities."

The problem was actively discussed during the XVI Meeting of the Directing Council of the Pan American Health Organization, XVII Meeting of the Regional Committee of the World Health Organization, which adopted Resolution IX, based on the pronouncement of the Eighteenth World Health Assembly, emphasizing the importance of cooperation among organizations of the Inter-American System.

The role of multilateral health agencies, such as WHO and PAHO, is to provide Governments with assistance in establishing their own health policies regarding population growth. It is obvious that any policy creates the need for norms, techniques, structures, and organizational patterns, as well as programs to implement it.

The program of the Pan American Sanitary Bureau, Regional Office of WHO, in health and population has been based on these considerations. It deals with three major areas: education and training with a multidisciplinary approach, research, and advisory services.

### Education and Training Programs

During 1965 the Pan American Health Organization placed major emphasis on the development of education and training programs as part of a broad research training program for strengthening medical education.

In March 1965 a working group on research training centers in medical demography met in the Department of Applied Statistics of the School of Hygiene and Public Health of the University of São Paulo, Brazil. The meeting was attended by 22 persons, including directors and professors of schools of public health and medicine in the Americas, the Director of the Latin American Demographic Center (CELADE), and staff of the Pan American Sanitary Bureau. The discussions centered on the teaching of demography in medical and public health schools with a view to helping the medical profession to understand the interrelationships of health and population problems. The School of Public Health of the University of Chile and the School of Hygiene and Public Health of the University of São Paulo expressed interest in the development of training in medical demography.

Definitive planning for research training programs in Santiago and São Paulo followed. The first pilot course on health and population dynamics will be given at the School of Public Health in Chile from 1 August-30 November 1966. The announcement of this new program, called Programa de investigación y docencia en salud y dinámica de la población, was made in December 1965. The WHO, PAHO, and CELADE are to collaborate in

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the course. The visiting faculty will include professors from the Universities of São Paulo, North Carolina, Harvard, and Princeton. The Milbank Memorial Fund will make a senior member of its staff available for consultant services. This course is primarily intended for members of the faculty of medical schools. Manuals for the teaching of demographic statistics in medical schools will be prepared. Fifteen-month courses in the School of Public Health will provide for specialization in health and population, research, or demography. In São Paulo the instruction will be given to university graduates wishing to specialize in population and qualify as teachers and research workers in demography and population in universities, institutions, or government departments.

The pertinent agreement has been signed in Chile and in São Paulo, Brazil, and budgets have been approved by the Organization. The objective is to extend education and training on health and population to universities and medical and public health schools throughout Latin America. Additional training centers are being established in other countries as resources become available from Governments and private agencies.

**Research**

The second field in which the Organization is developing its program is research. The WHO and PAHO are combining their resources and are supporting research projects to be initiated in 1966 in Peru and in São Paulo, Brazil. Epidemiological studies of populations, and especially of women of the childbearing age, will be undertaken to obtain data through current observation as well as from histories. Records regarding pregnancies, menstrual periods, dates and termination of pregnancy, breastfeeding, abortions and fetal deaths, live births, and deaths in these families will be obtained.

**Advisory Services**

As stated in the resolutions and document referred to by the Director-General of WHO, advisory services will be provided on request, with the understanding that such services are related to the technical aspects of human reproduction and do not involve operational activities. The WHO is proceeding to expand its program of expert committees and working groups to include the evaluation of the health effects of gesterones and intrauterine devices. Thus WHO and PAHO will be in a position to render technical services on the request of Governments.

The PAHO has convened two Conferences on Population Dynamics, on 7 January 1965 and on 3 January 1966. The Conferences were designed to secure full information regarding the population studies and training programs of foundations, universities, U.S. Government agencies, international agencies, including the Organization of American States and the Inter-American Committee on the Alliance for Progress (CIAP), among others. The Second Conference strongly recommended that PASB establish a permanent “clearinghouse,” a center for the exchange of information on research and training activities in the Americas, and hold annual meetings to consider specific outstanding problems that require solution.

In 1965 an Office of Health and Population Dynamics was established as a permanent part of the PASB services. It will coordinate and intensify population studies, the exchange of information, and advisory services.

In summary, the Pan American Health Organization has developed a new program encompassing education and training, research, and advisory services on health and population in accordance with the policies recommended by the Governments.

**ADMINISTRATIVE METHODS AND PRACTICES**

In accordance with Resolution XXXV of the X Meeting of the Directing Council of the Pan American Health Organization, which recommended that the Gov-
ernments give attention to the improvement of administrative practices related to public health programs and that, within the general policy of the Pan American Sanitary Bureau, emphasis be given to collaboration in matters concerning administrative methods and procedures in public health services, programs in this field have been expanded. They comprised advisory services, seminars, and the training of administrative personnel.

Administrative methods consultants were assigned to Zones I, III, IV, and VI, where they rendered services to the Governments that requested them. Short-term consultants were used wherever this type of service was considered more appropriate. In addition, administrative methods consultants assigned to malaria eradication and water supply projects assisted the Governments with their national programs.

Five seminars on the organization and administration of health services were held during this period. Separate seminars were held for the Central American countries and Panama, for South America, and for the Caribbean area. The seminar for Central America had previously been held in San José, Costa Rica, in November 1960. During the quadrennium initial seminars were held for South America (Bogotá, Colombia, December 1962) and for the Caribbean area (Kingston, Jamaica, November 1963). As a follow-up of these seminars and to review the progress achieved in implementing their recommendations and the continuing needs of the national health services, further seminars were held in Antigua, Guatemala, in May 1964; Buenos Aires, Argentina, in December 1965; and Port-of-Spain, Trinidad, in November 1965.

In 1964 the Organization began to award fellowships for the training of administrative personnel of health services. The 34 fellowships awarded in 1964 and 1965 were distributed as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>1964</th>
<th>1965</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Barbados</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Colombia</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Guatemala</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>Honduras</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>Jamaica</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Panama</td>
<td>—</td>
<td>5</td>
</tr>
</tbody>
</table>

Training was also provided through courses jointly sponsored by the Organization, the Governments, the United Nations, and training institutions. Courses were organized with the assistance of consultants at the national level, and in-service training was provided in many of the health services.

To meet increasing demand by the Governments, plans are being developed for the appointment of additional administrative consultants and for the organization of regional training courses.

**HEALTH LEGISLATION**

The Organization has continued to encourage countries to revise their health legislation.

Assistance in this field was given on request to Brazil, Guatemala, Honduras, Jamaica, and Trinidad and Tobago. In all these countries current legislation was reviewed and assistance was given in preparing health codes and other legislation.

These activities supplement the advisory services the Organization gives the countries on the structure and organization of general health services, in particular at the central level.

**FOOD AND DRUG CONTROL**

During the quadrennium the Governments manifested great interest in reorganizing their food and drug control services, in view of the growth of the pharmaceutical
and the food manufacturing and processing industries. The establishment of common markets in other countries has made uniform health standards necessary. In addition to protecting the consumer and guaranteeing wholesome and nutritive food and drugs of recognized quality, such standards facilitate trade. This has been done, for example, with the Central American Common Market in which foodstuffs constitute more than 50 per cent of the products exchanged by the countries.

In order to assist the countries in this important public health field, the Organization recruited consultants to make detailed studies on the establishment of standards, existing legislation, analytical laboratories, and the food and pharmaceutical industries in the countries of Central America, Argentina, Brazil, Chile, Colombia, Panama, and Venezuela.

At the request of the public health ministries of Central America and Panama, the Organization, in collaboration with various consultants and the personnel responsible for standardization at the Adolfo Lutz Institute in São Paulo, Brazil, drew up 400 health standards for foods. These standards were submitted to the IX and X Meetings of Ministers of Public Health of Central America and Panama, held in Nicaragua in 1964 and in Panama in 1965, where they were discussed and approved. The standards cover methods of analysis, definition, codification, and nomenclature of the main groups of foods in the Central American Isthmus. They were prepared in accordance with the international regulations established by the FAO/WHO Codex Alimentarius Commission as well as the regulations of the Pan American Commission on Technical Standards, and were adapted to the Central American Standard Tariff Nomenclature (NAUCA).

In September 1965 the First Seminar on Food and Drug Control in Central America and Panama was held under the auspices of the Organization in Guatemala City. Its main purpose was to review the recommendations on minimum food standards and the minimum plan for the establishment of a food and drug control department in the health services, which were approved at the X Meeting of Ministers of Public Health of Central America and Panama. The Seminar was attended by 16 professional members of the food and drug control services of the health ministries of the countries in the area, as well as by personnel from INCAP and the Central American Institute of Industrial Research and Technology (ICAITI) and advisers from the Organization.

The program for the control of pharmacies, drugs, and foodstuffs in Panama continued to receive assistance, and training was given to the staff of the inspection section and of the specialized analytical laboratories of the University. These laboratories, which serve as regional laboratories for the countries of the Isthmus for the testing of medicaments, have been supplied with international standards, technical publications, and test media for the control and analysis of drugs and other chemical products.

In view of Resolution WHA18.36 of the Eighteenth World Health Assembly, which invited the Governments to take the necessary measures to subject pharmaceutical preparations to adequate quality control, the Organization recruited a consultant to study the feasibility of establishing an international laboratory for the analysis of pharmaceutical products which would serve as a regional laboratory for the countries of the Hemisphere. The report of the consultant was submitted to the XVI Meeting of the Directing Council held in September 1965 and was approved by it. Pursuant to this resolution, the Organization has already begun to study the siting and financing of a laboratory of this type.

In accordance with Resolution XII of the XVI Meeting of the Directing Council and Recommendation V of the X Meeting of Ministers of Public Health of Central America and Panama—quality control and price of drugs—work has continued on the collection of drug control laws and regulations in the Americas, and on systems for the control of prices and the sale of pharmaceutical preparations. In implementation of Resolution WHA 16.36 on the clinical and pharmacological evaluation of drugs, adopted by the Sixteenth World Health Assembly, the countries of the Hemisphere were provided with information on the precautionary measures to be taken in the use of certain products hazardous or potentially hazardous to health.

EVALUATION

In 1963 the Organization undertook the evaluation of the projects in which it was collaborating with the Governments, and established an office for that purpose.

Recognizing that the systematic assessment of the progress achieved in each project is of vital importance, since it makes it possible to set targets with a knowledge of the facts, a start was made on this continuing and dynamic process in a very simple form. It consisted in obtaining and studying information on the situation as it existed at the beginning of the project and comparing it with the results obtained during and on completion of the project, bearing in mind the targets previously established. Evaluation was begun in 1963 and based on the reports of projects in Honduras and Panama; since then it has been extended to cover all the projects the Organization is assisting.

In implementation of a recommendation of the Inter-American Economic and Social Council (Second Annual Meeting at the Ministerial Level, São Paulo, Brazil, November 1963), a working group met in June 1964 as part of the Regional Advisory Committee on Health Statistics to make recommendations on a system of measurement units or indices that would make it possible to measure progress in health activities.

The working group was composed of outstanding specialists in health administration, statistics, health planning, and other health disciplines from several Latin American countries and the United States of America. It made a detailed examination of the practical possibilities of concurrent and terminal evaluation of health programs, and recommended that two types of evaluation should be distinguished: that which measures changes in the number of health activities carried out and the persons served; and that which measures the changes produced in the level of health.

The working group called attention to the fact that changes in the level of health are not solely the result of given health activities; other components of the level of living may also simultaneously affect the level of health of a population. It pointed out, for example, that improvements in family income, nutrition, housing, education, and other components of economic and social development could produce an increase in the level of health without any specific health activities having been carried out. It also stressed that, in short-term evaluation, which was what was required for projects of the type the Organization was assisting, allowance would have to be made for the fact that the effect of these projects on the level of health of a given population would not become apparent for a long period of time.

It was the opinion of the working group that the above-mentioned circumstances justified the use of the measurement of the activities carried out, provided the methods used in each health program were technically correct and conducive to the fulfillment of its objectives.

This is the method which the Organization has used to evaluate the projects in which it is participating.

With this end in view, the system for preparing reports for each of the projects was modified in 1965 to include the definition of objectives, the targets fixed for the year, and the results obtained. The result has been much fuller information about what was done; this information is studied so that appropriate changes may be suggested.

A start has been made on the computerization of the information received from the projects. This procedure will facilitate the study of the total work done in a country, region, or the Hemisphere as a whole and will also make it possible to assess the performance of resources and the resources required.

Project evaluation is becoming part of the health activities of the countries as they begin to plan their work and orient their programs and techniques in accordance with the national health plans already drawn up or in preparation.

B. SPECIFIC PROGRAMS

MEDICAL CARE AND REHABILITATION

Administration of Medical Care Services

The period covered by this Report was one of rapid change and development in the principles governing programs for the administration of medical care services in the Hemisphere. The Charter of Punta del Este (August 1961), the Meeting of the Task Force on Health in Washington, D.C. (April 1963), and the XVI Meeting of the PAHO Directing Council (September 1965) were milestones on the road to the recognition of medical care as a basic health service. The Technical Discussions of the XVI Pan American Sanitary Conference and the meetings of expert committees convened by PAHO in the course of those years supplied the infor-
Chart of Punta del Este

The fact that 11 countries, at the request of the PASB, included members of their health services in their delegations to the Special Meeting of the Inter-American Economic and Social Council at the Ministerial Level held at Punta del Este, was of vital importance in ensuring that health problems were given proper emphasis and that both the Charter itself and its annexes contained recommendations together constituting a broad program of public health for the countries of the Americas.

One of the health goals of the Charter of Punta del Este, to be reached during the decade beginning in 1960, was to “improve basic health services at national and local levels.” In addition, Resolution A.2, annexed to the Charter, recommended to the Governments long-term measures for the prevention of diseases and the protection and recovery of health, among which the following apply to medical care:

1-e. To improve the organization and administration of national and local health services by combining the functions of prevention and cure; to obtain a better return from medical care services; to create the necessary services gradually; and to ensure financial accessibility to therapeutic agents and means for the prevention of disease.

2-b(5). To take measures for giving increasingly better medical care to a larger number of patients, by improving the organization and administration of hospitals and other centers for the care and protection of health.

This is the program of action which has guided PAHO during the course of these years.

The Charter of Punta del Este envisaged integration on two levels: the integration of health services within the general plans of social and economic development of the Governments; and the integration of health activities, as parts of a national plan aimed at coordinating all available public and private resources for the protection, promotion, and restoration of health.

Advisory Group on Medical Care

In March 1962 an Advisory Group on Medical Care met to examine the problems of medical care services and to formulate programs for their incorporation into the national health plan. In the opinion of the Group, all persons, regardless of their income level or the source of their financial support, regardless of their geographic location, and regardless of their race or creed or political beliefs, should receive prompt medical care of the appropriate types . . . .” The professional services which these persons receive should include services for “prevention, treatment, and rehabilitation of all illnesses or accidents that they may suffer, whether physical or mental, short-term or long-term . . . .” The Advisory Group also emphasized the need “to improve the organization and utilization of services by improving resources and adopting the necessary measures to ensure that at the same time as constructions were being expanded installations were being renovated, and to bear in mind the urgent need to establish education and training programs for the health personnel intended for both medical and administrative services.”

The Group completed its analysis with recommendations on the pattern of organization, i.e., as close a coordination as possible of the various technical services to constitute an integrated health unit, the organizational focus for the provision of services; on the formulation of a national plan for the financing of medical care, even though the funds might come from multiple sources; and on research, i.e., utilization studies and studies to determine costs and the effectiveness of the services provided.

Technical Discussions at the XVI Pan American
Sanitary Conference

The selection of the topic “The Present Status of Medical Care in the Americas in Relation to its Incorporation as a Basic Service in Integrated Health Programs” demonstrates the interest of the Governments of the Pan American Health Organization in the continuing study of the goals established at Punta del Este. At the Technical Discussions it was recognized that health activities had to be programmed as an integral part of economic and social development plans; that it was advisable to coordinate and integrate health activities; and that to do so it was first necessary to create the appropriate mentality in all the persons executing programs. That mentality would have to be created in medical schools, nursing schools, schools of midwifery, etc., so that future professionals would adopt the integrationist approach. It was also recognized that although the State had an obligation to the needy, that did not necessarily mean that the State should administer all medical care services; certain functions might be delegated in part or in whole. It was acknowledged that social security agencies had made progress in providing protection against physiological, pathological, occupational, and social hazards. However, the high cost of independent administration and operation of such services, the discrimination between insured and non-insured, the standard of compe-
ence required of professional personnel, and the obstacles the autonomy of social security agencies put in the way of effective coordination and integration were viewed with reservations.

**Task Force on Health at the Ministerial Level**

In accordance with Resolution A.4 of the Charter of Punta del Este, the Organization of American States organized through the Pan American Sanitary Bureau a Task Force on Health which met at the Ministerial Level in April 1963.

In the Final Report of that meeting, in the section on Improvement of Health Services, the Ministers declared: "The doctrine of integration admits of no separation between prevention and cure. Among the social functions of medicine, it points to those that are carried out in the community, including the services brought to bear to protect, promote, and restore health. This concept implies that there is a mutual dependence between individual and collective medicine. Both tend to sustain the individual in the best state of health." And they added: "Modern research techniques have, in the past few years, greatly increased our knowledge of ways and means of preventing disease and restoring and improving man's level of health. Unfortunately, the utilization of this knowledge to the degree necessary to obtain the desired results encounters serious obstacles because the practical application is costly and complex.

"Moral, political, and economic reasons make it necessary for the State to concern itself with the well-being of the population in general as well as with that of certain specific groups in particular, and thus to participate in the planning for, and distribution of, services for the prevention of diseases and the promotion and restoration of health."

Conscious of the responsibility deriving from these declarations of the Task Force, the PAHO has taken the necessary steps to provide technical advisory services and to promote financial assistance through international credit agencies to enable the countries in the Region to implement their plans through a program for the construction and equipment of hospitals and other health facilities in which the policy of decentralization, regionalization, and the establishment of administrative sectors is applied effectively.

A program of this nature calls for good coordination of all the national resources that are to be incorporated into national health planning and for better utilization of the installed capacity available and of professional

and auxiliary manpower, the output of which can be raised by rationalizing their work.

As indicated in another chapter of the Final Report of the Task Force on Health, the education and training of the professional and auxiliary health workers who are to be responsible for preventive and curative activities must be given special importance as part of an educational program that parallels and supplements a program for the expansion of services and the construction and equipment of new facilities.

**Relations with the Medical Services of Social Security Agencies**

In accordance with the instructions of the Directing Council and the Executive Committee of the Organization, a meeting was convened in July 1965, in association with the Organization of American States, of a Study Group on the Coordination of Medical Care in Latin America, which dealt in particular with the relationships between the medical programs of social security institutions and those of the ministries of health and other governmental agencies. After an historical review of the subject and the main approaches to the problem, the Group decided that, within the over-all planning of economic and social development, public health and social security should have the place due to them as social progress sectors, the first ensuring that all members of the community enjoy the highest possible level of health, and the second restoring the capacity for gainful employment and therefore the purchasing power of wage earners when they are temporarily or permanently disabled. They should also use their funds for the construction, equipment, and maintenance of hospitals and other local health facilities. The participation of social security institutions in health planning is essential in order to ensure that consideration is given at the national level to the resources and services of all agencies providing medical care. Furthermore, the extension of social security programs and the standardization at the national level of all existing systems could bring unification, and that would undoubtedly constitute the best ground for their coordination with the services of the health ministries. As for the extent of services, it should be borne in mind that few countries in Latin America had reached the economic level where they could cover the whole working population and their dependents. Under existing conditions it was probable that most of the rural population was not sufficiently well off to pay even a very

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small contribution to a comprehensive health care system. It was therefore necessary for the State to continue to finance the health care of these needy persons from the national budget.

Programs of Hospital Construction

In accordance with the instructions of the Directing Council, the PASB convened in July 1965 a meeting of an Advisory Committee on Planning of Hospitals and Other Health Services, which included representatives of the Inter-American Development Bank. In opening the meeting the Director of the Bureau referred to the terms of reference of the Committee to recommend how the Bureau can best participate in the planning for the construction, staffing, and operation of integrated hospitals and related health facilities designed to serve the community needs in the various countries.

Later in his speech he said: "The formulation of a long-range program of hospital construction and installation involves a plan for its financing... current local investments are enormous. Yet, despite the effort being made at the national level, the bed capacity is below present demands, as well as those that can be expected as a result of the natural growth of the population, even if the organization and administration of the services were to be rationalized. In view of the social nature of the investment, foreign capital in the form of long-term, low-interest loans is obviously needed. We should like to have the Advisory Committee's opinion on the feasibility of creating a system of regional cooperation whereby the domestic resources would be supplemented by outside assistance and the sum total invested in a program carefully formulated by the Governments with the collaboration of the Organization. Carrying out such a plan might require a special agreement, in the form of an instrument—indeed, a convention—that would establish the conditions under which the Governments and the investors would participate in a cooperative venture of such magnitude."

It was against this background that the Advisory Committee made the following recommendations:

1. The Pan American Sanitary Bureau should strengthen and expand its present organization in order to intensify its work in these areas:
   - Studies and advisory services to countries and international organizations on the following matters:
     - Planning and organization of national health services based on adequately regionalized systems, in which existing resources would be utilized more effectively and costs and priorities in expenditures and investments would be established.
     - Administration of hospitals and other health services as a means of achieving greater efficiency and yield from the resources.
     - Study of manpower needs, in terms of personnel of various categories, and possibilities for education and training.
     - Efforts to promote the incorporation of these concepts into the curricula of medical schools and to interest universities and other educational centers in research on these matters.
     - Costs and financing of the various systems, including the participation of social security.
     - Utilization of international resources so that, in addition to their immediate purpose, they will serve to promote an increase in and more effective use of national resources being applied for the same objectives.

2. To carry out these functions, it is suggested that the Pan American Sanitary Bureau establish a department with personnel trained in administration and planning (physicians, economists, architects, and other professionals) who are specialists in the activities outlined above, drawing upon all of its present organizational structures that further this end. There should be two types of personnel: permanent and temporary. The Bureau should also maintain a roster of individuals and firms that specialize in such matters.

3. This branch, so conceived, should maintain and intensify its working relations and liaison with the Organization of American States, the Inter-American Committee on the Alliance for Progress, the Inter-American Development Bank, the United Nations agencies, and other public and private international agencies interested in this matter.

4. A permanent Advisory Committee should be established, composed of outstanding persons in the field and representatives of public and private international agencies that lend financial and technical assistance in this area. The functions of this Committee would be to advise the Bureau in carrying out the tasks outlined in the preceding paragraph and to promote coordination in the use of the national and international resources.

5. The minimum requisites for recommending priority standards for the approval of country requests might be:
   - Existence of national or local economic and social development plans, under study or in progress, which show a proper relationship and balance between the different sectors.
   - Willingness and ability of the requesting Government to adopt the structural, organizational, and administrative measures required for the attainment of goals, by means of appropriate reforms.
**Table 38. Number of Hospitals and Beds, with Rates per 1,000 Population, in the Three Regions of the Americas, 1960 and 1964**

<table>
<thead>
<tr>
<th>Region</th>
<th>1960</th>
<th></th>
<th></th>
<th></th>
<th>1964</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>General</td>
<td>Number</td>
<td>Rate</td>
<td>Total</td>
<td>General</td>
<td>Number</td>
<td>Rate</td>
</tr>
<tr>
<td>Northern America</td>
<td>8,150</td>
<td>6,673</td>
<td>1,792,939</td>
<td>9.0</td>
<td>8,514</td>
<td>7,189</td>
<td>1,902,604</td>
<td>9.0</td>
</tr>
<tr>
<td>Latin America</td>
<td>8,199</td>
<td>7,290</td>
<td>684,597</td>
<td>3.2</td>
<td>9,019</td>
<td>8,088</td>
<td>764,271</td>
<td>3.2</td>
</tr>
<tr>
<td>Middle America</td>
<td>1,826</td>
<td>1,650</td>
<td>151,962</td>
<td>2.3</td>
<td>2,778</td>
<td>2,576</td>
<td>213,449</td>
<td>2.8</td>
</tr>
<tr>
<td>South America</td>
<td>6,373</td>
<td>5,640</td>
<td>532,635</td>
<td>3.7</td>
<td>7,141</td>
<td>6,410</td>
<td>550,822</td>
<td>3.4</td>
</tr>
</tbody>
</table>

(c) Status of preinvestment studies.
(d) Willingness to contribute demonstration and application areas, and size and importance of such areas.
(e) Technical integration of preventive and curative activities and administrative coordination of the various health institutions.

**Medical Care Policy**

All these decisions and recommendations, which in due course were approved by the Directing Council of the Organization, define the theoretical basis for formulating a medical care policy, which may be summarized as follows:

(a) To stimulate the recognition of the right of all citizens, without distinction, to enjoy comprehensive health care services.
(b) To gradually promote the best possible coordination of preventive, curative, and social activities intended to ensure that all members of the community enjoy the highest possible level of health.
(c) To promote participation in the planning of the health sector, by all public, autonomous, semiautonomous, and private agencies which allocate funds for the protection, promotion, and restoration of health.
(d) To help countries to develop and improve their hospital systems as one of the basic services of an integrated health program organized on the basis of regions and sectors.

**Advances of Medical Care Services in the Countries**

Table 38 shows that in the period 1960-1964 the number of hospital beds in Middle and South America increased by no less than 79,000. However, this increase has only kept pace with the needs resulting from the natural growth of the population, since the bed ratio per 1,000 population has remained almost unchanged. There has been considerable increase in the hospital construction program in Middle America (from 2.3 to 2.8 per 1,000 population), whereas in South America there has been a slight decrease (from 3.7 to 3.4 per 1,000 population). As has been said in another part of this Report, it would be necessary to study the use made of this installed capacity in order to ascertain whether or not the number of beds available is appropriate to the demand, bearing in mind that, generally speaking, not all the population of these countries has access to hospitals and that not all the countries have sufficient resources to satisfy this demand.

A similar phenomenon is to be observed in the number of physicians and their ratio per 10,000 population. Table 39 shows that whereas the number of physicians has increased in Middle and South America by about 31,000 in the period 1957-1964, the ratio of physicians...

**Table 39. Number of Physicians, with Ratios per 10,000 Population, in the Three Regions of the Americas, 1957, 1960, and 1964**

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
<th>Ratio per 10,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern America</td>
<td>278,871</td>
<td>322,941</td>
</tr>
<tr>
<td>Middle America</td>
<td>30,455</td>
<td>32,833</td>
</tr>
<tr>
<td>South America</td>
<td>69,914</td>
<td>81,191</td>
</tr>
</tbody>
</table>

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### Table 40. Number of Dentists, with Ratios per 10,000 Population, in the Three Regions of the Americas, 1957, 1960, and 1964

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
<th>Ratio per 10,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern America</td>
<td>94,500</td>
<td>107,754</td>
</tr>
<tr>
<td>Middle America</td>
<td>5,100</td>
<td>5,203</td>
</tr>
<tr>
<td>South America</td>
<td>33,000</td>
<td>35,852</td>
</tr>
</tbody>
</table>

per 10,000 population has remained practically stationary in Middle America, that is, at about 5.0 physicians per 10,000 population; however, the ratio increased in South America from 5.3 to 6.0. As for dentists (Table 40), there has been a much more marked increase in South America, where the number has risen by about 11,000 and the ratio of dentists per 10,000 population has increased from 2.5 to 2.8 between 1957 and 1964. On the other hand, in Middle America there has been an increase of 2,300 dentists and the dentist/population ratio has remained stationary at about 1 per 10,000 population.

In all the countries the ratio of human and material resources to population tends to increase slightly.

**Technical Advisory Services to the Countries**

During the quadrennium full-time advisers in medical care were assigned to Zones III and IV, and advisory services continued to be furnished to Zone VI. These advisers are in a position to give specialized advice to all the countries in the Zone and are particularly interested in ensuring that medical care is given appropriate attention in all integrated health programs.

The projects described below are the most outstanding as far as the implementation of that policy in the countries is concerned.

In 1962 advisory services were given to the Government of Panama and the American Hospital Association in connection with a seminar on medical care administration, which highlighted the progress made in the administration of the basic services making up a local health program.

In 1963 the Government of El Salvador was provided with technical advice, in cooperation with the OAS, in studying possible ways of ensuring a better understanding and closer relationship between the Ministry of Public Health and Social Welfare and the Social Security Institute.

Since 1963 advisory services have been rendered in connection with the organization of the medical care and teaching services of the new Queen Elizabeth II Hospital in Barbados. Recommendations have been made on the internal organization of the hospital, the functions and the duties of personnel, and the administration of a teaching hospital, and they are being put into practice by the Government with the assistance of the Organization.

A similar project has been in operation at the new hospital in Montego Bay, Jamaica, since 1963.

Special mention should be made of the services given to the Governments of Argentina and Peru in organizing, in Buenos Aires and Lima, centers for the training of personnel who will be responsible for the administration of medical services, in particular hospital administrators. At the same time these countries have been able to train hospital directors and, as the years go by, are forming a new generation of highly trained medical administrators.

A consultant stationed in Uruguay has been assisting the Government since 1964 with programs similar to those in Argentina and Peru.

More recently, and in collaboration with the OAS, technical advisory services have been given to the Governments of Costa Rica, Honduras, and Nicaragua to assist them in promoting programs for coordination between the medical services of social security institutions and those of the ministries of health.

**Future Prospects**

The estimated number of hospital beds needed in Latin America in order to maintain the present ratio of 3.2 per 1,000 population is 25,000 per year for the next five years. However, a ratio of 3.2 beds per 1,000 population is very low and any program of economic development and social progress should strive to attain a satisfactory ratio of 4.5 beds per 1,000 population; to do that it will be necessary to construct 80,000 beds a year for the next five years.

It appears that a program of this scope is beyond the capital investment possibilities of the countries, not to mention serious difficulties in training professional and auxiliary personnel needed for operating these new hospitals.

Aware of the fact that an effort of this magnitude would be completely unrealistic, the Bureau has proposed the following more attainable targets:

(a) To improve the output of present resources by means of studies of cost, manpower, and administration and utilization of services, taking as a basis operational research in the field, with the collaboration of minis-
Rehabilitation

Prior to 1962 the Organization had occasionally provided countries in Latin America with technical advice on rehabilitation. In that year a regional adviser in rehabilitation was appointed in response to the increasing interest being shown in this field of activity. Argentina and Brazil (in particular the Rehabilitation Institute of the University of Sao Paulo) were provided with advisory services, and Chile received assistance in setting up the Rehabilitation Center of the National Health Service, which began operations in August of that year. Part of the equipment for the prosthetic and orthopedic workshops was supplied by the Organization, which also assigned an expert to assist with the management of the workshops and the training of the technical staff.

Between 1963 and 1965 more and more countries became interested in rehabilitation, and technical advice in this field was given to a considerable number of countries, including Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela. The above-mentioned Center in Chile expanded its activities when a Department of Occupational Therapy was opened in February 1964. In that year, and in 1965, it was provided with expert advisory services.

A special study was undertaken in Venezuela in connection with the establishment of a National Rehabilitation Institute with branch offices in hospitals and health centers. In recent years courses on occupational therapy, prosthetics, and orthopedics have been given in Brazil. In Venezuela, a two-year course on physiotherapy which began in 1965 had an enrollment of 17 students.

MATERNAL AND CHILD HEALTH

The years 1962-1966 witnessed constant efforts on the part of all the countries in the Region to translate into reality the aspiration voiced at Punta del Este: to reduce by one half the mortality rate in children under five years of age. Infant mortality, however, is a non-specific indicator and a reflection of social and economic health rather than of health activities alone. As the available statistics show, attainment of the stated aspiration has met with varying degrees of success in different countries.

Virtually every country in the Hemisphere has embarked on the reorganization of its health services for mothers and children, and in the past four years the expansion of services in the countries led to a proportionate increase in the number of mothers and children covered.

Another development that makes for improved health services for mothers and children is health planning and standardization of services. The health hazards and service needs of this segment of the population have been investigated by all countries which have undertaken national health planning. To assist the countries in this technical process the Organization has provided them with advisory services through its regional staff and short-term consultants, and through publications. In 1966 it issued A Health Care Program for Mothers and Children (Scientific Publication PAHO 130).

Diarrheal disease control programs have been strengthened through increased use of rehydration and systematic improvement of the techniques employed. Special publications of the Organization and the attention given to this subject at the Technical Discussions held during the XIV Meeting of the PAHO Directing Council have contributed to the improvement. Several countries have launched and expanded nutritional rehabilitation and education centers or programs as part of their child health care service.

In the field of maternal care, progress can be reported in the definition of the functions of midwives and nurse-midwives and their utilization by health care services throughout the maternity cycle. At the same time the

The report and working papers of the Technical Discussions were published in Control of Gastrointestinal Diseases. Scientific Publication PAHO 100.
need for accepting and drawing the rural empirical birth attendant into the ambit of the health care services has been increasingly recognized, and a number of countries have initiated or expanded activities for the training and supervision of such persons. In this process, assistance has been given by PAHO specialized staff and short-term consultants, and several short courses and seminars have been organized for professional personnel in all the countries of southern Latin America.

In pediatric education, substantial progress has been made in most countries in upgrading pediatric departments through the appointment of full-time staff; expansion of continuing education in pediatrics by universities and ministries of health, sometimes through cooperative agreements; initiation of pediatric residency training programs; and the conduct in the countries of special courses in social pediatrics. The Organization has cooperated in this process by giving technical assistance to selected medical schools, notably the University of Recife in northeast Brazil, and to selected continuing education programs, notably at the University of the West Indies in Jamaica.

However, the major focus of PAHO's educational program has been social pediatrics. Between 1962 and 1965 it co-sponsored, co-planned, and partially supported (with the International Children's Center, in Paris, and the Inter-American Child Institute, in Montevideo) a four-week international course which was given in several Latin American cities. The Organization organized, with the help of the pediatrics department of the Medical School and the School of Public Health of the University of Chile and the National Health Service, a special training center offering a three-month course in Santiago. In 1965 a second training center under like auspices was established at the University of Antioquia, Medellín, Colombia, with financial assistance from UNICEF. In 1966 these three-month courses in Santiago and Medellín were attended by 36 international fellows and 8-10 national fellows. More than half held faculty positions in the pediatrics departments of Latin American medical schools. The two international agencies that collaborated in the four-week course were able in 1966 to turn their attention and efforts to other fields and organized a special international course in child health for primary and secondary school teachers.

By the end of the quadrennium the Organization had also collaborated with the American Academy of Pediatrics, which has a membership of more than 1,300 Latin American pediatricians. It had become increasingly concerned about a clearer formulation of its own policies of technical assistance in this field and convened two advisory groups to assist in this formulation. As a result, its future efforts will not only include expansion of the social pediatrics training centers described earlier but also assistance to universities in the promotion and improvement of continuing and residency training programs in pediatrics and in the utilization of community health services for teaching pediatrics at all levels of medical education.

The acquisition of knowledge and the improvement and innovation of methods for using it to solve health problems are as necessary as education for planning and providing maternal and child health services. Two significant studies of the relationship between diarrheal disease and malnutrition, financed through the Organization, were completed. One of these was carried out by INCAP and has already pointed out several epidemiological aspects of this relationship that are important not only to planning but also to the organization of child health care services. The second, carried out by the Anglo-American Hospital, Lima, Peru, has provided information on treatment regimes and preventive measures.

Toward the end of the four-year period and following two meetings of advisory groups, a research contract was signed with the U.S. National Institute of Child Health and Human Development, which will enable INCAP to launch a long-term investigation of the relationship between malnutrition and mental development in children.

NUTRITION

During the quadrennium the food situation in Latin America has remained essentially unchanged; total food production has risen steadily but, owing to the parallel population increase, per-capita food production has remained stationary. Increasing food imports, both through commercial channels and through bilateral and multilateral aid, have tended to increase the amount of food available at the national level, but the extent to which the individual has access to it remains extremely variable. Improvements in food production, storage, processing, and distribution have barely been sufficient to keep pace with the demand created by population increase. Human nutrition therefore represents an increasing problem in public health, and in consequence PAHO has given a high priority to work in this field.

Advisory Services

The specialized advisory staff of PASB has been increased, in response to demand, by the addition of
one public health nutritionist at Headquarters (1964) and by the appointment of seven advisers at the Zone and country level. In view of the increasing need for guidance in nutrition education activities at the local level, posts were established for non-medical public health nutritionists in the Dominican Republic, St. Lucia, and Trinidad. There has been a steady increase in short-term assignments, to advise and report on specific problems such as endemic goiter and nutritional anemias and on priority activities such as salt iodization and low-cost, high-protein foods.

In 1963-1964 and in 1965 short-term consultants visited the Caribbean area to determine the current status of nutrition activities in the English-speaking islands and French departments and Netherlands territories, to determine the need for establishing a nutrition center to coordinate existing resources, and to provide training and advisory services for the area in relation to food production and economics and population nutrition.

PAHO field staff received special orientation in public health nutrition at two seminars held at INCAP in 1964 and 1965. The purpose of the seminars was to acquaint country representatives with recent advances in the field of nutrition and to study the incorporation of nutrition activities into national health plans, so that they would be better able to give assistance to nutrition projects at the national and local level. Seventeen representatives attended these meetings.

**Training**

PAHO collaborated with FAO and UNICEF in the organization and conduct of a course on human nutrition for agricultural workers held at the Agrarian University, “La Molina,” in Lima, Peru. In collaboration with UNICEF and the Inter-American Child Institute, PAHO was responsible for the organization and conduct of a special course in nutrition for directors of schools of social services. It was held in Montevideo, Uruguay, in 1963 and was attended by 23 persons from 16 countries. A course and seminar on the Planning of the Education Component of Applied Nutrition Programs was held at the University of Puerto Rico in 1964 under the joint auspices of PAHO, FAO, and UNICEF. Twenty persons from five countries attended the course and another five took part in the seminar.

Each year INCAP offered a short course in public health nutrition in both English and Spanish, and an 11-month course in public health nutrition for dietitians.

PAHO has given financial support and advisory services to four short courses on nutrition in public health at the Universities of Belém, Recife, Belo Horizonte, and São Paulo in Brazil. These courses are held annually for public health medical officers and other personnel responsible for nutrition activities in the national or state health services.

Teaching seminars on specific topics such as nutrition in nursing education (INCAP, 1963) and in medical education (Porto Alegre, Brazil, 1965) were organized by PAHO in response to national requests.

During 1965 PAHO established a program to strengthen national training centers for professional personnel in nutrition and dietetics. A questionnaire on existing conditions and facilities was sent to 20 schools of dietetics and nutrition in Latin America, to obtain basic information on staff qualifications, curriculum, admission requirements, etc. Later, a short-term consultant visited 18 schools to appraise conditions in situ and to prepare recommendations for a program of assistance to selected institutions including advisory services, staff training, and teaching equipment. As a preliminary step a meeting of directors of schools has been scheduled for 1966 to define objectives, needs, and resources.

**Applied Nutrition Programs**

During the quadrennium most of the applied nutrition programs under the joint sponsorship of WHO/PAHO, FAO, and UNICEF have developed successfully. Six new programs were begun, and in seven of the existing programs the initial phase was completed and the planned extension of activities was initiated. In December 1965, PAHO, with collaboration from FAO, ILO, and UNICEF, organized a working group to study methods of evaluating national and local applied nutrition programs. A set of detailed protocols covering the fields of health, agriculture, and education were drawn up and, together with the appropriate instructions, were circulated to countries with applied programs during 1966 in order to obtain basic data for a joint PAHO/FAO Seminar on Evaluation of Applied Nutrition Programs, to be held in Colombia in November 1966.

**Research**

An active program of research on nutrition problems was carried out during the quadrennium. In April 1963 a scientific group met in Bogotá, Colombia, under the auspices of PAHO, to discuss research on protein-calorie malnutrition in Latin America. Fifteen persons from 11 countries of the Hemisphere attended the meeting and reviewed the research being done in this field and defined new areas for future research. The conclusions and recommendations of the group were published in Document RES3/2, 1964.

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Mimeographed document.
A collaborative study of nutritional anemias has been undertaken by PAHO as part of a world-wide study of this problem being carried out by WHO. Five laboratories are making specific studies on anemias occurring in pregnancy and infancy according to a study design established at a research coordination meeting (1964) of collaborating workers. An anemia reference laboratory has been established at the Venezuelan Institute for Scientific Research (IVIC), Caracas, Venezuela (1965), for research training and a duplicate checking system. In at least one country participating in this study, specific recommendations arising from this research are being applied through the maternal and child health services.

A collaborative study of endemic goiter and cretinism and their prevention was initiated in 1962, and 11 laboratories in the Americas are participating. This group of investigators has met twice (1963, 1965) under PAHO auspices to present the data they have collected, to recommend procedures for the application of the results, and to define areas in need of further research. An iodine reference laboratory and technical training center has been established in Santiago, Chile (1965), to provide the necessary training for laboratory personnel and a duplicate sample check system to assure unified methods and comparability of data between different laboratories.

A seminar on salt iodization in endemic goiter control was held in 1965 in Salta, Argentina, under the auspices of PAHO and with financial assistance from UNICEF. It was attended by a senior technical officer of the public health service and an expert representing the salt producing interests, from each of 13 countries of the Americas. The recommendations of the meeting were published in the PAHO document entitled: “Informe Final del Seminario sobre Yodación de la Sal para la Prevención del Bocio Endémico.” In order to obtain full information on present conditions of salt iodization for goiter prophylaxis, a survey of Latin America was made prior to the seminar.

The INCAP research program has continued to progress, and special attention has been focused on the effects of protein-calorie malnutrition on physical and mental development and on physical work output. In addition, research has been continued on the development of the product INCAPARINA (see Institute of Nutrition of Central America and Panama). More important still, it marks the introduction into the applied nutrition programs of some of the results of the research which INCAP has been carrying out since its inception. There has also been a considerable increase in the specialized professional education programs and an extension of research into fields of immediate interest connected with nutrition problems in the region.

As far as applied programs are concerned, it was possible, to begin with, to demonstrate that the iodization of salt in the way recommended by the Institute was feasible and effective in controlling endemic goiter in the region. Indeed, as a result of this measure, which was applied by the Government of Guatemala on a national scale in 1960, the prevalence of endemic goiter, which prior to the program had been 38 per cent, was reduced to five per cent by 1965. This demonstration of the desirability of iodizing salt for human consumption, and other activities to stimulate and help countries to apply this procedure carried out by the Institute and the Pan American Health Organization, as well as by other international organizations, have succeeded in reawakening the interest of national institutions in other member countries of INCAP.

Another important part of the Institute’s work has been its research on highly nutritive, low-cost vegetable mixtures intended for use as protein supplements for infants and prepared from local products which fit into the dietary patterns of the inhabitants of the region concerned. These formulas, which bear the name INCAPARINA, have proved effective in offsetting the lack of suitable foods in the diet of infants. For some time the mixtures prepared by INCAP have been produced and successfully distributed through commercial channels in both Guatemala and Colombia. In addition, arrangements are being made for these formulas to be introduced into the other member countries of the Institute and into several others in South America, including Brazil and Venezuela. Figure 25 shows the growth of sales to the public from the time this product was put on the market up to the end of 1965. One no less significant aspect has been the fact that, in addition to showing that the idea was feasible and effective, this INCAP research has encouraged and guided similar activities of many other national and international agencies in other countries of Latin America and other parts of the world.

As for the incorporation of nutrition activities into regular public health programs, special attention has been given to the conduct of expanded nutrition programs which encompass not only the national health agencies but also those responsible for agriculture, education, and other related fields, and which are also sup-

Institute of Nutrition of Central America and Panama

The period covered by this Report marks a further stage in the consolidation of the organization and activities of the Institute of Nutrition of Central America and Panama (INCAP).
ported by and receive technical advice from WHO and FAO and financial assistance from UNICEF. In connection with these programs INCAP has assisted the countries of the region as the technical advisory agency and has provided them with the necessary training facilities for their personnel. These programs are initially carried out in limited areas as pilot projects, and are then enlarged, depending on the availability of the means their execution calls for, in the light of the experience acquired in the first stage. Up to the present time expanded nutrition programs have been operating in five of the six member countries of INCAP; however, in only two of them have they been conducted in a really satisfactory manner.

In accordance with the recommendations of its Council, INCAP has been giving more direct assistance to the regular programs of the agriculture, education, and health agencies.

In the case of agricultural agencies, the Institute has collaborated in agricultural and livestock planning studies to improve and increase the utilization of natural resources, in which the nutritional needs of the population receive priority. In addition, it gave assistance in studies aimed at improving the quality of agricultural and livestock production or the nutritional aspects inherent in the production of foodstuffs, in particular, studies on animal feeding and the improvement of basic foodstuffs; supplementation of these foodstuffs with local products; and

the use of new potential resources for coping with the nutritional needs of the population.

INCAP has also helped educational agencies to determine the most appropriate way of incorporating the fundamental notions of nutrition into public education programs at different levels. During the period under review it gave special attention to programs with an appropriate nutritional content and to the preparation of teaching and reference material, especially material for use in teachers' training colleges so as to improve the teaching of nutrition to future schoolteachers and thereby extend its radius of action.

In the work carried out directly with health institutions, it was thought advisable to give immediate priority to the care of infants suffering from malnutrition, and to assist with the organization and operation of services for that purpose, within the framework of the health agencies. This policy led to the establishment in two member countries of INCAP of nutrition rehabilitation and education services geared to the health organization and the type of problem. These services are already operating very effectively, and this type of assistance is expected to be extended to other interested member countries that are in a position to establish similar programs.

A major event has been the development of long-range national plans by member governments, in particular ministries of health. In the course of this process, it became clear that more accurate numerical information was needed on the prevalent nutrition problems of the whole country as well as the factors responsible for those problems, and their magnitude and effects.

This led to increased interest on the part of INCAP in carrying out studies to obtain such data, which it had not been possible to do earlier because of budgetary limitations and lack of personnel. However, assistance for this purpose was obtained from the member governments and from the Office of International Research of the United States National Institutes of Health. In this way, studies have been launched in the countries and will provide the necessary data not only for appropriate long-range planning of programs, but also for evaluating their results.

In all the member countries clinical nutrition surveys are to be carried out on a national scale and special attention is to be given to the study and quantification of the factors responsible for each country's problems, and of possible resources for solving them. Studies in Guatemala and El Salvador were completed in 1965, and in the other member countries they will be completed during another 18 months of field work. When the results are at hand, work will be begun with the health agencies and institutions concerned and plans will be drawn up for those activities that are considered most urgent.
within the framework of the appropriate programs of such institutions.

INCAP has redoubled its efforts to carry out teaching programs. These educational activities have been of benefit to the member countries as well as to many other countries in Latin America and other parts of the world. Table 41 shows the number and place of origin of the students—for the most part professionals—who attended academic courses at INCAP during the period covered by this Report.

Most of INCAP's former students are today working in the field of study in which they received special training at the Institute, almost all in programs of applied nutrition in their own countries.

The research which the Institute has been carrying on since it was established 16 years ago has been continued in this period with the same interest and devotion as in the past. It centered on the physiopathogenicity and epidemiology of the most prevalent nutritional deficiencies in the region, in particular those connected with protein-calorie malnutrition. Of equal importance are those investigations aimed at developing practical methods for evaluating the nutritional status of population groups; studies on the relationship between nutrition and other ecological factors, especially microbial agents; and the study of the ill effects which malnutrition produces in children (in terms of growth and development) and adults (in terms of work capacity and output). Mention must also be made of studies on the possibilities of making greater use of the food resources available in the area, and especially on the greater availability of appropriate foodstuffs. Finally, it is worth while mentioning a study of the cultural factors influencing the nutrition problems of these populations, and of educational methods for overcoming them.

INCAP has made the results of its research known in 238 scientific articles prepared during this period, of which 103 were in Spanish and 135 in English; most of them were published in widely read scientific journals of international repute.

Finally, during the quadrennium it clearly became urgently necessary to stabilize the regular budget of INCAP, which in the past had been heavily dependent on donations from foreign agencies. It was therefore deemed essential to lay the necessary financial basis for supporting the work of the Institute and for expanding both its services to member countries and its teaching activities. The Pan American Sanitary Bureau therefore asked the Governing Bodies of the Pan American Health Organization for a substantial increase in the direct contribution of that Organization to INCAP's programs, a request that was enthusiastically approved. For their part the member governments of the Institute have also given a favorable reception to a request for an increase in their annual quotas. These two increased payments

| TABLE 41. NUMBER OF PARTICIPANTS IN TRAINING PROGRAMS AT INCAP, 1962-1965 |
|-------------------|-----|-----|-----|-----|
|                   | 1962| 1963| 1964| Total|
| INCAP member countries |
| Costa Rica          | 1   | 2   | 1   | 4   |
| El Salvador         | 9   | 14  | 33  | 54  |
| Guatemala           | 5   | 2   | 21  | 34  |
| Guatemala           | 5   | 2   | 21  | 34  |
| Honduras            | 1   | 1   | 2   | 4   |
| Nicaragua           | 4   | 2   | 2   | 9   |
| Panama              | 2   | 3   | 2   | 7   |
| Total               | 10  | 18  | 23  | 48  |
| Other regions of the Americas |
| Argentina           | 4   | 3   | 3   | 7   |
| Barbados            | 1   |    | 1   | 1   |
| Bolivia             | 4   | 5   | 2   | 11  |
| Brazil              | 1   | 4   | 5   | 14  |
| Chile               | 1   | 4   | 2   | 5   |
| Colombia            | 1   | 9   | 12  | 27  |
| Dominican Republic  | 1   | 1   | 2   | 4   |
| Ecuador             | 4   |    | 4   | 4   |
| Guyana              | 1   |    | 1   | 1   |
| Haiti               | 1   | 1   | 1   | 2   |
| Mexico              | 1   | 2   | 2   | 4   |
| Peru                | 1   | 1   | 1   | 4   |
| Puerto Rico         | 1   | 2   | 2   | 11  |
| Trinidad and Tobago | 1   | 2   | 2   | 4   |
| United States of America | 6   | 14  | 15  | 35  |
| Uruguay             | 2   | 1   | 2   | 5   |
| Venezuela           | 1   | 3   | 3   | 8   |
| Total               | 23  | 34  | 53  | 112 |
| Other regions of the world |
| Ceylon              | 1   | 2   | 2   | 5   |
| France              | 1   | 1   | 1   | 2   |
| Germany             | 1   | 1   | 1   | 3   |
| Greece              | 1   | 1   | 1   | 1   |
| India               | 1   | 2   | 2   | 5   |
| Indonesia           | 1   | 2   | 2   | 5   |
| Iran                | 1   | 2   | 2   | 5   |
| Jordan              | 1   | 2   | 2   | 5   |
| Kenya               | 1   | 2   | 2   | 5   |
| Malaya              | 1   | 2   | 2   | 5   |
| Malaysia            | 1   | 2   | 2   | 5   |
| Sweden              | 1   | 2   | 2   | 5   |
| Switzerland         | 1   | 2   | 2   | 5   |
| Thailand            | 1   | 2   | 2   | 5   |
| Uganda              | 1   | 2   | 2   | 5   |
| Total               | 1   | 2   | 2   | 5   |
| Grand total         | 37  | 54  | 82  | 270 |

*Including six observation visits.
to the regular budget will become effective in 1966 and will make it possible for INCAP not only to stabilize its finances, but also to make better use of additional budgetary resources from other sources; through INCAP's own program of services they will benefit the countries of Central America and Panama in particular, and, through those of the PAHO, the countries of the Hemisphere in general.

Likewise of positive value in this respect will be the expansion of services INCAP foresees as a result of the new facilities of its headquarters, whose construction by the Government of Guatemala is already well advanced.

MENTAL HEALTH

Two important events in the field of mental health characterize the period covered by this Report, and exemplify the increasing importance being given to it in the Region: the establishment of mental health departments or sections in more than half of the health ministries in the Americas; and the incorporation of courses on mental health into the curriculum of more than 90 percent of the medical schools in the Region.

The desire of ministries of health to improve psychiatric services is shown by the establishment of new mental hospitals and the renovation of existing ones.

The ideas of community mental health or social psychiatry has begun to take root in several countries; in some of them, psychiatric wards have been opened in general hospitals and the number of outpatient services has been increased. However, these changes are only just beginning, and much remains to be done to achieve a better utilization of resources and a more appropriate geographic distribution. As yet, the community mental health center providing curative and preventive services to meet the mental health needs of health districts is still only an idea and has not yet been put into practice in Latin America, and even in the United States and in Canada such centers have come into operation only recently.

The expansion of mental health services has been hampered by a shortage of qualified personnel. Although this shortage affects health workers of all types, it is especially marked in the case of psychiatrists, psychiatric nurses, and auxiliary personnel. Several countries have organized residencies in psychiatry, usually lasting for three years, with a view to training more psychiatrists. In some instances the Organization has helped send faculty members abroad for advanced training. Courses in psychiatric nursing for graduate nurses are few and far between, and in view of the serious shortage of this type of personnel every encouragement must be given to the organization of these courses in various places. Policy in this field aims, on the one hand, at assisting institutions so that they can provide their teaching staff with better opportunities for training and, on the other, at stimulating the improvement of existing services and the establishment of community services. In other words the aim is dual: to improve care and to provide more appropriate resources for teaching.

The growing number of requests from Governments for assistance in the organization of psychiatric services and the training of personnel is significant, and in response to them the Organization has provided an increasing number of fellowships in mental health and assigned more short-term consultants to the countries.

There is increasing interest in epidemiological studies, both those covering mental diseases in general and those covering specific conditions such as schizophrenia, epilepsy, mental retardation, and alcoholism, which appear to be serious problems in certain countries and which the Organization considers to be of great importance.

During the quadrennium the Organization held three seminars on mental health with the assistance of the host countries: the first in Cuernavaca, Mexico, in 1962; the second in Buenos Aires, Argentina, in 1963; and the third in Kingston, Jamaica, in 1963. They were attended by medical specialists, nurses, public health officers, police authorities, lawyers, and social workers. The topics discussed included psychiatric care, psychiatric education, the architecture of psychiatric institutions, and other aspects of mental health activities. The meetings led to a better understanding of the problem and to various recommendations for its solution.

In 1964 an intensive training course in mental health was held in Barbados under the joint sponsorship of the Organization and the Caribbean Mental Health Federation and with financial assistance from the Foundation for International Medical Services, Inc. It was attended by 10 physicians and 10 nurses.

A study group on the epidemiology of mental diseases, which met in Washington in 1965, recommended that epidemiological studies on mental diseases in the Hemisphere be carried out and that methods be formulated for use in studies on the prevalence of epilepsy to be undertaken in accordance with Resolution III of the XV Meeting of the PAHO Directing Council. A meeting of a study group on the epidemiology of alcoholism was called to meet in San José, Costa Rica, in June 1966.

37 See Scientific Publication PAHO 81.
38 Scientific Publication PAHO 99.
In one country in the Region an epidemiological investigation is in progress on mental diseases in general and epilepsy in particular. It is jointly sponsored by the United States Army Research Center and the Organization. In another country a study on attitudes and modes of communication in families of schizophrenics has been in progress for the last two years. This study is being financed by the Foundations Fund for Research in Psychiatry and administered by the Organization.

The Mental Health Information Center on Latin America, which is attached to the PASB Mental Health Unit and receives financial support from the U.S. National Institute of Mental Health, has collected considerable information on mental health activities in Latin America. A selected bibliography of books and articles published in the period 1950-1962 has been compiled, and a preliminary directory of Latin American psychiatrists has been prepared. Laws and regulations governing mental patients have been collected, and in 1966 efforts will be made to ascertain which of these are still in force. At the present time the Center is making a survey of the teaching of psychiatry and behavioral sciences in Latin America, and in 1967 the Organization will hold a seminar on that topic.

The Organization assisted the Governments of Argentina (1963), Colombia (1965), Costa Rica (1965), Guatemala (1963-1966), Honduras (1966), Jamaica (1964, 1965, 1966), and Venezuela (1962, 1964) in various matters connected with the administration of mental health services through visits of either short-term consultants or the Regional Adviser in Mental Health.

DENTAL HEALTH

The Organization entered the field of dental health in 1954. Progress since then may be divided into three stages. The first stage, which might be called exploratory, was devoted to a study of dental health problems in the Region and the selection of the following four fields of work:

1. Assistance in the establishment of a regional center for the training of public health dentists.
2. Assistance in the establishment of teaching programs on preventive and social dentistry in dental schools.
3. Assistance in the establishment of auxiliary personnel training programs and demonstrations of the advantage of using such personnel in public health services.
4. Assistance in strengthening the dental health programs of the ministries of health.

During the second stage, 1957-1961, the main focus was the training of specialized personnel in public health, and assistance to departments of health in strengthening their dental health programs. The work of the regional center for the training of public health dentists at the University of São Paulo, Brazil, which has been operating since 1958 with assistance from the Bureau and the W. K. Kellogg Foundation, has already been described. The Organization took an active part during the first international course, held in 1958, in the organization and conduct of the initial courses for dentists. At present public health dentists who graduated from this school are serving in schools of dentistry or public health agencies of all the countries of Latin America.

In the third period, 1962-1965, the main activity of the Organization was the strengthening of direct dental public health programs and, in response to the requests of Governments, of education programs.

Dental Education

In collaboration with the W.K. Kellogg Foundation, the Pan American Sanitary Bureau organized three Latin American seminars on the teaching of dentistry, which were attended by representatives of all schools of dentistry in Latin America. The first, held in Bogotá, Colombia, in October 1962, was attended by faculty members from 17 dental schools in Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela; the second was held in October 1964 in Mexico City and was attended by representatives of dental schools in Costa Rica, Cuba, the Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, and Puerto Rico; the third will be held in Petrópolis, Brazil, in November 1966, and faculty members of 47 schools in Argentina, Brazil, Paraguay, and Uruguay will attend. At these meetings problems of dental education in Latin America have been discussed and recommendations for solving them have been made. The two seminars held to date have had a great influence on teaching in schools of dentistry in Latin America.

In preparation for the seminars the Organization made a survey of the status of dental education in schools of dentistry in Latin America. In 1962 the study covered 18 schools in the countries represented at the first seminar; in 1964 it covered 18 schools in Middle America; and preparations are being made for a survey of dental education in the remaining 47 dental schools in Argentina, Brazil, Paraguay, and Uruguay in 1966. These two surveys showed that schools of dentistry face a series of problems connected with the basic science, clinical, social, and public health aspects of training.
Concurrently with the organization of the seminars the Bureau actively encouraged the formation of an association of dental schools in Latin America that would apply the recommendations of those meetings. It helped establish the Latin American Association of Dental Schools (ALAFO) and collaborated in the organization of the First Latin American Assembly and the First International Course on the Teaching of Dentistry held in Bogotá in 1962, and the Second Assembly and the Second Course held in 1964; in the establishment of the General Secretariat of ALAFO in Guatemala City in 1965; and in the organization of the Third Assembly and the Third Course on Dental Education to be held toward the end of 1966.

The Organization has also encouraged the establishment of departments of preventive and social dentistry in several of the dental schools in Latin America. The first pilot department was established in Colombia in 1962, and it has already had an influence in at least five Latin American countries. As a result of the inclusion of the teaching of preventive and social dentistry in all the years of the dental course, the dentists now leaving the schools are taking a more active part in solving national and local dental health problems. The Organization cooperated in the training of faculty members and gave technical advice on teaching programs and the assignment of extra-curricular work to students. In Colombia preparations are being made for a project in which public health will be taught to combined groups of medical and dental students; this project will be useful in gauging the feasibility of a more intimate combination of the teaching programs of dental and medical schools in Latin America, which would enable maximum use to be made of physical facilities and teaching staff.

Mention must also be made of the assistance given by the Organization to the University of Puerto Rico in 1964 in connection with the First Hemispheric Conference on Dental Health, which was attended by outstanding representatives of public health dentistry and dental education, as well as of the dental associations of the United States and Latin America. Of the Latin American representatives, 90 per cent were graduates in public health dentistry of the University of São Paulo, Brazil.

Dental health and dental education in the Central American Isthmus was also studied with assistance from the Organization. Since 1962 the Pan American Sanitary Bureau has been collaborating in the annual public health round tables of the Dental Federation of Central America and Panama. As a result of a series of meetings in Venezuela on dental education, held in association with the Bureau, it was decided to reorganize the curriculum of dental schools; establish a department of preventive and social dentistry at the Central University of Venezuela, supported by the School of Dentistry of Zulia University at Maracaibo; survey the status of dental education in the country; and prepare a dental training program geared to actual conditions in the country and future needs.

On several occasions the Governments have asked the Bureau for assistance in various aspects of public health, and in the preparation of study programs for the training of dentists; in Panama assistance has been given to the University in preparing plans for the building of the new dental school and drawing up a study plan. The same type of assistance was given to the School of Dentistry of San Luis Gonzaga University, Ica, Peru, which is preparing a joint program together with the Ministry of Public Health and Social Welfare; and also to El Salvador in connection with the establishment of a department of preventive and social dentistry in the Dental School, and for the integration of the teaching programs with the activities of the Ministry of Public Health and Social Welfare.

To sum up, in the field of professional education the Bureau has helped to prepare study plans geared to the local needs of dental students; to train faculty members in various fields; to draw up study plans; and to disseminate the results of educational experiments through seminars on dental education.

Special attention has also been given to postgraduate education. Courses for the training of public health specialists were held in São Paulo, Brazil, and attended by 64 dentists between 1962-1965, of whom 32 came from 11 Latin American countries (Table 42); local courses were organized for supervisors and instructors in dental schools; and arrangements were made for the translation and distribution of specialized literature. In 1965 preparations were made for the First International Course on Oral Microbiology, which will be held in Brazil in 1967 for faculty members of dental schools of Brazil and adjacent countries.

To meet the need in Latin America for a textbook suitable for public health dentists, in 1962 3,500 copies of a book entitled Odontologia sanitaria (Scientific Publication PAHO 63) were printed and widely distributed. In addition, during the quadrennium the final reports of the Latin American seminars on the teaching of dentistry held in Bogotá (1962) and in Mexico (1964) were distributed. Scientific Publication PAHO 77 published in May 1965 and Scientific Publication PAHO 121 published in October 1965 contain the principal working documents and the final reports of the seminars, and the results of the survey of the status of dental education in the countries in which they were held.

Throughout the period support was given to the training of specialized public health personnel at the Regional

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<tr>
<td>Uruguay</td>
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</tr>
<tr>
<td>Venezuela</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>34*</td>
<td>55</td>
<td>64</td>
<td>119</td>
</tr>
</tbody>
</table>

— None.

* In addition, some 20 dentists from Argentina attended the Santa Fe School of Public Health from 1948 to 1964.

Center for Dentists in São Paulo, Brazil, and assistance to programs for providing curative services to the greatest possible number of persons and for making the maximum use of knowledge of dental health problems in the Hemisphere was increased. Aid was also given in connection with the training of professional and auxiliary personnel and with operational and administrative research.

The Organization collaborated in the international forum organized by the American Dental Association in Miami in 1962, which examined various facets of dental health in the Americas. A plan of assistance to Governments for the identification of health problems and of the resources available for ensuring the inclusion of the dental component in national health plans was also drawn up. In collaboration with the Government of Colombia plans were made for the inclusion of certain aspects of dentistry in the survey of health manpower and medical education being carried out in the country. Together with the Government of Venezuela, a feasibility study was made of a plan for the coordinated development of dental education and dental health activities by means of which it would be possible to measure the status of dental health in the country; analyze the social, anthropological, financial and other factors involved; evaluate the human and physical resources available in the country; and review the type of dental practice and the type of education being given in dental schools. When this survey is completed, probably in 1967 or 1968, a start will be made on the integrated planning of dentistry at the university, in private practice, and in government agencies providing dental services.

Other Activities

A plan was drawn up for a long-range dental research program. The first effort of this kind ever made was the assistance the Bureau gave in 1963 in ascertaining the effectiveness of kitchen salt as a vehicle for fluoride in the prevention of dental caries. This experiment was carried out in four communities in Colombia and up to the present time the results have been satisfactory. The first step, to get fluoridized salt accepted by the community, has given promising results and the first epidemiological evaluation, which is expected to be made in mid 1966, will ascertain whether the fluoridized salt is preventing caries. By 1968 sufficient time will have elapsed to show whether the procedure used should be recommended for general use. This investigation is being carried out by the University of Antioquia with assistance from the U.S. National Institutes of Health and the Bureau.

In 1964 the First International Center for Dental Epidemiology and Research was established; it operates under an agreement between the Bureau and the University of São Paulo, Brazil, and with the cooperation of the W.K. Kellogg Foundation and the U.S. Public Health Service. Among the main functions of this Center is the training, in epidemiology and research, of public health dentists from Latin America so that they can assist in the solution of dental health problems. Preparations were completed for the first international course for public health dentists to be held in 1967; after it has been evaluated it is hoped to continue with regular courses designed to cope with the needs of the countries.

During the quadrennium preventive measures were intensified; assistance to the Governments of Brazil and Colombia in fluoridation of water supplies was continued. A plan of action was drawn up for promoting the fluoridation of public water supplies in Latin America. A survey of the status of fluoridation in Latin America was first made in 1964 and served as a basis...
for the approval 40 by the XV Meeting of the Directing Council in September 1964 of the intensification of fluoridation in cooperation with dentists and engineers. In accordance with this new policy a five-year plan for promoting fluoridation was drawn up, divided into a training phase, a promotion phase, and a phase of technical assistance in the design, operation, and maintenance of water systems. It is hoped that financial assistance from the Kellogg Foundation and the cooperation of several international credit agencies will be forthcoming for this plan.

Toward the end of this period a plan to promote the training of auxiliary dental personnel was initiated. Studies were undertaken to identify an area in Latin America where experiments with new types of auxiliary personnel providing dental services direct to large segments of the population could be carried out. In addition, the distribution of specialized literature for motivational purposes was begun.

The Organization collaborated with the Government of Argentina in reorganizing the syllabus of the dental hygienist course which is organized by the health services of the Armed Forces, and with the University of Antioquia in Colombia.

A guide for the training of auxiliary dental personnel is being drawn up and will serve as the basis for experiments in the training of new types of personnel.

The Bureau has collaborated with professional associations in Colombia and Venezuela in the planning of a program for providing large segments of the population with low-cost dental care through dispensaries maintained by the associations, staffed by private practitioners, and technically assisted by the Government. These preliminary experiments will show how dental associations can contribute, together with the Governments, to the solution of dental health problems.

In Argentina assistance was given in connection with an intensive course on public health dentistry for members of the National Dental Association, and the Bureau participated in technical meetings on this subject held in Chile and Costa Rica in 1965.

**RADIATION AND ISOTOPES**

The use of radiation and isotopes in medicine as well as in industry demands proper understanding of both the potential benefits and the potential health hazards associated with these tools. Foreseeing that these needs, as well as the use of nuclear energy as a source of power, will continue to increase and spread and that the need for understanding and adopting protective measures will increase accordingly, the Organization continued to develop its comprehensive program designed to: (a) stimulate national health services to establish radiation protection services and adopt international standards, procedures, and regulations in the use of X-rays and radioisotopes and the disposal of radioactive wastes; (b) promote the teaching of basic health physics, radiobiology, and radiation protection techniques in professional schools; (c) organize training courses on the medical uses of radioisotopes, and for professional and para-professional personnel for the newly established radiation protection health services; and (d) encourage research on the use of radiation of medical, public health, or veterinary significance.

The program to stimulate the establishment of radiation protection services in the health ministries of the countries of the Americas and the training of the necessary inspectors has been strengthened by the recruitment of a radiation physicist in the latter part of 1964. From Lima, Peru, his base of operations, the radiation physicist has visited more than 10 countries and spent many weeks in each, giving assistance and advice on the organization of radiation protection services.

Three films translated from the original English into Spanish and produced in the latter language have been used extensively in public health and medical schools throughout the Americas for teaching purposes as well as for providing members of various medical and specialist societies with some insight into the subjects of radiobiology, radiation physics, and radiation protection techniques. A set of teaching slides, originally produced by the American College of Radiology (ACR), was modified for use in Latin America, translated into Spanish, and distributed in the Americas. These slides are designed to help physicians and dentists appreciate the potential hazards of ionizing radiation and to assist them in applying proven techniques for reducing the dose of radiation to the patient. In addition, thousands of copies of a booklet designed for the same purpose and produced in Spanish by the ACR, were purchased by the Organization for distribution to schools of medicine and related sciences and to medical and dental societies.

The translation into Spanish and the editing of the manual entitled “Basic Radiological Health,” produced originally by the U.S. Public Health Service, was completed. It is now being re-edited by the USPHS and will be printed by them in Spanish for the Organization to distribute to the various Latin American schools of medicine and related sciences. Lectures were also given at these schools on the need for incorporating radiation physics, radiobiology, and radiation protection into their curricula.

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40 Resolution XXIII. Official Document PAHO 58, 77.
The center established in 1961 at the University of Chile (and jointly financed by PAHO and the W.K. Kellogg Foundation) to train specialists in the use of radioisotopes in medical diagnosis and therapy, graduated 22 persons (21 physicians and one medical technician) in the four years beginning in 1962. In addition to studying the general clinical uses of radioisotopes, each fellow specialized in one and sometimes two particular areas, including gastroenterology, endocrinology, cancerology, hematology, cardiology, and urology.

Table 43 indicates for each year the country of origin and duration of study of the fellows who attended the courses.

Additionally, fellowships to enable persons to study radiation protection, radiochemistry procedures, cytogenetics as related to radiation, and roentgentherapy were also awarded. An international course on radiation protection and public health responsibilities in radiation was given in 1964 for high-level public health personnel.

The services of short-term consultants were made available to provide advice in two general areas of research recommended by a research advisory group on radiation which met at PAHO Headquarters in 1962. Three operating projects have come out of these activities:

1. Manganese Poisoning—A Metabolic Disorder

The U.S. Public Health Service has approved a third year's grant for this program. By means of neutron activation analysis of samples from apparently healthy miners as well as manganese intoxicated ones working in Chile, which is being carried out at the Brookhaven National Laboratories in New York, an attempt is being made to determine the levels of manganese in various tissues and body fluids and to relate these levels to various stages of intoxication and thus elucidate the mechanisms by which chronic industrial inhalation of manganese ores induces a schizophrenia-like syndrome followed by either Parkinsonism or a syndrome similar to "Wilson's disease."

2. High Background Radiation Areas in Brazil

The U.S. Atomic Energy Commission has given financial support to the Biophysics Institute of the University of Brazil and the Catholic University's Department of Physics, in Rio de Janeiro, in carrying out physical and biological studies in the areas of high natural background radiation in Brazil. The objective of this project is to ascertain the extent to which abnormally high radiation levels exist and to determine whether biological effects can be identified in the indigenous population.

The program continues to be coordinated by a consultant who is sent to Brazil twice a year under the auspices of PAHO. This consultant reports that excellent progress has been made. Some of these results, both in physics and biology, were used for the 1965 meeting of the United Nations Scientific Committee on the Effects of Atomic Radiation.

3. Investigation of the Biology and Ecology of Rhodnius prolixus

This project is now in its second year of cooperation between the Venezuelan Institute for Scientific Research (IVIC) and the Atomic Energy of Canada, Ltd. (AECL), under a grant approved by the U.S. National Institutes of Health (NIH/USPHS). A number of interesting findings have been reported, including the fact that 8,000 to 20,000 R interferes seriously with the mating behavior of the male. Significant lethality was also observed in eggs from females mated to males treated with 5,000 R. By using Cobalt 60 labelling it has been possible to prove that R. prolixus is not strictly an intradomesticary insect, an important fact in the epidemiology of Chagas' disease, which is transmitted by this vector.

Air and Food Surveillance

To determine the radionuclide content in air, sampling stations were established in Argentina, Chile, Jamaica, Peru, Trinidad, and Venezuela. The monitoring of
gross beta activity in air is being carried out under the auspices of a collaborative radiological program between the Organization and the U.S. Public Health Service. These sampling stations are manned by local personnel; the sampling equipment was provided by the USPHS, which is also responsible for the laboratory analyses; and the Organization provides the stations with administrative and reporting services.

Food sampling is the second step in the determination of the radioisotope contamination of the biosphere. Collection of composite milk samples has been initiated at two of the air collection stations. Analysis for radionuclides such as Strontium 89, Strontium 90, Cesium 137, and Iodine 131 is carried out by the USPHS under the same collaborative arrangements as for the air surveillance stations.
III. EDUCATION AND TRAINING

PROFESSIONAL AND AUXILIARY PERSONNEL

SCHOOLS OF PUBLIC HEALTH

During the quadrennium the work of the Organization was expanded to encompass activities with the schools of public health of Latin America and those of the United States and Canada. As in the past, the Organization sponsored the biennial conferences for the deans and professors of the schools of public health of Latin America.

The Third Conference was held in 1963 in Sao Paulo, Brazil, and dealt with the teaching of public health administration in schools of public health of Latin America; it was attended by the deans and professors of public health administration of the Schools of Public Health of Argentina, Brazil (three schools), Chile, Colombia, Mexico, Puerto Rico, Peru, and Venezuela. The Fourth Conference, held in 1965 in San Juan, Puerto Rico, discussed the teaching of epidemiology in public health schools of Latin America, and was attended by the deans and professors of epidemiology of the schools mentioned above.

A Study Group composed of the deans of the 10 schools of public health in Latin America met in Buenos Aires, Argentina, in November 1964, to draw up a set of guidelines for such schools.

The basic standards the schools should meet were defined and a definitive definition of a school of public health was drawn up, covering legal status and organizational structure; student body and faculty; physical facilities, curriculum, and content of the program; teaching methods and field work.

Two traveling seminars were organized to visit Europe (1963) and the Middle East (1965) to study the organization and administration of schools of public health.

The first visited schools in London, England; Edinburgh, Scotland; Leyden, Holland; and Zagreb, Yugoslavia. The second visited schools in Alexandria, Egypt; Beirut, Lebanon; and Ankara, Turkey. The deans of all the schools of public health of the United States and Canada participated.

A consultant was attached to the CSUCA (Consejo Superior Universitario Centro Americano) to advise on the need for, and the possibility of, financing and staffing, a School of Public Health for Central America.

For the purpose of including the basic elements of medical care in the teaching of public health administration, a special consultant visited the schools of public health of Latin America in 1964. As a result, several of the newer schools have incorporated the teaching of medical care in their curricula.

The Organization produced a series of filmstrips to assist in the teaching of specific subjects in professional schools in the health field. A total of 12 filmstrips were produced and distributed to teaching institutions in all parts of Latin America.

MEDICAL EDUCATION

During the quadrennium, important advances were made by Member Governments in the establishment of national health plans and policies and in the development of well-conceived programs to meet national health manpower requirements. In an effort to determine these needs and draw up plans to meet them, the Pan American Health Organization convened an Advisory Group on Medical Education in February 1962.

Distinguished medical educators of the Hemisphere discussed the problem and prepared a series of recommendations that were endorsed by the Task Force on Health at the Ministerial Level, convened by PASB in
nars organized by PAHO in 1962-1965. Deans and professors participated in three traveling seminars to enable deans and key faculty members to study various programs of medical education and administration and organization. A total of 35 members were in progress. In addition, PAHO/WHO organized advisory services to 36 medical schools in 19 countries in the Americas. The purpose of these advisory services was improvement of the teaching program in a specific branch of the medical sciences; incorporation of a new subject into the curriculum or modernization of the whole curriculum; inclusion of the teaching of preventive and social medicine throughout the medical education program; development of laboratory and library services; development of medical research activities; establishment of training programs for faculty members; and introduction of pedagogical approaches to medical training.

Medical schools in Latin America continued to improve and develop their education and training programs at all levels—in premedical, undergraduate, postgraduate, and continuing medical education. In the period 1962-1966 a total of 103 visits were made by PAHO/WHO permanent staff and short-term consultants to provide advisory services to 36 medical schools in 19 countries in the Americas (see Table 44). The purpose of these advisory services was improvement of the teaching program in a specific branch of the medical sciences; incorporation of a new subject into the curriculum or modernization of the whole curriculum; inclusion of the teaching of preventive and social medicine throughout the medical education program; development of laboratory and library services; development of medical research activities; establishment of training programs for faculty members; and introduction of pedagogical approaches to medical training.

Existing institutional resources in several regions in Latin America are being developed, with the collaboration of PAHO, as training centers for medical teachers in various fields: in social pediatrics in Chile and Colombia, and microbiology in Brazil. Plans for similar centers on medical demography in Brazil and Chile are well advanced and others for the teaching of pathology are in progress. In addition, PAHO/WHO organized traveling seminars to enable deans and key faculty members to study various programs of medical education administration and organization. A total of 35 deans and professors participated in three traveling seminars organized by PAHO in 1962-1965.

A significant feature of the PAHO faculty training program is its work in the medical pedagogy. Entitled "Laboratory of Human Relations and Medical Teaching," these courses are "workshops" of two weeks' duration, six days a week and at least six hours a day, and consist of a carefully balanced program of open discussions, readings, skill exercises, personal interviews, and informal talks in which the participants analyze various aspects of medical teaching. The activities are carried out in groups of 15 persons, each with two trained leaders. In some activities all groups work together. The participants are usually chosen from among persons interested in new methods of teaching and in improving teacher-student relations. In the period 1962-1965 a total of 320 teachers from 33 medical schools in 12 countries received training in courses of this type organized by PAHO in Brazil, Chile, Colombia, El Salvador, and Venezuela. It is expected that by the end of 1966 almost every country in Latin America will have been covered by this program.

In November 1962, during the Third Conference of Schools of Medicine of Latin America (Viña del Mar, Chile), the Pan American Federation of Associations of

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**Table 44. Schools of Medicine Receiving Assistance, and Number of Visits from PAHO/WHO Permanent Staff and Short-Term Consultants to Provide Advisory and Consultation Services, 1962-1965**

<table>
<thead>
<tr>
<th>Area</th>
<th>Schools of medicine receiving assistance (1962-1965)</th>
<th>Number of services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1962</td>
<td>1963</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>15</td>
</tr>
<tr>
<td>Argentina</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Brazil</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Chile</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Colombia</td>
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<td>1</td>
</tr>
<tr>
<td>Costa Rica</td>
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<td>3</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Ecuador</td>
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<td>2</td>
</tr>
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<td>El Salvador</td>
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<td>2</td>
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<td>Guatemala</td>
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</tr>
<tr>
<td>Haiti</td>
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</tr>
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<td>2</td>
</tr>
<tr>
<td>Mexico</td>
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<td>2</td>
</tr>
<tr>
<td>Nicaragua</td>
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<td>1</td>
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<tr>
<td>Panama</td>
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<td>1</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Peru</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Uruguay</td>
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<td>1</td>
</tr>
<tr>
<td>Venezuela</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

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None.
Medical Schools was founded. The idea of creating an organization representing all the medical schools of the Americas, which could contribute in an organized manner to the advancement of medical education, originated in a Latin American seminar on the teaching of preventive medicine organized by PAHO/WHO in 1955. The Federation has devoted its principal effort to the development and strengthening of national associations of medical schools. The Organization has rendered strong support to the Federation. The headquarters of the Federation were installed in the PASB Zone V Office in March 1965, and a close working relationship has been developed for joint planning and execution of medical education projects. In 1965 the Federation was officially recognized by the Directing Council as a nongovernmental agency representative of the medical schools of the Americas.

Recognition of the basic importance of medical education in improving public health has led private, government, and international agencies to participate and become involved in international cooperation for medical education. In 1952 PAHO organized the Medical Education Information Center (MEIC) to promote these international activities through the mutual exchange of information and experience concerning problems of program development and policies and plans. Representatives of the participating agencies meet each year for one or two days at the MEIC. The Center organizes an annual meeting supported by 16 agencies, including the Kellogg, Rockefeller, and Milbank Memorial Foundations, the U.S. Agency for International Development, and the U.S. Public Health Service; the PASB provides the locale and the staff for the secretariat. Each year the Center issues a complete list of projects in Latin America of each of the agencies and of the fellowships they have granted in the field of medical education.

VETERINARY MEDICINE EDUCATION

The role of the veterinarian in the public health services calls for a more and more thorough professional training. In the last four years there has been an increase in the number of schools of veterinary medicine in the Hemisphere, most of which have broadened their educational outlook and reoriented their academic objectives, especially in the matter of preventive medicine and public health. The Organization has continued to assist in these and other activities designed to improve the training of veterinary personnel. During the quadrennium eight specific projects have been organized with schools of veterinary medicine in Latin America, and almost all the countries have benefited through the regional veterinary education program.

The Second Seminar on the Teaching of Preventive Medicine and Public Health in Schools of Veterinary Medicine in the Americas, convened by the Organization, was held in Mexico City in August 1963. Thirty schools of veterinary medicine in the Hemisphere were represented by five deans and 36 professors of preventive medicine and public health. The Seminar evaluated the progress made since the First Seminar, held in Kansas City in 1959, and discussed the inclusion of public health and preventive medicine into the curriculum of their schools.

In October 1964 the Organization convened a meeting at Chapel Hill, North Carolina, of the Coordinating Committee on the Teaching of Preventive Medicine and Public Health in Schools of Veterinary Medicine in the Americas, which reviewed the preventive medicine and public health syllabi of several veterinary medicine schools in the Hemisphere and examined the possibility of establishing systems of course evaluation and accreditation. The Committee drew up a set of minimum standards for teaching public health, which was widely distributed to the schools.

In 1964 and 1965 the Organization expanded its collection of syllabi of schools of veterinary medicine in the Americas with a view to providing the schools with a comparative study of the type of professional training being given in each country. At present there are 64 schools of veterinary medicine in the Americas distributed in 16 countries. As is shown in Figure 26, 19 of these schools were established between 1958 and 1965, and 17 are situated in Latin American countries. The Organization helped plan the establishment of some of them and is actively collaborating in their operation.

Although the Organization’s projects in this field are mainly devoted to strengthening professional education, special attention is also being given to the teaching of public health and preventive medicine. Table 45 shows the progress achieved between 1957 and 1965, with the assistance of the Organization, in the teaching of these subjects in veterinary medicine schools in the Americas. The increase in the number of schools, students, and graduates has been paralleled by the introduction of public health into the professional curriculum; 26 schools now have a department of public health; in 90 per cent of the schools, public health is included in the curriculum; and the number of full-time and part-time teachers has increased five-fold since 1957.

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45 Resolution XXXVIII. Official Document PAHO 66, 89.
46 See Scientific Publication PAHO 96.
During the period under review the Organization has attached consultants to schools of veterinary medicine in Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Peru, Uruguay, and Venezuela. They have assisted the schools in organizing their syllabi for courses in public health, preventive medicine, and related subjects, and in reviewing their curricula and research projects.

With the collaboration of the Pan American Foot-and-Mouth Disease Center and the Pan American Zoonoses Center, reagents, biological products, and technical publications on zoonoses and food hygiene have been sent to veterinary schools in Brazil, Chile, Colombia, Ecuador, Guatemala, and Peru.

The Professional Education Branch of the Organization has provided all the schools of the Hemisphere with technical publications and audiovisual aids.

**NURSING EDUCATION**

During the past four years the Organization's major concern in the field of nursing education has continued to be the upgrading of basic schools of nursing, and the broadening of their programs of study to include the social and health aspects of nursing as well as preparation for teaching and supervision. The growing realization that direct care of patients and services to families and communities were in the hands of large numbers of untrained nursing personnel led to the initiation in many
countries of projects to give at least six months' training to new personnel and to as many as possible of the auxiliaries already employed in the services. Furthermore, it was found that in order to strengthen the basic programs and the courses for auxiliaries it was also necessary to upgrade the preparation of nursing instructors, and this led to the establishment of both short-term and academic courses for graduate nurses. The Organization therefore collaborated with Member Countries in launching a three-pronged attack on the problem of improving nursing care through strengthening nursing education at three levels.

Basic Nursing Education

The results of the Organization's efforts through counseling and through direct collaboration with nursing schools in different countries are depicted in the following tables, which show the growth in the number of schools that require candidates to have a pre-university entrance level education. The policy of the Organization is that in each country there should be at least one school preparing nurses at this level, and Tables 46 and 47 show that this objective is being attained in all but five countries. El Salvador, Mexico, Peru, and Venezuela have either recently started university schools of nursing or are planning to do so in 1966.

Training of Nursing Auxiliaries

Table 48 shows that during the five-year period beginning in 1960 a total of 22,447 nursing auxiliaries were trained in courses of six to 18 months, and that the trend is toward an increase in this effort.

An experiment was initiated in 1965 to prepare self-instructional materials on various aspects of nursing, such as units of study on immunization, on asepsis, etc., for use by auxiliaries who have completed primary schooling. It is hoped that there will be some guidance by graduate nurses, but often the latter will have had very little preparation as instructors aside from an intensive briefing on the use of programmed instruction materials. The results of the experiment will not be measurable for another two or three years, since the

<table>
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<th>Country</th>
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<th>9-10 years</th>
<th>11-12 years b</th>
<th>1965 Total</th>
<th>9-10 years</th>
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<td>2</td>
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<tr>
<td>Total</td>
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<td>61</td>
<td>25</td>
<td>104</td>
<td>39</td>
<td>65*</td>
</tr>
</tbody>
</table>

* Based on Directory of Schools of Nursing in Latin America, 1965, and on Survey of Schools of Nursing in Latin America, 1959. Refers only to schools which require nine years or more of general education for entrance and three years or more of full-time attendance in the program of nursing education.

b Complete pre-university education in these countries.

* Includes one school which reported after Directory was completed.
TABLE 47. NUMBER OF STUDENTS IN SCHOOLS OF NURSING IN LATIN AMERICA *  
REQUIRING NINE YEARS OR MORE OF SCHOOLING FOR ENTRANCE, 1959 AND 1965

<table>
<thead>
<tr>
<th>Country</th>
<th>1959 Total</th>
<th>9-10 years</th>
<th>11-12 years b</th>
<th>1965 Total</th>
<th>9-10 years</th>
<th>11-12 years b</th>
</tr>
</thead>
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<td>50</td>
<td>242</td>
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<td>0</td>
<td>94</td>
<td>100</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
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<td>1,426*</td>
<td>59</td>
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<td>0</td>
<td>815*</td>
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<tr>
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<td>0</td>
<td>341</td>
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<td>359</td>
</tr>
<tr>
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<td>427</td>
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<td>188</td>
<td>0</td>
<td>188</td>
</tr>
<tr>
<td>Cuba</td>
<td>0*</td>
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<td>0</td>
<td>1,028</td>
<td>1,028</td>
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<td>Dominican Republic</td>
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<td>38</td>
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<td>177</td>
<td>0</td>
<td>319</td>
<td>319</td>
<td>0</td>
</tr>
<tr>
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<td>0</td>
<td>132</td>
<td>113</td>
<td>0</td>
<td>113</td>
</tr>
<tr>
<td>Haiti</td>
<td>86</td>
<td>0</td>
<td>86</td>
<td>83</td>
<td>0</td>
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</tr>
<tr>
<td>Honduras</td>
<td>16</td>
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<td>31</td>
<td>0</td>
<td>31</td>
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<tr>
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<td>0</td>
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<td>0</td>
<td>146</td>
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<tr>
<td>Paraguay</td>
<td>61</td>
<td>27</td>
<td>34</td>
<td>95</td>
<td>11</td>
<td>84</td>
</tr>
<tr>
<td>Peru</td>
<td>760</td>
<td>760</td>
<td>0</td>
<td>865</td>
<td>865</td>
<td>0</td>
</tr>
<tr>
<td>Uruguay</td>
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<td>118</td>
<td>0</td>
<td>218</td>
<td>147</td>
<td>71</td>
</tr>
<tr>
<td>Venezuela</td>
<td>0*</td>
<td>0</td>
<td>0</td>
<td>631</td>
<td>631</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,833</strong></td>
<td><strong>3,299</strong></td>
<td><strong>1,534</strong></td>
<td><strong>9,169</strong></td>
<td><strong>5,737</strong></td>
<td><strong>3,432</strong></td>
</tr>
</tbody>
</table>

* Based on Directory of Schools of Nursing in Latin America, 1965, and on Survey of Schools of Nursing in Latin America, 1959. Refers only to schools which require nine years or more of general education for entrance and three years or more of full-time attendance in the program of nursing education.

b Complete pre-university education in these countries.

* Number of students not specified for one school.

d Eight schools not reporting.

* All schools had entrance requirements of less than nine years of general education.

f Includes 22 students from one school which reported after Directory was published.

study units being prepared will only become available for field testing in 1966 and for general use in 1967.

Postbasic Education

In 1964 almost all countries had postbasic courses for preparing graduate nurses in specialties such as obstetrics, public health, teaching and supervision, and administration of nursing services. A total of 493 nurses in 17 countries attended postbasic courses in nursing in that year.

FELLOWSHIPS

The continuing expansion of the national health services of the Member Countries of PAHO during the quadrennium led to an increasing demand for well-trained technical, professional, and auxiliary personnel and highlighted the shortage of personnel available for teaching medicine and related sciences.

Most of the countries organized their own education and training programs for the preparation of the personnel they need. Nevertheless, they sought international assistance in order to accelerate and facilitate the training of their personnel.

As a result there was a significant expansion of the fellowship program, the number of fellowships having increased by 22 per cent during the quadrennium, from 2,098 in the previous four-year period to 2,569 (Figure 27).

Table 49 shows the distribution of fellowships by country of origin of the fellows and by type of training. It will be seen that the highest percentages were awarded for fellowships for academic studies leading to a diploma or certificate as a specialist in public health (37 per cent) and for those to enable students to attend intensive short courses (41 per cent). The number of short courses was
TABLE 48. NUMBER OF NURSING AUXILIARIES TRAINED IN LATIN AMERICA,5
IN COURSES OF SIX TO 18 MONTHS, 1960-1964

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<td>Argentina</td>
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<td>158</td>
<td>126</td>
<td>161</td>
<td>219</td>
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<td>Bolivia</td>
<td>160b</td>
<td>14</td>
<td>...</td>
<td>21</td>
<td>45</td>
<td>80</td>
</tr>
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<td>Brazil</td>
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<td>852</td>
<td>963</td>
<td>1,098</td>
<td>1,121</td>
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<td>3,117a</td>
<td>308</td>
<td>335</td>
<td>512</td>
<td>744</td>
<td>1,018</td>
</tr>
<tr>
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<td>234</td>
<td>398</td>
<td>490</td>
<td>440</td>
</tr>
<tr>
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<td>341b</td>
<td>43</td>
<td>45</td>
<td>89</td>
<td>75</td>
<td>89</td>
</tr>
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<td>1,110</td>
<td>1,595</td>
<td>691</td>
</tr>
<tr>
<td>Dominican Republic</td>
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<td>25</td>
<td>23</td>
<td>...</td>
<td>28</td>
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<td>317</td>
<td>20</td>
<td>20</td>
<td>50</td>
<td>112</td>
<td>115</td>
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<td>76</td>
<td>159</td>
<td>163</td>
<td>175</td>
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<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Honduras</td>
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<td>20</td>
<td>28</td>
<td>24</td>
<td>31</td>
</tr>
<tr>
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<td>895</td>
<td>172</td>
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<td>98</td>
<td>292</td>
<td>228</td>
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<td>35</td>
<td>56</td>
<td>108</td>
</tr>
<tr>
<td>Panama</td>
<td>173b</td>
<td>...</td>
<td>...</td>
<td>29</td>
<td>34</td>
<td>110</td>
</tr>
<tr>
<td>Paraguay</td>
<td>226</td>
<td>57</td>
<td>52</td>
<td>44</td>
<td>33</td>
<td>40</td>
</tr>
<tr>
<td>Peru</td>
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<td>15</td>
<td>21</td>
<td>351</td>
<td>148</td>
<td>254</td>
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<tr>
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<td>614</td>
<td>552</td>
<td>794</td>
<td>435</td>
</tr>
<tr>
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<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Total</td>
<td>22,447</td>
<td>2,758</td>
<td>3,341</td>
<td>4,765</td>
<td>6,088</td>
<td>5,495</td>
</tr>
</tbody>
</table>

... No data available.
* Based on data obtained from questionnaires sent to Zone Nurse Advisers.
b In four years.
* Data reported by National Health Service, March 1966.
+ In addition, Mexico has trained 969 auxiliaries and Peru, 538 auxiliaries in courses of three months.
* Includes one course of three to five months.
* In three years.

considerably larger (114 per cent increase) than that in the two previous four-year periods (131 in the period 1961-1965 and 61 in the period 1958-1961); the largest proportions were for environmental sanitation and medical education. Travel grants, as always, accounted for about 22 per cent, which was in accordance with the program priorities established.

The distribution of fellowships by field of study (Table 50) shows the trend of the programs sponsored by the Governments and the Organization during the quadrennium, since fellowships are normally an integral part of some national program that is being carried out or is about to be started in collaboration with the Organization. Hence, there was a predominance of fellowships for environmental sanitation studies (20 per cent), the number of which, 521, was almost equal to the sum of those awarded in the two previous four-year periods: 525 (Figure 28). This increase, largely in the number of intensive short courses held under the auspices of the Organization, shows that environmental sanitation programs received high priority in the last four years.

Figure 28 also shows that there was a considerable increase in the number of fellowships awarded to teachers in schools of medicine and public health. The number of these fellowships during the quadrennium (357) was almost twice the sum of those awarded in the two previous four-year periods (171). This increase is due in particular to the importance given to short courses on pedagogical methods in the teaching of medicine.

The percentage of fellowships awarded during the quadrennium for studies in public health administration and in nursing was also high, although it remained...
Table 49. Fellowships Awarded in the Americas, by Country of Origin and Type of Training, 1962-1965

<table>
<thead>
<tr>
<th>Country of origin</th>
<th>Type of training</th>
<th>Courses organized or assisted by PAHO or WHO</th>
<th>Regular academic courses</th>
<th>Travel grants and other awards</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Special</td>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>60</td>
<td>23</td>
<td>69</td>
<td>30</td>
<td>182</td>
</tr>
<tr>
<td>Bolivia</td>
<td>30</td>
<td>17</td>
<td>13</td>
<td>17</td>
<td>77</td>
</tr>
<tr>
<td>Brazil</td>
<td>96</td>
<td>30</td>
<td>33</td>
<td>61</td>
<td>220</td>
</tr>
<tr>
<td>Canada</td>
<td>—</td>
<td>—</td>
<td>9</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Chile</td>
<td>26</td>
<td>3</td>
<td>26</td>
<td>59</td>
<td>114</td>
</tr>
<tr>
<td>Colombia</td>
<td>69</td>
<td>47</td>
<td>46</td>
<td>30</td>
<td>192</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>31</td>
<td>10</td>
<td>32</td>
<td>19</td>
<td>83</td>
</tr>
<tr>
<td>Cuba</td>
<td>11</td>
<td>8</td>
<td>16</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>Dominican Republic</td>
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<td>18</td>
<td>35</td>
<td>7</td>
<td>72</td>
</tr>
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<td>19</td>
<td>40</td>
<td>11</td>
<td>100</td>
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<td>El Salvador</td>
<td>23</td>
<td>17</td>
<td>22</td>
<td>32</td>
<td>89</td>
</tr>
<tr>
<td>Guatemala</td>
<td>25</td>
<td>7</td>
<td>23</td>
<td>9</td>
<td>64</td>
</tr>
<tr>
<td>Haiti</td>
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<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Honduras</td>
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<td>10</td>
<td>21</td>
<td>8</td>
<td>69</td>
</tr>
<tr>
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<td>44</td>
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<td>25</td>
<td>24</td>
<td>94</td>
</tr>
<tr>
<td>Mexico</td>
<td>29</td>
<td>7</td>
<td>22</td>
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<td>97</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>30</td>
<td>8</td>
<td>20</td>
<td>6</td>
<td>64</td>
</tr>
<tr>
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<td>14</td>
<td>27</td>
<td>80</td>
</tr>
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<td>31</td>
<td>10</td>
<td>57</td>
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<tr>
<td>Peru</td>
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<td>37</td>
<td>28</td>
<td>125</td>
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<td>—</td>
<td>7</td>
<td>10</td>
<td>43</td>
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<td>2</td>
<td>61</td>
<td>67</td>
</tr>
<tr>
<td>Uruguay</td>
<td>40</td>
<td>8</td>
<td>19</td>
<td>9</td>
<td>76</td>
</tr>
<tr>
<td>Venezuela</td>
<td>60</td>
<td>15</td>
<td>47</td>
<td>44</td>
<td>166</td>
</tr>
<tr>
<td>British territories</td>
<td>224</td>
<td>7</td>
<td>45</td>
<td>20</td>
<td>296</td>
</tr>
<tr>
<td>Departments of France in the Americas</td>
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<td>—</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Surinam and the Netherlands Antilles</td>
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<td>—</td>
<td>5</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,052</strong></td>
<td><strong>277</strong></td>
<td><strong>666</strong></td>
<td><strong>574</strong></td>
<td><strong>2,569</strong></td>
</tr>
</tbody>
</table>

more or less the same as in the last 12 years. Mention must be made of the fact that the number of fellowships for public health administration studies was higher than that shown (321), because many of them are classified under particular fields of study; for example, fellows specializing in maternal and child health, statistics, or epidemiology appear under those headings. The percentage of fellowships for studies in communicable diseases fell from 40 per cent and 37 per cent in the previous two four-year periods to 18 per cent. This decrease was due to the smaller number of fellowships for malaria studies, which in the previous two periods had accounted for the largest number. These changes in the distribution of fellowships by field of study and type of training are illustrated in Figures 29 and 30.

Table 51 and Figure 31 show the total number of fellows from the other Regions of the World Health Organization who studied in the Americas. A comparison with the previous four-year period shows that their number increased by 10 per cent. However, if the comparison is made with the quadrennium 1954-1957 (396) the increase was much greater (54 per cent), and reflects the expansion of health services and the greater demand for qualified personnel. Most of these fellows came from the European and the Western Pacific Regions.

About 75 per cent of all fellows studied in Latin American countries, which have not scrimped on the facilities of governmental and teaching institutions. Efforts have been made to maintain a balance between the need to stimulate the fellow by exposing him to new ideas and a new environment and that of providing him with a situation similar to that in his own country. The experience gained in the last eight years has shown that greater
success of the students. In those visits interviews were
held with the fellows and their advisers and attempts
were made to solve any problems a fellow might have,
both personal problems and those connected with his
studies. Such problems are common to persons who go
abroad for the first time, as is the case with most of the
fellows, and thanks to the aforementioned system of
visits most difficulties were quickly cleared up and
there were very few drop-outs.

During the period covered by this Report technical
assistance continued to be given to the fellowship pro-
grams of the Organization of American States and of the
Government of Venezuela; 937 applications for OAS
fellowships were examined, and supervision and plan-
ning of studies was given for 239 fellows of the Govern-
ment of Venezuela. In addition, study programs were pre-
pared for 148 WHO/PAHO staff members.
TABLE 50. FELLOWSHIPS AWARDED IN THE AMERICAS, BY COUNTRY OF ORIGIN AND FIELD OF STUDY, 1962-1965

<table>
<thead>
<tr>
<th>Country of origin</th>
<th>Public health administration</th>
<th>Environmental sanitation</th>
<th>Nursing</th>
<th>Maternal and child health</th>
<th>Other health services</th>
<th>Communicable diseases</th>
<th>Medical science and education</th>
<th>Clinical medicine</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>31</td>
<td>14</td>
<td>25</td>
<td>8</td>
<td>34</td>
<td>27</td>
<td>36</td>
<td>7</td>
<td>182</td>
</tr>
<tr>
<td>Bolivia</td>
<td>13</td>
<td>10</td>
<td>3</td>
<td>6</td>
<td>18</td>
<td>19</td>
<td>6</td>
<td>2</td>
<td>77</td>
</tr>
<tr>
<td>Brazil</td>
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<td>17</td>
<td>15</td>
<td>4</td>
<td>62</td>
<td>42</td>
<td>54</td>
<td>7</td>
<td>220</td>
</tr>
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<td>12</td>
<td>6</td>
<td>41</td>
<td>34</td>
<td>31</td>
<td>1</td>
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During the period the directories of former fellows of the Organization were completed, brought up to date, and distributed to the countries. From time to time the country representatives are requested to find out the posts being held by former fellows and as a result it has been possible to show that they are making good use of the training they received.

An examination of the budget proposals for 1967 and 1968 shows that the Organization's fellowship program will continue to increase at the rate of 15 to 20 per cent yearly.

| Table 51. Fellowships Awarded in the Americas and Fellows from Other Regions Who Studied in the Americas, 1962-1965 |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Years                                           | Fellowships awarded in the Americas | Fellows from other Regions who studied in the Americas | Total |
| 1958-1961                   | 2,098                          | 544                              | 2,642 |
| 1962-1965                   | 2,669                          | 691                              | 3,370 |
| Total                      | 4,667                          | 1,145                            | 5,812 |
IV. PLANNING

The information available indicates that the countries of Latin America have responded to the challenge laid down in the Charter of Punta del Este, which urged them to embark upon a series of systematic steps in health planning within the process of national economic and social development. The Pan American Health Organization has been associated with these efforts of the national administrations during the period under review.

The need for health planning at the present stage of development in the countries of the Americas is paramount. The geographic distribution of personnel and facilities is unequal, most of them being concentrated in the larger cities. Both the quantity of output, measured directly in terms of actions performed and patients attended, and the quality of output, measured indirectly by statistics of mortality and morbidity, are unsatisfactory in many cases. The yield from the substantial funds spent on health activity, which typically amount to 10 per cent of total government expenditure and probably amount in all to over two billion dollars, could be increased.

The Task Force on Health at the Ministerial Level, meeting in Washington, D.C., in April 1963, recommended 47 that:

... The training of the personnel in planning should be intensified... Systematic planning for the national territory should be undertaken... The Governments should conduct research in experimental areas....

During the years 1962-1966 national health planning became an established discipline. With the cooperation of distinguished experts of the Center for Development Studies (CENDES) of the Central University of Venezuela in Caracas, of the Ministry of Health and Social Welfare, and of the School of Public Health of that country, consultants of the Organization prepared a document on the concepts and methods of planning in the health field. That document 48 has been utilized by a number of Member Countries in the formulation of their national plans. The experience thus gained produced the systematic method of health planning which was taught, and improved upon each year, at the International Health Planning Course conducted in conjunction with the Latin American Institute for Economic and Social Planning in Santiago, Chile. The demand for health planners has been high, and 125 professionals from 20 countries of the Americas attended these international courses.

In addition to organizing the international course at Santiago, the PAHO has provided the services of one staff member part-time for the English-language health planning course given annually at the Johns Hopkins University. Various staff members and short-term consultants have also assisted in national training courses held in Brazil, Chile, El Salvador, Peru, Trinidad and Tobago, Uruguay, and Venezuela, in which about 300 health officials have been trained.

A Study Group on Health Planning was convened by the Pan American Health Organization and the Government of Venezuela in February 1965 to undertake a critical study of the national health planning process. They considered the status of health planning at that time in Latin America, the results of the application of the method of health planning developed by CENDES/PAHO, the health planning organization and administration, and the education and training of personnel for health planning. Many of the recommendations made by the Study Group have been acted upon, including a proposal to develop a center to direct and promote research which would be linked to the field work being conducted in the countries. A request supported by the Director-General of the World Health Organization has been submitted to the United Nations Development Program for assistance in establishing such a center.

Through the CENDES group and the joint activities with the Latin American Institute for Economic and Social Planning, as well as through the activities within the countries and the association maintained with the Inter-American Committee on the Alliance for Progress (CIAP), health planning has been closely correlated with economic development planning.

During the four years being reviewed, planning units were established in the ministries of health of 16 coun-

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47 Official Document PAHO 51, 36.
tries of the Americas. In some of the large federated countries, in which planning at the central level is a complex process, steps have been taken toward coordinated planning between the various ministries and agencies involved in health.

The advisory services of the Pan American Health Organization have been rendered by regular staff at the country project and Zone Office levels and by short-term consultants.

The Office of National Health Planning at PAHO Headquarters has the general responsibility for following up and encouraging programs in all the countries of the Hemisphere. It has also represented the idea of health planning at the international level.

Health planning was the subject of the Technical Discussions at the Eighteenth World Health Assembly. These Discussions, at which representatives of the Member Countries of the Americas took an active part, indicated that health planning in this Hemisphere is in an advanced state of development.

The activities which each country is recommended to consider undertaking in order to initiate planning, formulate a plan, and put it into practice, as an efficient and continuing activity, may be divided into the following stages:

(a) Basic promotional activities concerned with convincing the political authority of the necessity for planning. These activities lead to political decisions being taken to initiate the planning process. These decisions should be supported by concrete legislation for the installation of the system.

(b) Various steps are necessary leading to the formulation of the plan and the measures necessary to ensure its operation. This includes the training of technicians, the creation of the plan proper, and its translation into a program budget for each year of its operation.

(c) The reorganization of the health service structure for the execution of the plan.

(d) Once the plan has been drawn up and implemented, it should be periodically reviewed and evaluated with a view to adjusting it in the light of the operational experience gained.

At the present stage of achievements and in accordance with the above classification, the Latin American countries may be distributed for the purposes of health planning into the following four groups:

(1) Countries in which a formal political decision regarding health planning has been taken; progress has been made in setting up the system; personnel have been trained; and a plan has been formulated. Four countries have reached this stage, but only in one of them has the plan already been put into execution.

(2) Countries which have reached either an advanced stage of plan formulation or an advanced stage of training, where the national development planning system has been introduced and the ministry of health has been reorganized to administer the plan. Four countries are in this group.

(3) In a further six countries a sufficient number of planners have been trained to take the initial steps, or measures have been taken to formulate the plan as a separate government initiative. In these countries some basic work still has to be done, and political decisions and additional organizational measures have still to be taken.

(4) Eight countries fall into this group. Although in almost all of them some initiative has been taken, or some separate activity has already begun, in none has it been possible to initiate the planning process.
V. RESEARCH

The past four years mark a period of expansion and intensification of the biomedical research program of the Pan American Health Organization, which began with the establishment, toward the end of 1961, of the Office of Research Coordination. Supported at first by a planning grant from the National Institutes of Health of the United States Public Health Service, it was brought under the regular PAHO budget in 1964 so as to ensure its continuity.

The program has encompassed the stimulation of fields of biomedical research and research training related to the objectives of the Organization. Within the guidelines provided from time to time by the PAHO Advisory Committee on Medical Research and the recommendations of consultants, the Office has implemented the Organization's policy by identifying research problems and opportunities (emphasis being placed on those that are suitable for study through multicountry collaborative efforts) and by exploring the possibilities of obtaining support for research that meets the standards of excellence required by granting agencies.

A range of research activities has been stimulated in broad fields such as nutrition, communicable diseases, and environmental health, and in specific areas such as endemic goiter, nutritional anemias, epidemic typhus, arboviruses, Chagas' disease, genetics of primitive populations, immunology, scientific communication, medical library centers, population dynamics, and research in public health at the national level.

To accelerate the PAHO-sponsored research programs requiring the standardization of reagents, techniques, and terminology, the Organization has established three reference laboratories and training centers. Research in nutritional anemias, in endemic goiter, and in Chagas' disease is aided by the facilities provided by the PAHO Reference Laboratory and Training Center for Applied Research in Nutritional Anemias in Caracas, Venezuela; and by two centers in Santiago, Chile: the PAHO Reference Laboratory and Training Center for Iodine Determinations in Endemic Goiter Research, and the Center for the Production and Biological Control of Antigens in the Laboratory Diagnosis of Chagas' Disease.

At each of its annual meetings, the PAHO Advisory Committee on Medical Research devotes a full-day Special Session to a topic selected because of its particular significance for present and emerging health problems needing research. A single field of scientific endeavor is thus analytically and critically reviewed by a specially selected international panel of experts, and out of this scrutiny emerge major conclusions and recommendations that facilitate future public health actions.

Three areas of inquiry have been explored thus far. In 1963, in appraising research needs in tuberculosis, the Committee examined the distressing situation where, although knowledge concerning the epidemiology, immunology and chemotherapy of the disease is so precise that highly effective methods of prevention and treatment can be devised, a number of difficulties stand in the way of the practical application of these methods and limit their usefulness, especially among the needy population groups.

The following year the Special Session 49 focused on the issues posed by the development of "shanty towns," on the difficulties of achieving even minimum living standards for their inhabitants, and on the problems of adapting the rural inhabitant to an urban environment or, perhaps, of adapting that environment to communities of rural origin. The ecological, social, organizational, and economic factors influencing the success or failure of efforts to improve conditions were identified.

In 1965 those factors in deprivation which are known or likely to influence mental development and intellectual development were examined by the Committee 50 within the context of newer concepts in the molecular and neurocellular processes of coding and information storage. Although opportunities for studying deprivation problems at the molecular-cellular levels are available, there exist in Latin America circumstances deriving from special social and cultural conditions which are unique and which make possible studies of the effect of these factors on psychobiological development in man. These

49 Environmental Determinants of Community Well-Being. Scientific Publication PAHO 123.
50 Deprivation in Psychobiological Development. Scientific Publication PAHO 134.
include mass cultural studies to delineate crucial dimensions of deprivation and critical ages at which this can occur; ways in which deprivation is or is not associated with maternal or parental care; and policies and methodologies of nutrition as these relate to health and child care.

At the recommendation of the PAHO Advisory Committee on Medical Research, a Study Group met in 1964 to examine national policies for biomedical research in Latin America. The purpose of the inquiry was not to examine the state of research itself—that is, the areas of investigation or the relative strengths of various fields—but rather to study the general conditions under which research is conducted, the factors in various countries that tend to promote or retard research or to influence the field of investigations, the formal organizations for research, and the attitudes of Governments toward research. The inquiry was directed toward biomedical research, but the nature of science is such that it was not possible or desirable to confine it to that field alone. The report of the Study Group, *Science Policy in Latin America: Substance, Structures, and Processes*, was published as *Scientific Publication PAHO 119*.

In 1965 the Committee focused attention on the desirability of an analysis of the factors operating in the international migration of scientists, in particular the problems faced by many Latin American countries as a consequence of manpower losses through emigration of trained health personnel. A Subcommittee on Migration was constituted late in 1965 to study the forces leading to migration and to suggest ways of halting it to the Fifth Meeting of the PAHO Advisory Committee on Medical Research.

A report of the PAHO-sponsored research activities was prepared; it includes summaries of 90 projects whose inception, operation, or completion fell within the period 1961-1966.

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VI. PUBLICATIONS AND INFORMATION

The publications program of the Organization has grown rapidly in volume and scope in the past four years. The program is designed to complement, without duplicating, the WHO publications distributed in the Americas, and to meet the special needs of this Region. It comprises the three Special Publications series—Scientific Publications, Official Documents, and Miscellaneous Publications—the periodical publications: the monthly Boletín and the Weekly Epidemiological Report.

PERIODICAL PUBLICATIONS

The monthly scientific journal, the Boletín de la Oficina Sanitaria Panamericana, completed its 45th year of publication in 1966. It has continued the work for which it was created by the Sixth International Sanitary Conference (Montevideo, 1920), through the distribution of current technical literature on all aspects of international health in the Americas. With the steady growth in the number of readers, the pressrun increased from some 9,800 copies in 1961 to about 11,000 at the end of 1965. From 80 to 90 technical articles were published each year, along with technical abstracts, medical and health news, and booknotes.

The Boletín, while still primarily a Spanish-language journal, has included an increasing amount of material in English, Portuguese, and French. During the quadrennium the format of the journal was revised and the selection of articles was focused more and more on the needs of health workers in the field, as is shown by the inclusion of technical studies relating directly to operating projects and articles covering the work of PAHO/WHO. Special arrangements were maintained with the Bulletin of the World Health Organization for the simultaneous publication of lead articles in Spanish and English.

The other periodical publication issued regularly by the Organization is the Weekly Epidemiological Report, which appears in a bilingual English-Spanish edition.

SPECIAL PUBLICATIONS

Through its program of Special Publications, the Organization made available to public health services and workers throughout the Americas an increasingly broad selection of current technical literature. In the four-year period 1962-1965 a total of 182 publications were issued, or 45 per cent more than in the preceding four years. The number of pages printed rose 60 per cent and the number of copies printed 50 per cent in the same period. Details are given in Table 52, which shows the total production figures for 1962-1965.

Among the texts on communicable diseases, the Organization has traditionally undertaken the translation and publication of the Spanish and Portuguese versions of the successive editions of the American Public Health Association manual Control of Communicable Diseases in Man. The Portuguese version of the 9th edition of this manual appeared in 1962 (Scientific Publication 51). The 10th edition was published in Spanish (Scientific Publication 120) in 1965 and the Portuguese version of that edition is now in preparation.

Publications on tuberculosis included the Spanish version of the U.S. National Tuberculosis Association manual Diagnostic Standards and Classification of Tuberculosis (Scientific Publication 97), and working documents of both the Technical Discussions of the PAHO Directing Council on tuberculosis and the Regional Seminar on Tuberculosis (Scientific Publication 112). Basic refer-

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ence material on plague, leprosy, and gastrointestinal diseases was also issued. Texts on venereal disease included Spanish editions of the USPHS publications Notes on Modern Management of VD (Scientific Publication 71) and Syphilis—Modern Diagnosis and Management (Scientific Publication 56).


Increased activities in malaria eradication were reflected in a number of technical texts, including those on training courses, seminars, and conferences, and the 2nd edition of the Manual for the Microscopic Diagnosis of Malaria, published in English, Spanish, and Portuguese (Scientific Publication 87). The yearly reports on the status of the malaria eradication campaign in the Americas were published as part of the Proceedings of the Directing Council.

On the subject of environmental sanitation, the reports of several seminars on education and training and on water supply design were issued. Tubercias plásticas (Scientific Publication 113) presented a compilation of technical papers covering all aspects of the use of plastic pipes for water supply. The papers of the First Latin American Seminar on Occupational Health were published in Spanish (Scientific Publication 124) and a new series of training guides on environmental sanitation were translated and adapted from the texts published by the U.S. Communicable Diseases Center; nine titles were issued in this series, on the following subjects: fly control, arthropods of public health importance, lice control, garbage and waste disposal, control of rats and mice, vector-borne diseases, control of fleas, mosquito control, and insecticides used in vector control.

In the field of education and training, the reports and working papers of numerous seminars were published, including those of two meetings of the deans of schools of public health of Latin America; traveling seminars in Latin America, in Europe, and in the Eastern Mediterranean Region; and a seminar on the teaching of public health and preventive medicine in schools of veterinary medicine. In 1965 a major text on medical education, Pedagogía médica, was issued as Scientific Publication 122.

Twelve publications on nursing appeared during the period. Publications in Spanish included a survey of nursing schools in Latin America, a guide for nursing schools, two compilations of articles of special interest to nursing services in Latin America, and a guide for the training of nursing auxiliaries. In the new series of Reports on Nursing, begun during the period, the reports of five seminars on nursing education and nursing services were issued.

Publications on health planning, medical care, nutrition, and ionizing radiation were also issued. In the field of research, the Spanish edition of Science Policy in Latin America was issued as Scientific Publication 119 (the English edition appeared early in 1966) and the English text of Environmental Determinants of Community Well-Being was published as Scientific Publication 123.

The reports of two Latin American seminars on mental health and of two more on dental public health were published. An original text, Odontología sanitaria, appeared as Scientific Publication 63. Four publications on health education were also issued.

Publications on health statistics, issued in English and Spanish, included many important volumes, among them Summary of Four-Year Reports on Health Conditions in the Americas, 1957-1960 (Scientific Publication 64), Health Conditions in the Americas, 1961-1962 (Scientific Publication 104), and new printings of Facts on Health Problems (Miscellaneous Publication 63). Yearly editions of Reported Cases of Notifiable Diseases in the Americas also appeared.

The reports of the Regional Advisory Committees on Health Statistics and on the International Classification of Diseases were published in English and in Spanish.

Other statistical publications included guides for the reporting of statistical information in the health field, instructions on the use of the International Classification of Diseases, a guide for the organization of a hospital medical records department, and additional printings of Clasificación internacional de enfermedades—Adaptada para índice de diagnósticos de hospitales y clasificación de operaciones (Scientific Publication 52).

In the Miscellaneous Publications series a number of informational pamphlets were issued. The PAHO Official Documents, published regularly each year in English and Spanish, included the financial reports, budget estimates, proceedings of meetings of the Governing Bodies, annual and quadrennial reports of the Director, and Basic Documents of PAHO.

**PUBLIC INFORMATION**

The years 1962-1965 saw the intensification of the effort to increase public awareness of the work of the Pan American Health Organization and the World
Health Organization in the countries of the Hemisphere. The information program was highly successful, one of the main achievements being the number of new services. The program has two parts—one of information, and one of public relations. The first is directed at the mass media—press, radio, television; and the second at the general public—the ordinary citizen interested in health.

For the first group, mats, illustrated feature articles, timed radio copy, and TV telops were introduced. For the second, the general public, such regular publications as the PI Newsletter and the PAHO Information Series, and such occasional publications as the booklets on the Pan American Zoonoses Center, Malaria in the Americas, New Food for Hidden Hunger, Western Hemisphere Art Sought to Beautify New Health Building, and Headquarters for Hemisphere Health were distributed.

Mass-Media Coverage

News Releases

A total of 762 news releases were issued in English, Spanish, and Portuguese, a notable increase due in part to more meetings of news value announced to the press and to the newsworthiness of the inauguration of the new headquarters building.

Mats and Feature Articles

Twenty mats were issued during the four-year period. Mats are brief feature stories that go out in pre-set form on two- or three-column wide perforated cardboard. From 200 to 400 words of text and a photograph are mounted in this cardboard sheet, which allows the newspaper to set the mat directly onto its circular press.

Mats are very popular in Latin American papers, large and small. In the United States of America and in Canada their use is restricted to non-metropolitan dailies and weeklies, or to what is usually called “the grass-roots press.”

During the period, a total of 27 feature articles were issued.

Radio and Television

Experience shows that radio releases are better used in Latin America than in either the United States or Canada. So the radio program is aimed south. From 1962 to 1964 radio releases were sent directly to Latin America stations and to the OAS, United Nations, and Voice of America radio systems. Thirty-five releases were issued in English and Spanish during the period.

On the opening of the headquarters building, eight releases were sent to area TV and radio stations. “Dedication of Health Headquarters,” a six-minute wrap-up TV documentary from ground-breaking to opening ceremonies, was produced for some 50 Latin American outlets. Narrated in English, Spanish, and Portuguese, and musically scored, the film was made to meet these needs: First, as a sum-up of events for the Latin American outlets, to which prints were air shipped while delegates from their countries were still meeting in Washington. Second, as a memento to delegates of an historic event in Western Hemisphere public health. Third, as an audio and visual record for the Organization’s archives. And fourth, a more immediate aim, as a “trailer” preceding the showing of films selected for the Festival of Western Hemisphere Health Films, one of the three social events held in the Council Chamber. A filmed and scripted 60-second release entitled “Michigan’s Kellogg Foundation Contributes to Pan American Health” was also produced and distributed to 19 stations in Michigan.

Crews from local TV stations themselves filmed the opening ceremony for their news programs on 27 September 1965. Bureau staff also worked with TV crews from the U.S. Information Agency in producing a film for “Panorama Panamericano,” a weekly news and feature program on events of hemispheric interest, which is syndicated to 115 television stations throughout Latin America.

Public Relations Section

World Health Day

An important function is the organization of World Health Day, yearly observed on 7 April. It affords an excellent opportunity for publicizing not only the World Health Day theme, the aim of the Day, but also the Organization's work in the Hemisphere.

A basic publicity tool are the World Health Day kits sent out to editors in English, Spanish, and Portuguese. Each kit is made up of 10 articles, and World Health Day messages from the Director-General of WHO and the Director of the Pan American Sanitary Bureau.

The articles provide editors with background facts for features on the World Health Day theme, and give them an idea of what the health agencies are doing. Stories based on the kit are usually feature-type articles.

In addition, three captioned glossy photographs and a covering letter that can be used as an editorial are distributed. Many editors do just that after editing out the introductory paragraphs.

Emphasis has been given to the telling of the World Health Day story to a Washington area audience. The area audience is made up of distinguished men and
women in government, in foreign embassies, and in the press corps from all parts of the world.

One tool used to publicize World Health Day in the Washington area are the car cards. These are 28” x 21” size cardboard posters that go up in buses. Although there is usually a charge for such services, the city transit company makes no charge.

Posters are also distributed to schools, libraries, and supermarkets.

**Written Inquiries**

The great number of inquiries received from the general public is a gauge of the success of the information program. Each year an average of 18,000 kits were sent out, a total of about 70,000 pieces of literature in all, to answer such inquiries.

**Films**

Films were loaned to schools, colleges, universities, and organizations interested in public health. Most films in the lending library are produced by WHO and the United Nations.

**PAHO Film**

An important project undertaken in 1965 was the making of the Organization’s first film. Some 200 of the still pictures on file went into its making, as well as the full battery of cinematic expression—dissolves, trucks, dollies, pans, and tilts. Scored for dramatic music, and whatever natural effects that seem worthy and offer intrinsic integrity, the film as planned will be printed in three languages. This will increase the lending library, which now has 17 titles.

**VISUAL AIDS**

During the quadrennium the visual aids activities were mainly devoted to the production of illustrations for technical publications, information booklets, and to the preparation of slides and filmstrips (See Table 53).

In the second half of the quadrennium the Bureau began to produce filmstrips with Spanish and Portuguese titles to be used as teaching material in Latin America in schools of medicine, public health, nursing, veterinary medicine, and sanitary engineering. This activity was initiated in collaboration with the Visual Aids Unit of the United States Public Health Service, attached to the USPHS Communicable Disease Center in Atlanta, Georgia.

Some of the filmstrips produced by that Center have been translated and adapted by Bureau staff, who have added text in the language concerned. By the end of the quadrennium 16 filmstrips had been completed, each with an average of 75 frames, and of these the majority had been built up from originals created in the Visual Aids Unit of the USPHS in order to reduce production time; the Bureau itself prepared 262 frames.

By the end of the quadrennium 2,722 copies of the first 12 filmstrips produced by the Bureau had been distributed.

The Visual Aids Unit rendered services in Brazil as consultant to SUDENE (Superintendency of Development of the Northeast) on the establishment of a visual aids unit. The Organization has been requested to continue its assistance until this project has been completed.

Table 53 shows the other services provided by the Visual Aids Unit.

**LIBRARY**

The period under review marked a transition for the Library from its former cramped quarters to the present modern installation. The collection was reviewed to provide the essential bibliographic services to the specialist, both in the field and at Headquarters.

Although the library collection is not numerically large and extensive, it has frequently been reviewed so as to reflect the aims of the Organization and the needs
of the staff. The holdings have been kept in balance by subject, and limited in size, by considered additions and withdrawals. The discarded publications have been given to other libraries, both in the United States of America and in Latin America, through the medium of the U.S. Book Exchange, the Medical Library Association Exchange, and the National Library of Medicine.

Upon request, the Library has supplied the Zone Offices and Country Representatives with publications and information. The same service has been extended to ministries of health and to individuals in Latin America and the United States who sought help in the form of bibliographic materials.

During the four-year period the Library has assisted the Fellowship Branch of the Organization in evaluating candidates for fellowships at the Inter-American Library School in Medellin, Colombia, and in advising on the content of courses in the curriculum of the School. In 1964 the Library was invited to present a paper on bibliography and reference services in the Caribbean at the Caribbean Conference, sponsored by the School of Inter-American Studies of the University of Florida.

In the same year one staff member reviewed the collection in the Zone II Office and instructed a staff member there in library methods for keeping the collection in order.

TABLE 54. LIBRARY SERVICES, 1962-1965

<table>
<thead>
<tr>
<th>Type of service</th>
<th>1962</th>
<th>1963</th>
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<tbody>
<tr>
<td>Books cataloged and classified</td>
<td>2,069</td>
<td>1,986</td>
<td>1,928</td>
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<tr>
<td>Requests for information</td>
<td>3,276</td>
<td>3,000</td>
<td>3,646</td>
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<tr>
<td>Circulation</td>
<td>5,146</td>
<td>6,326</td>
<td>7,551</td>
<td>4,655</td>
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<tr>
<td>WHO documents received</td>
<td>3,450</td>
<td>3,813</td>
<td>2,611</td>
<td>2,654</td>
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<tr>
<td>Periodicals added</td>
<td>4,208</td>
<td>4,775</td>
<td>4,877</td>
<td>4,425</td>
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<tr>
<td>Photocopies</td>
<td>3,318</td>
<td>5,051</td>
<td>2,913</td>
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VII. ORGANIZATION AND ADMINISTRATION

GOVERNING BODIES

The XVI Pan American Sanitary Conference, XIV Meeting of the Regional Committee of the World Health Organization for the Americas, was held in Minneapolis, Minnesota, from 21 August to 3 September 1962. The Directing Council of PAHO, Regional Committee of the WHO, held its annual meetings as follows: XIV Meeting in Washington, D.C., 16-25 September 1963; XV Meeting in Mexico, D.F., Mexico, 31 August-11 September 1964; and XVI Meeting in Washington, D.C., 27 September-8 October 1965. The Executive Committee of the Directing Council held eight meetings (46th to 53rd): one in Minneapolis, Minnesota; one in Mexico; and six in Washington, D.C. Attendance at the Pan American Sanitary Conference and at the Directing Council meetings is shown in Figures 32 and 33.

In carrying out their constitutional functions, the PAHO Governing Bodies (the Conference in 1962 and the Council from 1963 to 1965) reviewed and approved the annual reports of the Chairman of the Executive Committee and of the Director of the Bureau (period 1961-1964); reviewed and approved the annual program and budget of the Organization, and elected the Member Governments of the Organization to fill vacancies on the Executive Committee. Figure 34 shows the composition of the Executive Committee during the four-year period covered by this Report.

The Conference also reviewed the Quadrennial Report of the Director 52 of the Bureau for the years 1958-1961, and the Summary of Four-Year Reports on Health Conditions in the Americas, 1957-1960.53 The Director of the Bureau was re-elected by the Conference for a four-year period beginning 1 February 1963. He was subsequently reappointed by the WHO Executive Board as Regional Director for the Americas.

With reference to the program and budget of the Pan American Health Organization, the budget ceilings were $5,990,000 for 1963; $6,560,000 for 1964; $7,190,000 for 1965; and $8,080,000 for 1966. The Conference and the Directing Council, as Regional Committee of the World Health Organization, also reviewed and transmitted to the Director-General of WHO the proposals for the Region of the Americas.

During the period under review, particular attention was given by the Governing Bodies to the resolutions and recommendations arising out of the Charter of Punta del Este (Resolutions A.2 and A.4). Emphasis was placed on the continuing role of public health activities in the

<table>
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<tr>
<th>COUNTRIES</th>
<th>MEETINGS</th>
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<td>ARGENTINA</td>
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<td>BOLIVIA</td>
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<td>TRINIDAD AND TOBAGO</td>
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<td>UNITED KINGDOM</td>
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<td>UNITED STATES OF AMERICA</td>
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<td>URUGUAY</td>
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<td>VENEZUELA</td>
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In accordance with Resolution VII of the XVI Pan American Sanitary Conference (Santa Domingo, 1962), meetings of the Directing Council are held only in those years in which the Conference does not meet.


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52 Official Document PAHO 43.
53 Scientific Publication PAHO 64.

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<thead>
<tr>
<th>OBSERVERS</th>
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<th>1964</th>
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<td>INTERGOVERNMENTAL ORGANIZATIONS</td>
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<tr>
<td>Inter-American Development Bank</td>
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<td>Organization of American States</td>
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<td>United Nations</td>
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<td>Biometric Society</td>
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<td>Council for International Organizations of Medical Sciences</td>
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<td>International Committee of Catholic Nurses and Midwives</td>
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<td>International Confederation of Midwives</td>
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<td>International Council on Jewish Social and Welfare Services</td>
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<td>International Council of Nurses</td>
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<td>International Dental Federation</td>
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<td>International Diabetes Federation</td>
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<td>International Federation of Obstetricians and Gynecologists</td>
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<td>World Veterinary Association</td>
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* In accordance with resolution VIII of the VIII Pan American Sanitary Conference (Santo Domingo, 1958), meetings of the Directing Council are held only in those years in which the conference does not meet.

**Fig. 33.** Observers Present at Meetings of the Pan American Sanitary Conference and the PAHO Directing Council, Regional Committee of WHO, 1962-1965
economic and social development of the Americas to achieve the objectives of the Charter. In 1962 the Conference examined a report of the Director on the activities being carried out at that time by the Bureau under the Charter of Punta del Este, and urged the Governments to push forward with well-planned and coordinated programs designed to achieve the health objectives pursued; requested the Director to augment the advisory services to Governments for the preparation and execution of the aforesaid health plans, and take the necessary steps to assure the participation of the Bureau with respect to survey, planning, and program operation in social and economic development undertaken by the Organization of American States, the Inter-American Development Bank, and other organizations.

In 1963 the Director of the PASB convoked a meeting of the Task Force on Health at the Ministerial Level called for in Resolution A.4 of the Charter of Punta del Este, in order to “appraise prevalent problems and suggest general lines of action of immediate effect relating to: the control or eradication of communicable diseases; sanitation, particularly water supply and sewage disposal; reduction of infant mortality, especially among the newborn; and improvement of nutrition; and also recommend actions for education and training of personnel and improvement of health services.” The report prepared by the Task Force was submitted to the Directing Council at its XIV Meeting. The Council, considering that the recommendations of the Task Force “reflect a continental approach to health that coincides with the goals and objectives expressed in the Constitution of the Pan American Health Organization,” accepted all of them as a statement of general policy of the Organization.64

With reference to communicable diseases, the Governments were urged to expand and accelerate their national smallpox eradication programs and to develop systems within national health services to ensure the maintenance of adequate national levels of immunity and provide for continuous surveillance against recurrence of the disease; to assign to such programs the high priority they deserve; and to intensify all measures intended to eliminate the disease through vaccination programs, epidemiological surveillance services, and other suitable means.

On tuberculosis control, the Conference examined the PAHO reports and the recommendations made by the WHO Expert Committee and the WHO/UNICEF Joint Committee on Health Policy, and recommended that the Director of the Bureau aid Governments in drawing up and implementing short-term and long-term plans in accordance with the principles laid down by the Committees, and that the Governments obtain from the agencies concerned with the financing of the Alliance for Progress, special funds to cope with the complex problem of tuberculosis. During the XV Meeting of the Directing Council, the subject “Tuberculosis Eradication: A Task for Present Planning and Future Action” was the subject of the Technical Discussions. The Council, in considering the report on the subject, recommended to the Organization and to the Governments that they take into account the guidelines contained in the report, especially with respect to the training of medical officers. The matters of BCG vaccinations, radiological examinations, and planning and organization of services were also studied in that report.

In regard to venereal diseases, in 1964 the Directing Council considered 65 that there was an urgent need for programs to be organized, or intensified, as appropriate, for the control of this group of diseases, and requested the Director to undertake a special study of the current situation of the problem in the Americas, for the pur-
pose of preparing a proposal for a continental program. This matter is at present under study.

With reference to the eradication of *Aedes aegypti*, the Conference called on the Governments of countries and areas still infested to give the highest priority to the completion of eradication campaigns. It was noted that 15 years had elapsed since the inception of the continental eradication program in 1947, and that many areas were still infested with the mosquito. In 1963 the Council declared Mexico free of the vector and reiterated to the Governments the need for the completion of the campaigns. The same recommendation was made by the Council in 1964. It reminded the Governments of the countries and areas from which the vector had been eradicated to maintain active vigilance services to prevent reinestation. On the financial aspect of the programs, the Council stressed the importance of voluntary contributions to the PAHO Malaria Eradication Special Account, and the WHO Malaria Eradication Special Account, and urged the Governments to continue their contributions to achieve the objectives of the program.

In examining the status of malaria eradication in the Americas, the Governing Bodies called the Governments’ attention to the urgent need for eradicating malaria and for assigning the necessary funds for that purpose. Concern was expressed over the shortage of sufficient funds to intensify the campaign in areas where transmission persisted because of technical problems. They expressed their gratitude to the United States of America, to UNICEF, and to the U.S. Agency for International Development for the assistance they have given to the hemispheric program, and the hope that both UNICEF and AID would continue to support the campaign until malaria was completely eradicated. The concern of the Council over international assistance, both technical and financial, was again reiterated in 1965, particularly for the solution of the biological problems that had arisen in the campaign.

Special attention was also given by the Governing Bodies to urban and rural water supply and sewage disposal. In 1962 the Pan American Sanitary Conference requested the Director of the Bureau to give the highest priority to the continental plan of community water supply and sewage disposal and to continue the efforts to stimulate the investment of local and international funds in water projects. Member Governments were urged to incorporate this program in long-range national plans, to make maximum use of local resources in their financing, to strengthen engineering services, and to undertake a technical review of plans for installations prior to construction or modification. To cope more effectively with this problem, the Conference expressed the need for, or advisability of, establishing a service exclusively devoted to environmental health and sanitation problems at the highest executive level within the Bureau.

In subsequent meetings of the Directing Council, the need for giving the highest priority to the program and to efforts to stimulate a larger investment of funds was reiterated. In this connection, the Council acknowledged with gratitude the contributions to the Community Water Supply Fund made by the Governments of Colombia, Honduras, Jamaica, Nicaragua, Peru, the United States of America, Uruguay, and Venezuela. It also expressed its appreciation to the international credit agencies cooperating in this program, and recommended that the Director increase the Organization’s technical assistance to Governments and continue its collaboration with the Inter-American Development Bank and other agencies, and its cooperation in research, education, and training and in the strengthening of engineering schools, as a means of fostering progress in this field.

The XV Meeting of the Council also urged the Director to take all necessary steps to begin the continent-wide program of rural environmental health and well-being along the lines set forth by the previous Directing Council meeting. These guidelines called for the participation of the communities in the program, the establishment of national revolving funds, and contributions from outside sources. Close cooperation with national and international organizations was requested from the Director, particularly with IDB and AID, with a view to stimulating greater investments in community water supply systems. The Council further recommended that the Governments establish adequate and competent organizations in each country for administering the rural water supply program at the national level.

Mention should be made of the Council’s recommendation to the national authorities having responsibility for providing public water supply to the effect that they take the necessary steps to begin fluoridation in systems which had not yet adopted that measure.

The Council was also concerned with the growing significance of water pollution, the problems caused by demographic expansion, uncontrolled waste discharges, and technological changes affecting the production and use of industrial products. The Council endorsed the courses of action proposed by the Director of the Bureau to provide the Governments with technical assistance in all aspects of the problem and recommended that the Governments expand their technical staff and related facilities to provide for practical and effective controls.

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56 Resolution XIII. *Official Document PAHO* 54, 12.
58 Resolution XXII. *Official Document PAHO* 58, 75-76.
In regard to the nutrition program in the Americas, as approved in Resolution XI 60 of the XIII Directing Council Meeting, recommendations were made to the effect that the Bureau consider the possibility of increasing the resources devoted to training in nutrition and that it continue to collaborate with FAO and UNICEF with a view to expanding advisory services on the development, production, marketing, and utilization of low-cost, protein-rich products for undernourished population groups. The Governments were urged to strengthen the nutrition programs of health services at the local level; to carry out food consumption surveys as a basis for the preparation of national food programs; to intensify the development of the traditional sources of protein and control their prices; and to develop other low-cost protein sources.

The research policy and program of the Organization was examined and approved with respect to both scope and depth. The Council concurred with the policy of accelerating studies in environmental health and in biostatistics dealing with health conditions, in the economic and social aspects of health and medical care, and on the number of physicians needed in relation to medical education programs; recommended that the Organization undertake studies on population dynamics and population growth, with special reference to medical demography, epidemiology, and human reproduction as related to socioeconomic development. The Council also endorsed the programs and research studies for measuring present and future requirements in the Americas, of physicians and other professional, paraprofessional, medical, and auxiliary personnel; as well as the program for Pan American Faculty and Research Training Centers to assist in meeting the shortage of qualified teachers and researchers in various medical sciences and in related professions. It urged individual Governments, insofar as their resources permitted, to consider the possibility of establishing a permanent national fund for research on public health problems.

With reference to aspects of health related to population dynamics, the XVI Meeting of the Council examined Resolution WHA18.49 60 of the Eighteenth World Health Assembly, and requested 61 the Director to provide technical advice on this subject, to cooperate with the Inter-American Committee on the Alliance for Progress in the work that this Committee carries out in this field, and to conduct studies on population dynamics related to the program activities of PAHO.

The XVI Pan American Sanitary Conference examined the Summary of Four-Year Reports on Health Conditions in the Americas, 1957-1960, which included vital and health statistics, trend of prevailing problems, and the resources available to meet them. The Conference, considering that the planning of long-range programs requires basic data of many types, recommended that the Governments expand and strengthen their programs for the collection, publication, and utilization of vital and health statistics to serve as a basis for the formulation, execution, and evaluation of national health programs; that each national health authority establish, or strengthen, its statistics department at the proper level; and that they support education and training programs in statistics for professional, technical, and auxiliary personnel. In 1965 the XVI Meeting of the Directing Council, after considering the report of the Rapporteur of the Technical Discussions held during that meeting on “Methods of Improving Vital and Health Statistics,” recommended to the Organization and to the Governments that efforts be made immediately to implement the recommendations for action suggested in that report. They included the fulfillment of the 10-year goals on health statistics based on the principles set forth in the Charter of Punta del Este; as well as specific actions on statistical offices and systems in health ministries; vital statistics; hospital statistics; population dynamics; sampling; modern resources; education and training of personnel; and international assistance.

With reference to the training of auxiliary personnel, the Council instructed the Director 62 in 1964 to prepare a study on the matter for discussion at a meeting of national authorities, with the collaboration of international experts, for the purpose of presenting to the Governing Bodies a policy for the training of auxiliary workers based on the needs of the Americas. A preliminary report was submitted by the Director to the Council in 1965 on the preparations for the meeting mentioned above.

The Governing Bodies also examined during this period items related to clinical and pharmacological evaluation of exogenous agents, to the Inter-American Investigation of Mortality, collaboration of the Bureau in administrative practices of national health services, intercountry exchanges of teaching and other health personnel; and organization of national citizens committees for the promotion of health programs. The Council also examined the relationship between social security medical care programs and those of ministries of health and recommended that the Director convene a study group on the promotion of better coordination between the public health services and the medical care programs provided by the social security agencies and other organizations.

60 Official Document PAHO 41, 21-22.
62 Resolution XXIX. Official Document PAHO 58, 81-82.
At the XVI Meeting the Council studied the report requested, and made several recommendations to the Governments and to the Bureau on the subject.

Among administrative and financial matters, the Governing Bodies examined and approved amendments to the Staff Rules of the PASB; reports on the Emergency Revolving Fund; allowances for members of the Executive Committee; buildings and installations for Headquarters; and the program of administrative rationalization in the Bureau aimed at streamlining the structure, procedures, and techniques of the administrative system. The Council commended the staff of the Bureau on the success of their efforts in the matter and requested that the program be continued.

Annual reports on the collection of quota contributions were examined during the period. The Council was concerned with the problem of arrears in quota payments and urged all Governments to make budgetary provision for their quota assessments and to pay them as early as possible each year. In 1964 the Council approved an amendment to Article 6 of the Constitution of PAHO, by virtue of which voting privileges may be suspended for any Government in arrears in an amount exceeding the sum of its quotas for two full years should it fail to meet its financial obligations to the Organization by the date of the opening of the Conference or a meeting of the Council.

Executive Committee

In accordance with the provisions of the Constitution of PAHO, the Executive Committee examined the budget proposals of the Organization and prepared the pertinent recommendations for the consideration and approval of the corresponding Governing Bodies; advised the Conference and the Council in technical and administrative matters; and approved the provisional agendas for their meetings. The Executive Committee examined reports on PAHO activities under the Charter of Punta del Este; on recruitment and retention of staff; on the Emergency Revolving Fund and procurement services to Governments. It also studied the annual reports on buildings and installations and other matters, which were later submitted to other Governing Bodies for consideration.

LIAISON WITH OTHER INTERNATIONAL AGENCIES

The activities of the Pan American Health Organization as an autonomous agency and a specialized organization of the Organization of American States and as the Regional Office of the World Health Organization have become more complex in recent years, especially since the Act of Bogotá and the Charter of Punta del Este recommended the inclusion of health activities in economic and social development programs. This policy, which the Bureau advocated from the outset and of which it may be considered the initiator, has increased and expanded its relations with institutions of the Inter-American System and with the United Nations and its specialized agencies and organs.

Once it was accepted that the PAHO should provide advisory service in the health field for programs of economic and social development in the Americas, the Bureau clearly had to create an appropriate mechanism for maintaining, facilitating, and promoting relations with the Inter-American Economic and Social Council, the Inter-American Committee on the Alliance for Progress (CIAP), the Inter-American Development Bank, the United Nations Development Program, and similar organizations.

In March 1964 a Liaison Office was established and attached to the Director's office. It has been establishing its own structure and methods since there was no model which could be adapted for the work assigned to it.

In the period covered by this Report mention should be made of relations with the Organization of American States and its organs, including the General Secretariat and the technical departments of the Pan American Union, in particular the Departments of Economic Affairs, Social Affairs, Educational Affairs, Scientific Affairs, and Technical Cooperation.

Attendance at the Second Extraordinary Inter-American Conference, which was held in Rio de Janeiro, Brazil, in November 1965, made it possible to follow the discussions concerning the operation and strengthening of the Inter-American System and the economic and social development of the Hemisphere, of interest to the Organization. In addition, the Organization continued to be represented at the country reviews by the Inter-American Committee on the Alliance for Progress, at which national authorities and representatives of international credit agencies examine economic and social development programs, as well as sectoral programs. Another manifestation of these relations with CIAP is its support for the financing of foot-and-mouth disease control programs which have been developing with considerable likelihood of success.

Relations have been expanded with the Inter-American Development Bank, which gives considerable financial assistance to urban and rural water supply programs. Mention must also be made of the Bank's policy of extending loans for programs in the fields of medical edu-
cation, foot-and-mouth disease, and biological products laboratories; discussions have also been held on a policy for the construction and equipment of hospitals and other health facilities. In connection with health activities in the countries within the framework of national health and development plans, representatives of both organizations have discussed a program for joint action aimed at strengthening and improving the effectiveness of their work. This program will enable the Bank and the Organization to plan their short, medium, and long-term operations so as to obtain a greater return from the resources of both institutions and to benefit the countries through better coordination of external financial assistance.

Staff members of the Liaison Office have participated at a number of international meetings, including the Third and Fourth Annual Meetings of the Inter-American Economic and Social Council. They have also kept in constant touch with the United Nations Development Program.

### ADMINISTRATIVE ACTIVITIES

#### Budget and Finance

The total budgetary resources of the Organization increased 24.93 per cent from $14,590,572 in 1962 to $18,228,082 in 1965 (see Table 55). These figures do not include the cost of the new headquarters building, which was occupied in 1965.

During this period the appropriations of the Governing Bodies of PAHO to the regular budget increased by 37.2 per cent and allocations from the regular budget of the World Health Organization to the Region of the Americas increased by 46.4 per cent.

Significant changes occurred in other sources of funds. The WHO funds for malaria eradication programs increased, in accordance with a policy adopted by the World Health Assembly, and demands on the PAHO Special Malaria Fund consequently decreased over the period under review. The PAHO Community Water Supply Fund remained relatively stable over the period, but there was a notable increase of 91.2 per cent in the INCAP budget and related grants.

Another important source of funds for projects was the United Nations Special Fund (now part of the United Nations Development Program), under which three projects totalling $1,608,100 were approved while others were under consideration at the end of 1965.

Of the budget amounts appropriated by Governing Bodies or available from special funds or other sources, the annual financial reports show that an average of 91 per cent was expended each year. Actually the percentage of expenditure in relation to available funds was somewhat higher, since unspent balances of special funds and some grants were available for rebudgeting in the following year.

For the PAHO regular budget, the yearly figures for appropriations, income, and expenditure are shown in Table 56. Income averaged 95.3 per cent of the authorized appropriation owing to delays in payment of quotas, but there was nevertheless a steady growth from year to year. Over the full period a deficit was avoided by keeping expenditure at an average of 94.4 per cent of the authorized budget, a procedure that produced a net surplus of $232,361.

During the four-year period the financial situation improved steadily. The Working Capital Fund, as shown in Table 57, stood well above the percentage at the end of 1962 and was sufficient to meet operating requirements. The satisfactory financial condition was due to the step-by-step fulfillment of long-term policies on expenditures, Working Capital Fund, and reserves. First was the policy adopted in 1959 to maintain expenditures within income, and to stay below the authorized budget if necessary. The second main policy was to build and maintain an adequate Working Capital Fund. The Directing Council in 1959 authorized the Director to include in the PAHO regular budget for 1961 and future years an amount for gradually increasing and maintaining the Fund. The third policy, adopted in 1962, was to gradually expand the partial reserves for repatriation entitlements and service benefits to include all termination costs. This was especially important to ensure the Organization against risks arising out of the uncertainty of grants and voluntary contributions. This reserve is now substantially complete for most of the voluntary funds. A reserve for INCAP funds was commenced in 1965, and the reserve for the PAHO regular budget was further increased. The result is that the Organization has assured capacity to meet future financial obligations which may arise from program terminations without danger to the PAHO regular budget or the Working Capital Fund.

During 1963 the budget presentation was modified so as to include a program classification as an aid to analysis of the budget. The classification plan was presented with a vertical display of specific program subjects grouped under major headings and a horizontal distribution by ways of arriving at program objectives as defined in the Basic Documents of the Organization. Both have assisted in assessing the direction of effort of the Organization as a whole, as well as in planning and
### TABLE 55. FUNDS BUDGETED FOR PAHO/WHO, 1962-1965

(U.S. dollars)

<table>
<thead>
<tr>
<th>Source of funds</th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
<th>Increase from 1962 to 1965 (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pan American Health Organization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAHO—Regular budget</td>
<td>5,240,000</td>
<td>5,990,000</td>
<td>6,560,000</td>
<td>7,190,000</td>
<td>37.21</td>
</tr>
<tr>
<td>PAHO—Special Malaria Fund</td>
<td>3,085,198</td>
<td>3,000,000</td>
<td>2,551,283</td>
<td>1,897,773</td>
<td>(38.49)</td>
</tr>
<tr>
<td>PAHO—Community Water Supply Fund</td>
<td>411,700</td>
<td>378,551</td>
<td>358,663</td>
<td>378,943</td>
<td>(7.96)</td>
</tr>
<tr>
<td>PAHO—Grants and other contributions</td>
<td>937,647</td>
<td>916,861</td>
<td>933,052</td>
<td>953,416</td>
<td>1.68</td>
</tr>
<tr>
<td>INCAP and related grants</td>
<td>702,613</td>
<td>727,499</td>
<td>790,724</td>
<td>1,343,164</td>
<td>91.16</td>
</tr>
<tr>
<td>Organization of American States, Program of Technical Cooperation</td>
<td>537,808</td>
<td>642,202</td>
<td>690,163</td>
<td>582,908</td>
<td>8.58</td>
</tr>
<tr>
<td><strong>Subtotal PAHO</strong></td>
<td>10,914,966</td>
<td>11,675,113</td>
<td>11,883,885</td>
<td>12,346,194</td>
<td>13.11</td>
</tr>
<tr>
<td><strong>World Health Organization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WHO—Regular budget</td>
<td>2,275,420</td>
<td>2,495,385</td>
<td>2,764,400</td>
<td>3,331,003</td>
<td>46.39</td>
</tr>
<tr>
<td>WHO—Malaria Eradication Special Account</td>
<td>72,760</td>
<td>89,827</td>
<td>395,543</td>
<td>647,435</td>
<td>789.82</td>
</tr>
<tr>
<td>WHO—Expanded Program of Technical Assistance</td>
<td>1,321,666</td>
<td>1,232,940</td>
<td>1,342,350</td>
<td>1,280,550</td>
<td>(3.11)</td>
</tr>
<tr>
<td>WHO—United Nations Special Fund</td>
<td>—</td>
<td>134,028</td>
<td>247,032</td>
<td>532,250</td>
<td>—</td>
</tr>
<tr>
<td>WHO—Other funds</td>
<td>5,760</td>
<td>33,120</td>
<td>22,250</td>
<td>90,650</td>
<td>1,473.78</td>
</tr>
<tr>
<td><strong>Subtotal WHO</strong></td>
<td>3,675,606</td>
<td>3,886,300</td>
<td>4,771,575</td>
<td>5,881,588</td>
<td>60.92</td>
</tr>
<tr>
<td><strong>Total PAHO/WHO</strong></td>
<td>14,590,572</td>
<td>15,560,413</td>
<td>16,655,460</td>
<td>18,228,082</td>
<td>24.93</td>
</tr>
</tbody>
</table>

* Figures represent funds actually available rather than amount shown in budget document.
( ) Decrease.

### TABLE 56. PAHO REGULAR BUDGET—APPROPRIATIONS, INCOME, AND EXPENDITURES, 1962-1965

(U.S. dollars)

<table>
<thead>
<tr>
<th>Budget item</th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
<th>Average percentage and net surplus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorized appropriation</td>
<td>5,240,000</td>
<td>5,990,000</td>
<td>6,560,000</td>
<td>7,190,000</td>
<td>95.33</td>
</tr>
<tr>
<td>Income (quotas and other)</td>
<td>4,462,608</td>
<td>5,843,272</td>
<td>6,253,025</td>
<td>7,255,434</td>
<td>94.40</td>
</tr>
<tr>
<td>Income as per cent of appropriation</td>
<td>85.16</td>
<td>97.55</td>
<td>95.32</td>
<td>100.91</td>
<td>95.33</td>
</tr>
<tr>
<td>Expenditure</td>
<td>4,751,018</td>
<td>5,390,269</td>
<td>6,251,197</td>
<td>7,189,494</td>
<td>95.33</td>
</tr>
<tr>
<td>Expenditure as per cent of appropriation</td>
<td>90.67</td>
<td>86.98</td>
<td>95.29</td>
<td>99.99</td>
<td>94.40</td>
</tr>
<tr>
<td>Surplus or (deficit)</td>
<td>(288,410)</td>
<td>453,003</td>
<td>1,828</td>
<td>65,940</td>
<td>232,361</td>
</tr>
</tbody>
</table>

* Figures adjusted for analysis purposes to show the amount of $1,000,000, representing a delayed payment received in January 1964, as included in 1963 instead of 1964.

### TABLE 57. PAHO REGULAR BUDGET—WORKING CAPITAL FUND, 1962-1965

(U.S. dollars)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance 1 January</td>
<td>1,707,059</td>
<td>1,415,649</td>
<td>2,171,652</td>
<td>2,473,480</td>
</tr>
<tr>
<td>Charge during year from operational surplus or (deficit)</td>
<td>(288,410)</td>
<td>453,003</td>
<td>1,828</td>
<td>65,940</td>
</tr>
<tr>
<td>Budget provision to increase the Working Capital Fund</td>
<td>—</td>
<td>300,000</td>
<td>300,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Balance 31 December</td>
<td>1,418,649</td>
<td>2,171,652</td>
<td>2,473,480</td>
<td>2,839,420</td>
</tr>
<tr>
<td>Per cent of following years' budget</td>
<td>23.68</td>
<td>23.10</td>
<td>34.40</td>
<td>35.14</td>
</tr>
</tbody>
</table>
guiding day-to-day operations. In addition to the tables, the regional programs planned under each subject were summarized in narrative form.

Between 1962 and 1964 a major reorganization centralized budget and accounting functions in the Headquarters Office, while planning and operational responsibilities were further decentralized to country levels. Through the application of unique methods of allocating to Zone Chiefs and Country Representatives the resources needed by them to carry out authorized programs, and through the creation of simplified procedures, it was possible to increase program effectiveness and simultaneously achieve dramatic reductions in administrative manpower and costs.

Administrative Management and Personnel

During the period 1962-1965 the staff strength of PASB/WHO increased approximately 1 per cent, from 965 to 976, exclusive of consultants and other short-term personnel. Details are shown in Table 58.

There was a marked increase (96.4 per cent) in the recruitment of consultants and temporary advisers during the period, from 227 in 1962 to 446 by the end of 1965.

During the quadrennium, all personnel activities were centralized. The preparation of all documentation was transferred from the Zone Offices and Centers to Washington. This additional workload was absorbed by the headquarters establishment without any increase in the staff of the Personnel Office and permitted a net reduction of six positions in the field.

The recruitment of fully qualified public health personnel continued to be a critical problem, owning in part to the inadequate compensation offered by international organizations. In early 1962, however, the United Nations approved a new wage scale for international professional personnel, and toward the end of 1965 a further increase was adopted. It was anticipated that this latter increase would help the Organization to attract qualified personnel and fulfill some pending program commitments.

Certain changes in conditions of employment were made. Those of major significance were: increase in the allowance for a dependent spouse; extension and liberalization of reimbursement of educational expenses and education grant travel; repatriation grant for staff losing service benefits; extension of health insurance coverage to staff on special leave and dental benefits to all participants; coverage by a life insurance plan extended to all interested staff; authorization of repatriation grant payments after one year of expatriate service instead of two years; establishment of a flat rate as extra compensation for language proficiency; expansion of the rule for language allowance to permit payment of an additional rate for a third language useful to the Organization; recognition of the gross salary level as the basic criterion for pensionable remuneration rather than the previous net figure after staff assessment; and an increase in the limit of indemnification payable to a staff member for loss of personal property resulting from a service condition from $1,000 to $2,000 for staff members without dependents, and to $4,000 for those with dependents.

Administrative Rationalization and Mechanization

The broad program of administrative rationalization, first planned in 1959, was started in 1962 and completed in 1964.

The over-all objective of this program was the incorporation of the major part of field administrative operations into the headquarters system so as to decrease expenditures and increase efficiency of operation.

The annual savings resulting from this program amounted to $530,000 (68 administrative posts). The extension of administrative rationalization to INCAP in 1964 resulted in estimated initial savings of $53,000 per year (21 posts).

Recentralization of field administrative activities and an expanding program and budget rather substantially increased the work of the Washington Office. It was possible to accommodate this additional work without an increase of the staff, largely through the continuing review and improvement of internal methods and procedures and the gradual introduction of new techniques. One such technique which is assuming an increasingly important role in the Bureau's work is mechanization or data-processing. In view of the advantages inherent in

<table>
<thead>
<tr>
<th>Year</th>
<th>Washington</th>
<th>Field</th>
<th>Total staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of staff</td>
<td>Per cent of total</td>
<td>Number of staff</td>
</tr>
<tr>
<td>1962</td>
<td>245</td>
<td>25.4</td>
<td>720</td>
</tr>
<tr>
<td>1963</td>
<td>250</td>
<td>26.9</td>
<td>681</td>
</tr>
<tr>
<td>1964</td>
<td>254</td>
<td>28.0</td>
<td>625</td>
</tr>
<tr>
<td>1965</td>
<td>249</td>
<td>25.5</td>
<td>727</td>
</tr>
</tbody>
</table>
adopting a modern and rapidly changing technology, data-processing has been applied in both administrative and technical areas. A further gradual expansion of data-processing throughout the Bureau during the coming years was also planned.

**Services and Supply**

A review of the Organization's procurement activity during the past four years discloses a substantial increase over previous years. Successive annual increases in work since 1961 reached an all-time high at the end of 1965, when the total increase in the purchase of line items was almost 100 per cent. This increase in workload was accomplished with little or no increase in staff except for periodic part-time typing assistance. Details of purchasing activities are shown in Tables 59 and 60.

**New Headquarters Building**

After 63 years of effort and planning for a permanent headquarters building, the first group of staff members occupied the building on 16 August 1965. The remainder of the staff moved in on 23 August when the Bureau officially changed its address to 525 Twenty-third Street, N.W., Washington, D.C. 20037.

Years of study by the Governing Bodies and the Secretariat and continuing negotiations over a decade had resulted in action in March 1960 when a bill was signed by the President of the United States of America authorizing the donation of the present site to the Organization. In October 1962 the W. K. Kellogg Foundation made a loan of $5,000,000 to the PAHO, to be amortized in a period of 20 years, for the construction of the headquarters building. As agreed upon with the Foundation, the payment is to be made in the form of annual budgetary allocations of $250,000 to the Special Fund for Health Promotion for expanded programs of water supply, nutrition, and education. This loan is an expansion of the original loan of $3,750,000 made under the same conditions in 1961.

The new headquarters building was designed by Román Fresnedo Siri, who was awarded first prize in the hemisphere-wide architectural competition held in 1961. The properties at 1501 and 1515 New Hampshire Avenue, N.W., the former temporary Headquarters, were sold in 1965 to the American Council on Education for $1,125,000.

A number of works of art were donated by Member Governments of PAHO and a piece of sculpture was given by the Government of Spain. In addition, gifts were received from the Pharmaceutical Manufacturers' Association and from Mrs. Carlota M. de Inurria of Argentina.

**ZONE AND FIELD OFFICES**

The objectives of the program of administrative rationalization were achieved during the period 1962-1965 and resulted in the centralization at the Washington Office of most of the administrative functions previously carried by the Zone and Field Offices, and the decentralization to the country level of technical operations. A saving of several hundred thousand dollars per annum in the cost of operating the Zone Offices was achieved.

As an integral part of this program PAHO/WHO
Country Representatives were appointed to the countries in which the Organization was operating. The Country Representatives became responsible for the full coordination of the PAHO/WHO program within their respective countries of assignment. At the same time, Chiefs of Zones became primarily responsible for the over-all planning, directing, and evaluation of the programs of the Zones and for promoting the inclusion of health activities in national, social, and economic development.

As a consequence of the growth of the Organization's program activities it became necessary to gradually establish more adequate housing facilities for the staff of several Zone Offices. Additional space was provided in the Argentina and Brazil offices, and negotiations were in progress for the offices in Peru and Guatemala.
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