

TENTH PAN AMERICAN SANITARY CONFERENCE

Bogotá, Colombia, September 4-14, 1938

Because of the general interest in the matter, a brief résumé of the more important discussions at the Tenth Pan American Sanitary Conference is given below.

Yellow fever.—The international importance of yellow fever was demonstrated by data showing its recent existence in 12 states of Brazil, 6 Departments of Colombia (197 cases with 173 deaths reported for 1934 to 1938, mostly in two foci), and certain regions of Bolivia, Paraguay, Peru (no cases since May, 1937), Ecuador, Venezuela (State of Bolívar) and perhaps others, although not present in any port or important city. Jungle yellow fever, which has already caused several outbreaks of urban yellow fever, has existed unrecognized for many years in certain regions of South America from Panama to Paraguay, while *Aedes aegypti* yellow fever has not been present in recent years in cities or along the coast of the Gulf of Mexico, the Caribbean region and Pacific Coast of Central and South America. There were 15 percent of positive tests in 1,512 monkeys examined from 54 places in Brazil and Bolivia.

Nowadays the first step in combating yellow fever is to determine whether or not it has been transmitted by the classic vector, *Aedes aegypti*. Anti-larval measures are especially important in order to prevent urban epidemics and the interurban or international spread of the disease; their beneficial effect is not limited to yellow fever. Such measures should not be discarded for vaccination except when they would prove too costly and it is practicable to vaccinate the entire population. On the other hand, in dealing with jungle yellow fever, vaccination is the primary measure, since it protects those exposed and helps prevent the invasion of urban zones by the jungle virus. One may not hope, however, for the elimination of yellow fever virus in jungle regions by vaccination alone, since it has already been proven that the infection is not limited to man. Vaccination a week or more in advance permits persons coming from infected regions to travel in airplane or other rapid means of transportation without danger of propagating the virus.

It was recognized that the three classical measures to be employed, in addition to immunity studies in suspicious regions, should be antilarval campaigns, especially in ports and cities; viscerotomy in suspicious jungle regions; and vaccination en masse of exposed populations. Vaccinations have been generally performed in all the countries affected, especially Colombia (over 10,000), and Brazil, where the number is expected to reach 1,000,000 by the end of 1938, at a cost not exceeding 10 cents each. (The X Conference recommended in its resolutions the establishment of yellow fever vaccination services for persons residing in areas affected or menaced by yellow fever. It praised the work done by the Rockefeller Foundation in research on the prevention and control of yellow fever, and recommended that the investigators who have carried on such work for the past twelve years be considered for the Nobel Prize.)

Other virus diseases.—Compulsory vaccination of dogs against *rabies* (single dose method) has been discouraging in the United States and in Mexico, having been dropped in the latter country. In Colombia and Chile it is not considered advisable, except as an auxiliary measure. It has recently been adopted in the

Federal District in Brazil, however. Rabies was also reported as present in Venezuela and Haiti, among other countries, but has not yet been found in Ecuador. The rôle of bats in the transmission of rabies among cattle has been verified in Brazil.

Epidemic encephalitis has been reported in Brazil (58 deaths in Rio de Janeiro, 1920-1936); Chile (1 case in 1935, 1 in 1936); and poliomyelitis in Brazil (small epidemics in 1936-37); Nicaragua (epidemic of 40 cases); Chile (rare except in the North American colony, in which there were 21 cases in 1937), and Haiti, where it is also rare.

Epidemic pemphigus, known as "wild fire" is an important problem in Brazil, especially in the States of São Paulo, Minas Gerais, and Mato Grosso. A special laboratory for its study has been established in São Paulo.

Lymphogranuloma inguinale has been studied in Brazil since 1921; it has increased in Chile during the last 6 or 7 years. The few cases in Haiti were diagnosed in hospitals.

Not a single human case of *psittacosis* has yet been reported in Brazil, although cases abroad have been linked with the importation of Brazilian parrots. Cases in Argentina in 1936 and 1938 were traced to Australian parrots. The importation of parrots and related species is forbidden in Argentina.

Foot-and-mouth disease is scattered throughout Brazil, but human cases are rare and it is not a major health problem.

Smallpox has been the subject of much study in Brazil since 1908; in 1910 the presence of alastrim was demonstrated. Argentina has intensified her work on vaccine since a small outbreak of smallpox in 1936 and the threat of it in some frontier zones. Some changes have been made in smallpox vaccine manufacture in Colombia, including passage through the burro and maturation in glycerine and ice. In Chile there has been no smallpox since 1930, although isolated cases have been reported on the Bolivian frontier in 1932, 1933, and 1936. Restrictions have been imposed on vessels of Venezuelan origin because of outbreaks of alastrim in that country. Systematic vaccination of children has been carried on in Haiti since 1920-21, and a recent suspicious epidemic was found to be chickenpox. There was an epidemic of smallpox toward the end of 1936 and beginning of 1937 in Ecuador including Guayaquil.

Plague.—Of the countries invaded by plague at the beginning of the century, Venezuela, Chile, Uruguay and Paraguay are now free; in Ecuador the disease has subsided but may reappear during the rainy season beginning in January; the situation in Peru is more encouraging than in previous years. Plague has disappeared from almost all Argentine ports since 1931. There appears to be little international danger from plague today, since the ports are all free of it, but it must be remembered that the disease reappears when least expected. Interesting data of recent years include the Argentine experience with deratization of vessels; report on plague affecting wild rodents in Argentina in the wooded region extending across 30 degrees south latitude from Jujuy to Patagonia; the reported introduction of plague by a boat from India into South American ports, and its transmission from one place to another through infected fleas in the ponchos of Peruvian Indians. Plague still exists in a large area in northeastern Brazil, including regions in six States, especially the interior of Ceará and Pernambuco (1934-June, 1938, in this region, 1,393 cases, of which 35 pertained to 1937 and 14 to 1938; mortality, not over 40 per cent). In 1937, more than 5,000 vaccinations were made. One vaccine used in an outbreak in Bahia, on 4,456 persons, showed only 1 case among those vaccinated five days previously, and in 1938, in another outbreak, there was only one case (which recovered) among more than 4,000 vaccinated persons. The use of vaccine is favored in Bolivia, although

many vaccinated persons were not protected. The presence of plague in the absence of rats, though other rodents were present, was noted in 1928, in Bolivia.

The history of plague in Chile was reviewed, with a discussion of the probability of reinfection in times past from imported jute bags as an extrinsic factor, and local reinfection from time to time as a result of residual plague in rodents. The last rodent plague reported in Chile occurred in 1932. The decrease in the incidence of human plague in Peru was noted, as well as the existence of atypical forms. The absence of plague in Haiti was commented on; and the few cases of plague in Argentina were mentioned, together with the efficacy of vaccination in that country.

(The Tenth Conference emphasized in its resolutions the importance of plague control work and commended the work of the Pan American Sanitary Bureau. A more detailed report on plague in Latin America will be published shortly.)

Maritime and aerial quarantine.—It was noted that as a result of extemporaneous fumigation of foreign vessels in Argentina the necessity for such a measure had decreased from 1.65 in 1935, 1.17 in 1937 to 0.79 per cent in the first half of 1938. Similar results were noted in the United States where, as a result of inspection of boats in order to establish the index of rodent infestation, the fumigation of foreign vessels has been reduced about 80 per cent. For the last 15 years no pestilential disease has been introduced into the United States. Improvements in fumigation, through the use of zyklon discoids was noted. The extension of radio pratique to 89 vessels was explained. Port sanitation in Mexico was described, there having been no plague, cholera or yellow fever in the country for some time, and no autochthonous typhus or smallpox in the ports. The 9 principal ports have water and drainage systems either completed or under construction. Cyanide fumigation is used. The *Aedes* index is maintained under the safety level in the ports. Two quarantine stations have been established on the Pacific coast, and one on the Gulf is contemplated. 24 airports have been authorized in the country, and others being put into condition on the frontiers, upon completion of which work Mexico will adhere to the International Sanitary Convention for Aerial Navigation. International health measures taken in Peru were described. In Brazil semi-annual deratization for all coasting vessels is required. The International Sanitary Convention for Aerial Navigation has been ratified by Brazil, although not all requirements have yet been complied with. *Aedes* indexes of zero and near zero are maintained in all cities of the coast and hinterland (interior or frontiers). Airplane personnel are required to be vaccinated against yellow fever. Maritime and aerial sanitation in Brazil is based in general on the Pan American Sanitary Code and doctrines expounded in the Pan American Sanitary Conferences. Costa Rica fulfills all its international engagements, and is not a sanitary menace to other countries, since it has had no typhus, plague, smallpox, or yellow fever since 1905. Vessels from Costa Rica have been granted radio-pratique in the United States.

Venereal disease.—The history of the venereal disease campaign in the United States during the last 12 years was reviewed from three angles: research; epidemiology, in which it was discovered that venereal disease is $4\frac{1}{2}$ times more frequent in urban than in rural districts; and 6 times more common among negroes than among the whites, and that every year some 500,000 new cases are clinically diagnosed, two-thirds of them in men; and third, the plan of combating the disease, using the funds appropriated by the U. S. Congress which are to increase from three million dollars in 1938-39 to five million in the next year, and seven the following. Free diagnosis and treatment where needed are already available in the greater part of the United States. Several States have passed pre-marital examination laws; group blood examinations have been popularized. Costa

Rica has tried to follow on a small scale the example of the United States, and in 1937 already had 47 venereal disease clinics reaching 90 per cent of the population, and attending to some 7,200 patients in 1937. Of 21,840 sero-reactions made in the Central Laboratory at San José, 4,108 were positive; of 4,172 tests from an unselected group, 425 were positive. Non-compulsory adoption of the premarital certificate has been attempted with the cooperation of the Church. The campaign in Brazil was described, with recommendations for international cooperation, and the good result of the dispensaries established by mutual agreement along the Brazilian-Uruguayan frontier was noted. The campaign in Chile, beginning in 1925, was described, the obligation (1938) of the Welfare Funds (Cajas de Previsión) to undertake the discovery and treatment of chronic diseases of their members, including syphilis was noted. The results of the first 25,000 examinations of individuals being treated has revealed 10.3 per cent positive Kahn reactions; 0.4 per cent primary syphilis, 0.6 per cent secondary syphilis, and 2 per cent acute gonorrhoea. Treatment is compulsory, since the patient who drops it is deprived of his welfare fund benefits. Free treatment is supplied by the Social Security Fund to pregnant women, and nursing children. The campaign is based on case finding, treatment, compulsory isolation of those discontinuing treatment, and education. Lymphogranuloma has apparently increased in Chile. The incidence of venereal disease, and especially of gonorrhoea since the use of sulfanilamide derivatives, has decreased greatly, although the number of new cases is still very high. A description of the new antivenereal disease law of Argentina was given, noting the favorable results, since the incidence of venereal disease among recruits has decreased from 1.66 per cent in 1937 to 0.87 per cent in 1938, and cases of venereal disease among soldiers in the first quarter of each of these years, 2.43 per cent in 1937 and 0.95 per cent in 1938. Various Departments in Colombia have aided the campaign, among them Cundinamarca with its large venereal disease center, the Samaritan Hospital, offering free treatment to all requesting or needing it. While in Chile the abolition system of dealing with prostitution, in effect from 1927 to 1931 was considered to have favored the increase of venereal disease by forcing prostitutes onto the street, Argentina has incorporated abolition into her venereal disease law, and the system is favored in Mexico, with emphasis on the necessity of rehabilitating the prostitute, for which purpose a school with work-shops and two school-homes have been established in Mexico City. The necessity for rehabilitation was also noted by Colombia, and the statement made that abolition and reglementation could be the cardinal points in an inter-american agreement for the campaign against venereal disease. The anti-venereal disease budget in 1938 in Venezuela amounted to more than a million bolivars, or some 350,000 dollars. There are 23 dispensaries, in cities, oil regions and ports, with 1 physician for every 20,000 inhabitants. The diagnosis must be made both clinically and in the laboratory, due to the prevalence of yaws and carate, both of which also give positive tests in high proportion. In Guatemala, of 64,154 health certificates issued, only 7.95 per cent had to be refused for syphilis. The prenuptial certificate involves certain difficulties, in the case of the woman being already pregnant or a mother, but the problem may be solved by requiring both parties to undergo treatment. In reply to a question from Honduras as to the neglect of gonorrhoea in venereal disease campaigns, it was said that if this disease has received less emphasis, it is because there had not been available against it such efficient weapons as there are against syphilis. The introduction of sulfanilamide, however, is promising. The importance of Government supervision of the quality of laboratory services was noted, and a resolution to this effect approved.

Amebiasis.—The incidence of amebiasis in Brazil reaches 9.3 per cent, the

disease being milder, however, in the temperate zone. Statistics for Venezuela show from 6.8 to 42.9 per cent of infestation, with a mortality of less than 1 per cent. Infestation is greater from one to five years of age. The importance of fowl and buzzards in the spread of protozoa was pointed out by Guatemala. In Chile, where for many years the disease was considered uncommon, there has recently been found 11.26 per cent of infestation among 2,503 patients, mainly with digestive disorders, and 6.96 per cent among army recruits. As to Bolivia, the important part played by dysentery, especially bacillary, during the Chaco war was mentioned. The importance of the laboratory in differential diagnosis was noted by the Argentine Delegation. The prevalence of amebiasis even in an elevated site, such as Bogotá, Colombia, where it appears in small outbreaks, especially among children, was remarked, and the rôle of buzzards in the spread of intestinal diseases in Buenaventura was mentioned.

Malaria.—The disastrous part played by *A. gambiae* since its recent introduction in 1930, in the spread of malaria in northeastern Brazil was reported. In 1938, in a zone inhabited by 60,000 persons, there were some 50,000 cases of malaria, and in many localities the proportion was more than 90 per cent; the mosquito is still spreading, and it may perhaps be impossible to prevent its spread over the whole continent and even to North America. In Venezuela there was created in 1936 a Division of Malariology. Malaria is the most important cause of death in the greater part of the country, with a probable death rate in 1937 of 156 per 100,000, while the proportion of malaria to the general mortality varied from 6.2 to 17.1 per cent differing in various regions. One year of work in Puerto Cabello resulted in a decrease in mortality from about 70 to about 10. Malaria is endemic in a great part of Mexico, only the very high and cold districts being free from it. The most common plasmodia are the *vivax*, the *falciparum*, and rarely, the *malariae*; the most dangerous mosquitoes the *albimanus* and *pseudopunctipennis*, and in some areas, the *maculipennis*. Special services have been established in the more afflicted areas to combat the disease. Work is in charge of a Malaria Commission in the Department of Public Health; anti-malaria supplies are admitted duty-free; 80 per cent of a fund composed of some 15 per cent of the budget of the Department of Health is to be used for permanent anti-malaria works. It is hoped that the results of the campaign being waged in Cuba, both in rural and urban zones, will be evident within a few years. Panama has been a small laboratory for anti-malaria work, with the campaign gradually extending into the interior. In Argentina, it was noted that the problem is local, necessitating careful study of each region. Malaria affects an area of 120,000 km², with some 850,000 inhabitants, 300,000 in large cities and 550,000 in rural zones. The campaign in the rural zone is limited to distribution of drugs, education, etc., and this last year, experimentally, mechanical protection of children under three; in the cities, the mosquito is combated. Twice a year a survey is made, with a blood index of children under 2 years. Of the 23 species of anopheles in Colombia, 4 carry malaria (*tarsimaculatus*, *darlini*, *albimanus*, *pseudopunctipennis*) *P. malariae* is very rare. Totatquina is prepared for distribution by the National Institute of Health. In Guatemala malaria mortality reaches 18.17 per cent of the general death rate. Over 65,000 quetzals are spent in malaria work. The most common anopheles are *albimanus*, *argyritarsis*, *pseudopunctipennis* and *hectoris*. Vectors have been found above 5,000 and even up to 11,000 feet, but without malaria. Malaria in general is decreasing since a systematic campaign began in 1932. The creation of a Malaria Committee in the Pan American Sanitary Bureau was advocated by a Peruvian representative. Malaria is decreasing in some cities in Peru due to large-scale sanitation undertakings. Quinine in high initial doses is recommended. Malaria

is a local problem in Bolivia, and some outbreaks disappear without any sanitary action, while flourishing towns have been left desolate due to the disease. Cases have been noted up to 2,100 meters (6,889 feet) altitude. Four-fifths of the population are menaced, and the Chaco war spread the disease to areas formerly free. Inhabitants of each district are obliged to contribute two days work a year to anti-malaria work, and patrons to contribute to the free treatment of workers. A large scale factory for totaquina has been established. Malaria in Chile presents itself exclusively in the valleys of Tarapa Province, Department of Arica, with *pseudopunctipennis* as the vector, and a mortality of 0. A campaign in one of the two valleys principally affected has eradicated the infection almost completely, and a similar campaign has been initiated in the other valley.

Health administration.—Public health administration in Venezuela was reorganized in 1937, on the basis of a trained personnel and the creation of health units, tending to greater economy and efficiency. Public health action has been coordinated and scientifically unified in Brazil in accordance with the recommendation of the III Panamerican Conference of Directors of Health, although centralization of all health administration is not possible in such a vast country. In 1937, 7 federal health delegations were created, located in the larger cities and embracing the whole country. In 1938 a study of yaws, filariasis, leishmaniasis and hookworm disease in all the country was begun. Sanitary Codes drafted by the National Department of Health are in force in four States. Courses in public health are given. Financial as well as advisory aid is given, as in the construction of leprosariums and sanatoriums, by the Federal Government. The responsibility for health work is left to the States rather than to the municipalities. Health budgets of the various States have been increased consistently. The career service is becoming increasingly adopted by the various States. In Costa Rica, due to its small size, centralization is effective. Although the 60 municipalities are autonomous, they are required to assign 20 per cent of their income for health work. In Mexico the Department of Public Health has charge of all health work except that concerned with children, since there has recently been created a Department of Public Welfare, including the Department of Infant Welfare. In Ecuador the Ministry of Social Welfare includes public health. The country is divided into three zones, each in charge of a Director of Health subordinate to the General Department. Each head of a zone possesses a scientific personnel with laboratory, etc. The plague service is almost independent, in view of its international importance. There are three points of view in Chile: one wishing to merge public health with public welfare and worker's security; another to coordinate these services; and the third to have each completely autonomous. Coordination, or perhaps fusion, has been achieved in the Ministry of Public Health, whose chief fulfills political, social, and scientific duties. On the other hand, the Director of Health is a scientist, exercising health authority in regard to its scientific phases. A school of hygiene has been created. In Peru, a Ministry of Public Health, Labor and Social Welfare was created in 1935, while the Direction of Public Health has been reorganized on a scientific basis. A Commissioned Service and a school of public health have been created. Public health in Argentina has developed step by step, the original law of some 60 years ago including only two articles. It is probable that an Under-Secretary of Public Health attached to the Ministry of the Interior will be created. In Uruguay there is a full-time Director of Health in the Ministry, and it is hoped to extend this principle.

Drinking water.—A draft of standards for drinking water was presented, to serve as a base for a more complete text to be submitted to the departments of sanitary engineering of the various Republics for consideration. A complete

list of cities and towns of 2000 inhabitants or more in Argentina, which have water distribution systems, was presented. Surface water supplies predominate. The daily per capita consumption is greatest in Rosario, with 283 and Buenos Aires, with 395 liters. While water supply and sewage disposal are generally municipal matters, the Obras Sanitarias de la Nacion, to which not less than 61 cities have delegated these services, is national in character. House dwellers are required by law to provide themselves with water supplies and sewage disposal facilities, and the discharge into rivers of untreated sewage and noxious industrial residue is prohibited. The localities having complete sanitary services are few, but the number of people supplied is considerable, if the Federal Capital is included.

Rural hygiene.—Only 4 States have not yet adhered to the Mexican plan of coordination of State and Federal health services, which is carried out through the Central Office of Rural Hygiene and Sanitary Services of the Department of Public Health. Throughout the country 265 rural health centers, health units, and offices, have been organized, and there are also maintained traveling health brigades to deal with special problems. In Nicaragua a division of the Department of Health is in charge of all rural and local sanitary activities. There are 29 health officers, some stationary and some traveling, in the 15 Departments of the Republic. Hookworm disease is combated through laboratory examination and treatment of cases and construction of latrines. The campaign against an equally important problem, malaria, is limited by the resources available. There has not been a case of smallpox in Nicaragua since 1932 thanks to compulsory vaccination. The work of the Compulsory Social Security Fund in the rural section of Chile (52 per cent of total population), especially in regard to medical attention, and of late, construction of healthful dwellings, was described. The work accomplished in Venezuela in building sanitary latrines at low cost or free; incinerators; and economical and healthful rural dwellings, was noted. A survey in Brazil revealed that hardly 200 localities of more than 2000 inhabitants in Brazil had sewage systems, and 80 of these were in the State of São Paulo. Rural latrines have been introduced in the rural districts over a period of 20 years or so, and are being replaced, especially in Minas Geraes, by improved models. In Paraná, the health department builds reinforced concrete septic tanks which it sells at cost to the public on credit. New health regulations under consideration require that in all new rural zones the latrines must conform to prescribed standards, and there are provisions regarding waste disposal and water supplies. In Costa Rica almost the most important industrial activity might be said to be construction of sanitary latrines, which have been introduced into the most remote parts of the country. The latrine now used costs \$3.50, paid by the peasants in 10 quarterly installments. In Colombia the principal rural health problems are hookworm, syphilis, alcoholism, and in certain regions, malaria, while yellow fever is not an immediate menace. Some 90 per cent of the workers of the coffee regions suffer from hookworm. Venereal disease affects more than 60 per cent of the workers. In Cuba, 1,200 rural schools, in which health is also taught, have been built, and 42 diagnostic laboratories examine the specimens obtained in schools or during inspections. In more than 90 per cent, the cause of disease is intestinal parasites. In Haiti the principal rural afflictions are intestinal diseases, yaws, and malaria. *Chenopodium* is systematically used against intestinal parasites, without a fatality. The goal of a sanitary latrine for each rural dwelling is still far from attained. Yaws is treated in rural dispensaries, with stovarsol, spirocide, and in certain cases neo-arsphenamine. More than 1 million pills for malaria have been distributed, using lately atepé, which shortens hospitalization. Certain swamps near some cities are to be drained this year.

Goiter.—There are 7 zones in Guatemala, with 126 cities, where the incidence of goiter is greater than 10 per 1000 inhabitants, varying from 11 to 346, the principal foci being in mountainous localities on the central plateaus and valleys. There are no endemic zones on the Pacific slope. There are few cases in two zones not far above sea level. In the Department of El Progreso, all villages are affected, and there are also endemic areas of Chagas' Disease. The lowest altitude above sea level at which goiter has been found is 328 m, without any further relation with altitude beyond these figures. Some 40.9 per cent of the goitrous localities receive their water supply from the mountains, and only 11.3 per cent from volcanic hillsides. The youngest patient observed was 4 years.

Trypanosomiasis.—Chagas' disease is of importance in a considerable extent of Argentina, known cases being more than 300, while the vector is found over a slightly larger area.

Onchocerciasis.—No truly effective means of combating onchocerciasis has been found in the afflicted zones (Oaxaca and Chiapas) in Mexico. Of the 109,724 km² of the Republic of Guatemala, 1,000 are included in the endemic zone, 29.1 per cent of the 35,322 inhabitants being affected. The simuliidae capable of transmitting the infection are *ochraceum*, *mooseri* and *avidum*. The length of life of the microfilaria is a point worth investigation, from the preventive point of view.

Nutrition.—Dr. González, Chairman of the Nutrition Committee of the Pan American Sanitary Bureau, presented a detailed report, and also described the work done in Uruguay by the National Committee of Correct Nutrition, the Department of Nutrition and Foods of the Public Health Ministry; popular restaurants; milk sanitation; and a planned Institute of Correct Nutrition and Alimentation. The work done by the Institute for the Investigation of Popular Nutrition in Mexico was described, and results of investigations of foods of the country given. In Colombia research suggests that the working class spends 0.28 pesos daily and obtains 1,779 calories per person; employees, small merchants and students spend 0.85 pesos for 1,817 calories; and the well-to-do middle class, 0.51 for 2,538. Differences in consumption of food due to climate have been noted in Colombia, as well as the existence of beriberi in some regions, pellagra in others, whereas scurvy is very rare, and rickets also extremely uncommon in Bogotá. The bases of the nutritional policy in Chile were described. Sanitary control is in charge of the Department of Nutrition of the Department of Health, and municipal agencies. A draft of a new food law has been prepared. A National Council on Nutrition has been created and has already obtained valuable data. The organization and functioning of the new National Institute of Nutrition in Argentina were described, this being an outgrowth of a former municipal institution, offering to South American countries a center for study and training. Dr. McCollum reviewed the economic phases of nutrition, and emphasized the importance of an optimum diet for laborers, noting that heavy labor requires 4000 calories or more per day. A paper on the prevalence of avitaminotic edema in Costa Rican children in late years, with a mortality of 39.5 per cent, was presented, while in El Salvador a death rate as high as 60 per cent has been noted. In Brazil, an extensive inquiry into nutrition has been undertaken. Steps for the establishment of dairies and the culture of fruits and vegetables have been taken. Recent regulations provide for workers' kitchens and minimum salaries. A study of 60,149 persons in 12,106 families from various parts of Rio de Janeiro show that almost a fourth of them lived on a system of permanent deficit, each family spending on the average a fourth of its income for rent, a 16th in transportation, and more than half for food. Deficiency in the calory total of the diet was not observed, but more likely, a surplus, although the consumption of pro-

teins and fats might be low, and the quantity of milk, greens, legumes and fruits markedly low. The emphasis being laid on nutrition in relation to the health of mothers and children in the United States was noted. In 22 of the 51 state and territorial departments of health which cooperate with the Federal Government in maternal and infant welfare work, there is at least one nutrition specialist. In other States independent bodies furnish similar services. The establishment of popular restaurants in Peru was described.

Social security.—The organization of Social Security in Chile was described, including attention and compensation for the risks of illness, disability, old age and death, through 43 welfare funds supervised by the Department of Welfare of the Ministry of Public Health, including workers of the most varied institutions. The principal is the Compulsory Social Security Fund, embracing 1,400,000 persons, or one-third the population of the country, of which approximately 1,000,000 pay their fees regularly. The Fund gives medical assistance, grants in case of incapacity, maternity care, infant care, death benefits, return of payments for death, disability and old age pensions, health examinations, compulsory treatment of syphilis, and preventive rest cures. In its 12 years of existence the receipts of the Fund amounted to 1,115,266,280.52 pesos, and in 1937-38, 174,954-465.72, while the total expenditure has been 619,985,991.48 in the first period, and 119,974,465.32 in 1937-38. The capital of the Fund June 30, 1938, was 471,326-065.44 pesos. The Fund has built or has under construction more than 2000 houses, and turns over each year one per cent of the employers' quota, or 18,000-000 pesos, to the Housing Fund for such construction. The provisions of the U. S. Social Security Law of 1935 were explained. The relation of social security to health was set forth in a paper from Brazil. The age distribution must be considered in social security plans; in Brazil in 1920 it was: under 20 years, with few possible contributors and consumers, 56.45 per cent; 20 to 50 years, strongest contributors, 34.56 per cent; and over 50, 8.99 per cent. The distribution varies, of course, in different regions. The salaried population of Brazil is estimated at 11,880,000 in a total population of 44,002,095, the majority dedicated to agriculture. Although official social security does not exist in Cuba, private enterprises have been engaged in it since 1900, especially groups of the Spanish colony, who in their ten social security associations have more than 700,000 members. Similar institutions have been founded by the medical associations. Military institutions, including some 40,000 to 50,000 individuals, have their own Funds. Laws have been passed on industrial accidents, workers' insurance, and maternity insurance and paid rest. In Mexico and Venezuela, only preliminary studies of the subject have been made to date. More than 15,000 cards on accidents of work and professional diseases have been collected in Venezuela and a census of all workers of the nation is being taken. The system is to embrace at first only the Federal District. In Ecuador the system embraces two population groups, the employed and the salaried classes, on the basis of a compulsory 5 per cent contribution. Results have been excellent. Well-equipped general clinics have been established by the Social Security Funds, and in addition to the death and illness benefits, the capital is wisely invested, for instance in draining swamps, creating workmen's housing quarters, improvement of nutrition, etc. In Peru the Fund has already collected 5,800,000 soles. A hospital and clinics not only in Lima, but in the rest of the country, are under construction.

(A more extended review of Social Security in Latin America is available for distribution by the Pan American Sanitary Bureau.)

Vaccines and sera.—It was pointed out by the Argentine delegation that methods of value in one country may be less successful in another. In Argentina the single dose immunization against diphtheria has been used with excellent

results, and four provinces have legislated on the matter. The number vaccinated with the old method reached 400,000 children in a population of more than 1,000,000. Triple vaccine (typhoid, tetanus and diphtheria) is used in some 60,000 soldiers each year, without any reaction. The only compulsory vaccination is against smallpox. There would appear to be justification for a legal basis for the elimination by immunization, of such diseases as smallpox, diphtheria, and perhaps yellow fever in limited zones. There are from 50,000 to 60,000 diphtheria cases a year who receive free serum. A method permitting certain diagnosis in three hours is used for diagnosis. The problem of smallpox prevention in Brazil was discussed, together with the creation of a National Smallpox and Vaccine Service. The work of the Institute of Hygiene of Mexico in supplying sufficient bacteriological products for the needs of the country was described, and the possibility of utilizing simultaneously active and passive diphtheria vaccine in the protection of contacts was discussed. In Peru a National Institute of Public Health has been created, and foreign technicians had to be contracted at first.

Leprosy.—Leprosy is one of Colombia's greatest problems, there being 12,000 estimated cases. There are 5 principal foci, in one of which the incidence of leprosy reaches 3.54 per 1000, compared with 0.14 for the rest of the country. In the last 14 years some 23,000,000 pesos have been spent in maintenance of leprosaria, of which there are now three, one lodging 5,000 lepers and 2,600 healthy persons. Furthermore, 12 leprosy dispensaries have been established in different parts of the country, and the health units and rural commissions cooperate in preventive work. Four asylums have been established for healthy children of lepers, but the number is insufficient, 1,533 children still living with their diseased parents. From 1920 to 1934, 593 cases of leprosy in children of patients in the leprosaria were found, in contrast to 7 cases among 973 children removed early. Results of treatment are encouraging, since 64 per cent improve (26.8 per cent of these becoming socially cured), and 24 per cent become arrested. The Lleras Acosta Institute of Investigation carries on research. The campaign in Brazil has been intensified lately through the cooperation of the Federal Government with the States, the efforts of the State of São Paulo being noteworthy. A revised census, yet unfinished, revealed some 35,000 lepers in June, 1938, distributed as follows: north, 2.05 per 1,000; northeast, 0.2; center, 1.13; and south, 0.49. The long-term plan of combat includes construction of new farm-colony type leprosaria and improvement of existing institutions, with the aim of isolating only the cases of lepromatous and mixed forms, which are responsible for more than 95 per cent of the contagion, especially among the poorer classes. Of sufferers from the neural type, only the indigent and the crippled will be isolated, more for welfare purposes. The number of cases to be isolated is calculated at 65 per cent of the total. There are 28 leprosaria now functioning, and 22 under construction or planned, with a total of approximately 25,000 beds. Practically all the States contribute to the construction, representing an investment of more than 34,000 contos. Increasing sums for maintenance will be appropriated by the Federal Government, but the States must have their preventive service well organized, including dispensaries, census, complete and permanent medical aid, and adjustment with federal authorities. The cost per day per bed varies from a little over \$300 in Minas Gerais to \$700 in the Federal District. Dispensaries have been established, especially in the Federal District and the States of São Paulo and Espirito Santo. In the International Leprology Center a chaulmoogra ester has been obtained which shows great efficiency and little irritating effect. The *Carpotroche brasiliensis* also promises to yield therapeutic effects similar to those of *hydnocarpus*. Oxygen under pressure is being tried with encouraging results.

The Federation of Societies for Aid to Lepers and Defense against Leprosy, with its 72 branches, is in charge of welfare work with families and especially children of lepers, having already established 9 preventoriums. Results with the Lleras Acosta test in a series of 391 tests were considerably different from those described by the author of the test. In Argentina the first leprosarium of the five to be constructed by the National Department of Health was inaugurated this year. Leprosy is not a problem in Guatemala, since there are only 43 patients for 3,000,000 inhabitants, but isolation has been practiced since 1874. Leprosy was almost unknown in Peru until a few years ago, when some cases arrived from neighboring countries, and the number is now considerable, so that a small leprosarium has been built near Iquitos, and a leper colony on the order of those in Brazil is planned. The second leprosy census in Mexico, in 1937-38, found 540 lepers to be added to those of the previous census. There are 20 dispensaries, in which 2,357 lepers are registered, 1,206 of whom receive treatment. The Society for the Protection of Lepers has founded an asylum for healthy children of lepers in the Federal District. The importance of good general condition in treatment was emphasized in Venezuela. Occupational therapy is to be introduced in the leprosaria, which are to be reorganized as hospital-asylums.

Germ and virus carriers.—The search for typhoid and dysentery carriers in Brazil was described. In an outbreak in Rio de Janeiro, of 365 persons living in a sanatorium, two carriers were detected before they became ill. Among 1,183 patients studied from 1935 to 1938, the proportion of carriers varied from 8 to 8.5 per cent; among contacts of the sanatorium mentioned, the proportion of carriers was 1.4 per cent, while among 304 studied in health centers, it was 1.6 per cent; among 2,025 persons examined during an epidemic, in São Paulo, 1 per cent, and among 915 food-handlers in a Rio suburb in 1928, 1.6 per cent. Of 1,479 suspicious cases studied in Rio from 1935 to June, 1938, 7.8 per cent proved to be carriers of amebic dysentery; of 1,649 suspicious cases of bacillary dysentery, the same period, 8.5 per cent. Methods used for the control of carriers in a typhoid campaign in México were described.

Typhus fever.—The development of typhus in Chile since 1850 was traced. The latest epidemic began in 1932 with 754 cases, continuing with 15,000 in 1933; 14,600 in 1934; 15,700 in 1935; 4,000 in 1936, 3,000 in 1937, and in 1938 having almost disappeared from large cities, the sporadic cases therein observed being possibly of rural origin. From 1919 to 1937 there were 85,000 cases with 18,000 deaths, and no less than 40 or 50 million pesos have been spent in combating the disease. Investigation has shown that the number of clinical cases is insignificant in relation to the sub-clinical infections, although the proportion varies in different outbreaks. Severe cases infect almost 100 per cent of the lice, the proportion decreasing with the decreasing severity of the infection. Typhus diminishes in the winter and fall, when there is vitamin C deficiency, though the contrary would seem logical. During the five years of the last campaign, 10 million persons were bathed; 1 million were deloused and had their hair cut; 1 million places were disinfected, and some 15 or 20 million pieces of clothing, while more economical and practical results might be obtained treating only direct contacts. Typhus serum has given excellent results and gave the final blow to the epidemic in Valparaíso. Among 70 vaccinated contacts, not one became ill, although those not vaccinated became ill. In Peru the obtaining of cultures directly from rats infected with rickettsia may facilitate the preparation of a vaccine. In Colombia, typhus was mentioned in 1629, its last epidemics toward the end of the 19th century corresponding to the last civil wars. With the improvement of the standard of living, only sporadic cases have been observed of late. In 1935 a spotted fever of the rickettsia group was found on the Rio Negro banks. Al-

though the typhus group is not a serious problem, it may become so if known foci are not watched and new ones investigated. In Bolivia the disease is very severe, in a highly fatal endemo-epidemic form, more so in the white than in the native. Typhus of the Bolivian highlands belongs to the "European" type, and in three years, among 1,863 cases treated in the La Paz General Hospital, the death rate ranged from 21 to 38 per cent. Vaccination with dead virus is considered to have high immunizing qualities, greater at higher doses injected and greater concentration of rickettsia. Vaccine against the virus of European typhus isolated in Mexico gives complete protection to the guinea pig if the concentration of rickettsia is greater than 1,200 per microscopic field and more than two 1 cc doses are administered. This vaccine seems absolutely harmless. In Brazil, only rare cases of European typhus have been reported, generally in seaports among newly-arrived immigrants. Rodent typhus was suspected in São Paulo in 1937 in an official in charge of recovering fleas from rats. More sporadic cases may be discovered, since naturally-infected rats have been found. The spotted fever group presents an important problem, having been recognized in São Paulo in 1929 and in Minas Gerais in 1933; in 9 years, some 300 cases have been observed, the disease being endemic and suburban or rural, in limited foci, with greatest incidence toward the end of winter. Although the cases are usually single, several have also been observed in one dwelling. The Weil-Felix reaction is frequently positive with *Proteus* X19, X2 and XK, highest in the first two. The vector appears to be a tick, generally *Amblyomma cajennense*. Preventive work in São Paulo is based on work against ticks and preventive vaccination with a vaccine made from infected ticks. Typhus may have reached Guatemala from México, but was generally unknown until 1897, when there was an epidemic. The dog may be a reservoir of the virus. The disease is severe in the Indian and the half-breed. Education is important in preventive work. There is a lake in the typhus region. The disease is uncommon in other parts of Central America. The work done in Mexico on vaccination was described. Both European and American typhus may be effectively immunized against with dead rickettsia, provided the vaccine is sufficiently strong and carefully purified. Rats are now being bred for size and quality for the production of rickettsia. The influence of temperature on the development of the typhus virus has been shown.

Tuberculosis.—In Nicaragua, collapse-therapy has helped to solve the difficulty derived from the lack of sanatoria. A Tuberculosis Section has been established in the Department of Health. Tuberculosis is a serious problem in Chile, with a mortality of 266 per 100,000 in 1937, and about 73,000 cases in the country. A recent law provides for health examination, preventive rest, and paid rest. There is a tuberculosis section in the Department of Health. The Compulsory Social Security Fund has established 28 clinics, three sanatoria with 300 beds, as well as contracted quarters in hospitals, a house for night rest, and has begun a three year plan of early diagnosis, early isolation of infectious cases, and effective treatment. Only a trial has been made of BCG. Results of vaccination with BCG, in Argentina, beginning in 1935, were described. In 52,000 children vaccinated during the period, no contra-indications or disturbances of any kind were noted. The vaccinated person should be separated from the contagious focus for 4 to 8 weeks. Subcutaneous vaccination is more effective. When the vaccinated person does not react in six months, he should be revaccinated. Vaccination in older children and healthy adults with repeated negative tuberculin tests is advisable. This method should be used in tuberculosis work when means successfully used by other countries are not available. The tuberculosis death rate in Venezuela is 84.8 per 100,000 according to official figures, and much greater according to others, being higher in the Federal District and in States

such as Valencia. Among the Goajiro Indians tuberculosis lesions do not amount to 1 per cent. Up to 50.11 per cent positive reactions were found in Caracas dairy herds, but the proportion was much lower in the interior. Until 1935 there were only 3 dispensaries in the country, 2 of them in the capital, and not more than 200 beds. Lately 13 dispensaries in the more important towns have been established, a 200 bed sanatorium built in Caracas and another of 300 beds to be constructed; colonies and school restaurants have been established, and a preventorium with capacity for 40 children. Vaccination with BCG has been carried on since 1933, its value being considered but relative to date. In Mexico it is not felt that BCG vaccination has reached its maturity, although it is to be tried. There is a tuberculosis section in the National Department of Health, with an appropriation. There are two sanatoria in the country, with 974 beds. Mortality from tuberculosis is 7,165 annually. Results obtained with BCG in a group of children vaccinated in Montevideo from 2 to 7 years ago, were compared with a similar group of unvaccinated, the data being very favorable to BCG. In Costa Rica there are 455 beds available for tuberculosis; annual deaths, 499; active tuberculosis cases, 4,000. BCG has not gained in popularity among tuberculosis workers and clinicians in the United States, first because there have not yet been scientific experiments on a large scale, secondly, other methods, such as search for contacts and discovery of early cases seem to be better from the epidemiological point of view, and thirdly, the incidence of infection among the new-born is much less in the United States than in the countries where BCG is used, and finally, results from countries where it has been tried in adults are contradictory. Tuberculosis is the most important sanitary problem in Brazil, there being towns where the death rate is more than 300 per 100,000 inhabitants, and there are probably more than 100,000 deaths a year from tuberculosis in the country, and more than 500,000 cases, or 1.2 per cent of the population. The campaign includes training of experts, including nurses; installation of dispensaries; large-scale use of BCG; furnishing the necessary beds (some 13,000) in low-cost sanatoria and preventoria. Results with BCG in Rio de Janeiro are considered satisfactory, although scientific research should be continued. Diagnosis of tuberculosis in psychiatric hospitals was described. Tuberculosis is a serious problem in Peru, still further complicated by the migration of patients from the coast to the mountains. In 1937 the tuberculosis death rate in Lima was 430, and a death rate of 330 per 100,000 is estimated for the Republic. Plans of campaign include creation of dispensaries, a central X-ray laboratory, and a 1,000 bed sanatorium for Lima, where only 400 beds are now available. A hospital for extra-pulmonary cases in children is to be built. BCG has been tried in about 1,000 children, no conclusions as yet being drawn. The preventorium system has not been tried, because of expense.

The estimate of 100,000 cases in Colombia is considered by some as too high. There is a tuberculosis section in the Department of Health, and 13 dispensaries have been established and a national program mapped out. Among 7,378 persons reporting at the dispensaries, the incidence of infection was 17.5 per cent. All hospitals subsidized by the government must have wards for tuberculosis cases, and there are 700 beds in 17 institutions. Vaccination with BCG is to be instituted shortly. Improvement of housing in Bogotá is being attempted as an auxiliary measure, and similar action has been recommended to the Federation of Coffee-Planters. The importance of the social factor in tuberculosis was noted by a representative of the United States. The campaign begun in Cuba in 1935 by the National Council of Tuberculosis was described, including a survey which has already revealed more than 17,000 cases. New dispensaries, sanatoria and hospitals have been created. Although the mortality from tuberculosis in

1934 was 35.68 per cent of the total death rate, in 1937 it had descended to 14.06 per cent.

Maternal and infant hygiene.—Maternal and infant hygiene work in Venezuela since 1936, now under the Division of Maternal and Infant Hygiene of the Department of Health, was described. Services, independent or in the health units, have been organized in the principal cities of the country. 1,300 rural midwives have been registered. Infantile tetanus has decreased from 11.17 per 1,000 live births in 1933 to 2.34 in 1937. Except for Caracas and some cities, the infant mortality in the country cannot be accurately estimated; in Caracas it has decreased from 150 in 1934 to 99 in 1937; for the country as a whole from 158 to 125, although the number of births and deaths is undoubtedly below the actual numbers. A National Children's Council has been organized, and a Children's Charter approved authorizing control by the Federal authority of all organizations engaged in maternal and child welfare. The work done in the United States, especially since the organization of the Children's Bureau in 1912 was described. Infant mortality has considerably decreased in 22 years, partly because of specific measures and partly because of general improvement. Much work is yet needed, particularly in order to decrease the mortality during the first month of life. Social work should complement medical and nursing aid. Increase in the number of visiting nurses and child and prenatal dispensaries incorporated in health centers, were declared to be primary needs for success in Brazil, as well as education of midwives. Established measures of immunization should be applied to children. In countries with low resources, the number of beds needed in maternity wards may be reduced by the creation of an efficient home delivery service.

(A more complete review of maternal and child welfare measures is available for distribution by the Pan American Sanitary Bureau.)