

IV PAN AMERICAN CONFERENCE, *Continued*

SANITARY PROGRESS, *Cont.*

Uruguay.—Dr. Schiaffino reported that the work of the Ministry of Public Health of Uruguay has been characterized since 1936 by an orientation toward hygiene and preventive medicine. Vaccination against smallpox of more than a million persons prevented the spread of the disease following an outbreak in 1936. Intensification of diphtheria vaccination has brought a reduction in mortality. The tuberculosis death rate has dropped. Surveys of tuberculosis infection have been made using Abreu's roentgen-photography method. Other developments include the extension of drinking water and milk pasteurization services to more than 70 cities; the reduction in infant mortality; increase in facilities for training of public health personnel; creation of a "Health Certificate" clinic in the Department of Health for the compulsory medical examination of certain employees; and establishment of the Departments of Industrial Hygiene, School Hygiene, Hygiene of Nutrition, and Vital Statistics; authorization of a Center to combat Hydatidosis; control of the narcotic drug traffic and of the mineral water and soft drink industries; and increase in the health department budgets.

Venezuela.—In his detailed report on recent public health progress in Venezuela, Dr. Garcia Maldonado mentioned the creation of an Institute of Hygiene for pathologic research and the manufacture of biologic products; creation of the School Health Service of Caracas; an increase in the number of beds of the Social Welfare department from 7,000 in 1936 to 10,000 in 1940; establishment of popular restaurants and school lunch rooms, of physical education centers in 11 cities, of milk centers in 18 cities, of a venereal disease dispensary and facilities for the preparation of personnel in diagnosis and research and discovery of heart lesions; the furnishing of pasteurized Grade A milk in Caracas; reorganization of the Institute of Puericulture, which offers training for nurses and physicians and furnishes child and prenatal care; the reduction in infant mortality from 140 in 1934 to 99 in 1937; and tuberculosis control work, including the construction of a 300 bed sanatorium housing the National Tuberculosis Institute, creation of 3 dispensaries, of a traveling epidemiological service, and of a radiology service which made 10,000 examinations in six months. Alastrim has decreased considerably, following the vaccination of 619,000 persons. The Division of Yellow Fever has increased the number of viscerotomy posts from 13 in 1938 to 40 by the end of 1939, and the *A. aegypti* index of La Guaira, Puerto Cabello and Ciudad Bolivar has been considerably reduced. The public health budget has increased from 5 million bolivars 4 years ago to 20 millions, and the technical personnel from 93 physicians to 293; from 54 nurses to 293, and from 22 inspectors to 234.

In referring to *Brazilian* vital statistics, Dr. Barros Barreto mentioned among other advances the promulgation of the Census Law on collection, classification and publication of statistics, to be applied to all States, some of which are already enforcing it. The departments of state sanitation have vital statistics offices which send their reports to the Department of Public Health, as do important cities. The number of vital statistics offices in Brazil increased from 59 in 1937 to 147 in 1939. The Department of Public Health has sent trained personnel to different cities and States to assist in improving local statistical services. The service for the issuing of death certificates has been improved and compulsory autopsy in cases of death where no medical assistance was received has been established.

Dr. Finlay reported that *Cuba*, conscious of the necessity for having an efficient statistical service if progress is to be made in sanitation, is thoroughly reorganizing her department and has already taken steps to endow it with the most modern equipment.

Mr. Ríos Castro sketched briefly the origin and development of vital statistics services in *Chile*. These services began in 1924 and by 1936 had evolved into the Department of Biostatistics which has 24 provincial offices and 395 local vital statistic units. Registration of births is compulsory and 95% efficiency has been attained. Death certifications by witnesses has reached only 55%, and marriage statistics as well as reports of communicable diseases are incomplete. An increase in funds and trained personnel, among other things, are considered essential for the betterment of the service.

Dr. Schiaffino stated that *Uruguay* has already begun the reorganization of its demographic service. For this work the assistance of Dr. Linder was secured through the mediation of the Pan American Sanitary Bureau. The improvement in the securing of information in the interior of the country is of primary importance. Dr. Schiaffino also explained that the high rates for Montevideo are due to the fact that patients rush to the capital in search of better medical care. This phenomenon is observed to a greater or less degree in nearly all large cities of Latin America.

In *Venezuela*, according to Dr. García Maldonado, vital statistics organization was greatly benefited by the adoption in 1938 of a certificate of death which had printed on its back the international classification of causes of death. This international classification was officially adopted in Venezuela in 1940. The Ministry of Health is in charge of the collecting of data on mortality and morbidity and has been recently authorized to create registration areas and to establish special epidemiological offices in six cities of the country. Birth registration must be made not later than the fourth day after birth. The reporting of cases of communicable diseases has been greatly improved, but about 50% of deaths still occur in the absence of medical attention.

In a paper presented by Dr. Schiaffino, of *Uruguay*, Dr. F. E. Linder, Vital Statistics Consultant of the Pan American Sanitary Bureau, reported that the most important problems in the organization and development of an efficient vital statistics service are: (1) greater accuracy of original data; (2) securing of supplementary information related to population, such as, classification of inhabitants according to age, race, etc.; and (3) complete utilization and correct application of collected data. The basic requirements for the establishment of an efficient vital statistics service include: preparation of questionnaires to secure supplementary information; securing of modern equipment for tabular classification; and organization of the service in such form that it may serve as a consulting unit. Publication and distribution of data among interested entities should be made possible. Trained personnel is considered of utmost importance.

INDUSTRIAL HYGIENE

Dr. Barros Barreto reported that in *Brazil* the practice and improvement of industrial hygiene are following two main routes: the issuing and enforcing of protective laws; and the training of specialized personnel. With this last goal in mind special courses have been added to those in public health given by the Medical School of Rio and the Department of Public Health. The standards for industrial plants seek to improve conditions with reference to location, illumination, atmosphere, sanitation, water supply, health of the workers, employment of women and children, hour and wage schedules, prevention of accidents and fires and the elimination of toxicosis.

Dr. Sayers, the new Director of the Office of Mines reviewed the origin, development, and actual status of industrial hygiene in the *United States*, which may be said to have begun with the studies made by the Public Health Service at the beginning of the century. Following these, the Office of Mines was created. Today, in addition to certain state organizations, the following federal bureaus are especially interested: Women's, Statistics, Labor Standards, and Children's. Recently the former Office of Industrial Hygiene of the Public Health Service was changed to the Division of Industrial Hygiene of the National Health Institute. Actually there are 26 agencies in the United States which study, investigate, and give practical assistance in the matter. This does not include municipal units and 40 national organizations such as the Industrial Hygiene Division and Industrial Health Committee of the American Medical Association, American Association of Industrial Physicians and Surgeons, and Industrial Hygiene Division, American Public Health Association. Dr. Sayers commented favorably on the compensation legislation and explained the federal compensation law which protects government employees against any pathological condition contracted during or as a result of their work. He recommended that causes for sick leave of employees be filed.

Dr. Siurob reported that in *Mexico*, not only silicosis, but anthracosis and other pneumoconioses exist in the coal mines. The existing industrial legislation of Mexico has yielded excellent results, and provides for the inspection of light, ventilation, dust, accident risks, etc. in mines and workshops, and also of housing conditions. Despite this, he said, much remains to be accomplished.

In *Peru*, owing to the predominance of mining, silicosis constitutes a serious medico-industrial problem, affecting from 10 to 20% of a total of 680,000 miners, according to Dr. Hurtado. The pernicious effects are multiple: industrial, with a large number of workers disabled at an early age; economic with large indemnity payments, in Peru more than one million *soles*; and hygienic, because of the propensity of those affected to acquire tuberculosis. He called attention to the clinical phenomena observed in silicosis at high altitudes, where the ailment develops and incapacitates more rapidly than at sea level, probably owing to the greater pulmonary effort and to the consequently larger number of particles inhaled. The Peruvian Government is now organizing a department of Industrial Hygiene.

In *Uruguay*, remarked Dr. Schiaffino, Industrial Hygiene functions through protective legislation (minimum wages; working and resting hours; vacations, etc.), and compulsory workers insurance, under the supervision of the Division of Industrial Hygiene created 3 years ago. An extensive study is being carried out at present regarding conditions of labor in industry, 4,000 factories having been inspected and great numbers of workers examined for occupational diseases.

SANITARY INDICES

Dr. Barros Barret of *Brazil* spoke favorably of the methods of Stouman and Falk for the appraisal of sanitary conditions of a community and of the efforts made toward its improvement. He went on to explain the formula that he had prepared with the cooperation of a special committee of the Conference for trial application. Based on the abridged Index of Stouman and Falk, this formula covers 72 sanitary points and is better adapted to the countries of the American Continent, not only because it gives increased weight to certain topics, such as dysentery, tuberculosis, and malaria, but also because it discards the weights or numerical values opposed by many hygienists. It is subdivided into three sections: (1) Vitality and Health; (2) Environment, and (3) Sanitary and Public Health work.

Referring to this matter, Dr. Mountin, U. S. Public Health Service, described the "appraisal form" for evaluating public health work and the state of health of the community and mentioned the system of sanitary indices prepared by Dr. Billings at the end of the nineteenth century. The appraisal form should contain: Research findings; typical norms of efficient practice; relative value of various services, and method for the evaluation of tangible results. Nevertheless these forms can only be used effectively in connection with sanitary services of more than average proficiency and are more applicable to large urban centers than to rural sections, while they also fail to consider certain important features such as medical attention, hospital facilities, housing and general pathology, though there is a tendency to increase the radius of action. While Dr. Mountin considers the method to have unquestionable value, he realizes that many sanitary experts disagree, particularly with regard to the selection of certain numerical values of appraisal.

SANITARY ENGINEERING

The Conference agreed that the meeting of sanitary engineers recommended by the Tenth Pan American Sanitary Conference of Bogotá should be held at Rio de Janeiro, jointly with the Eleventh Conference, and that its program should be drawn up by the Pan American Sanitary Bureau, with the cooperation of the National Health Services of all the republics. Mr. Boaz, Chief Sanitary Engineer of the Bureau presented an outline of a model manual on water services which might be applied in the American Republics and, after discussion, it was resolved that, before proceeding with the idea, the outline should be sent to the departments of sanitary engineering of the various countries for criticism and commentary.

The Colombian Delegation presented an extensive report concerning the activities of the Ministry's department of Sanitary Engineering, which was organized by decree in 1938. Divided into two sections, Sanitation and Public Works, it has yielded great benefits in the development and construction of sanitary works. One of the greatest obstacles met is the lack of proper training of the technical personnel, for which reason the Water Supply and Sewage Departments do not yet function with the fullest efficiency. The Department is staffed by a group of graduate Civil Engineers, who have specialized in sanitation. Another difficulty has been the unwillingness of the municipal authorities to invest the necessary funds. The scarcity of funds has also prevented the execution of additional mosquito-control projects, except for some municipalities in which larval infestation has been notably reduced by such operations. The Department has cooperated with sections interested in other works, including: industrial, urban and rural sanitation; construction of hospitals, dispensaries and isolation wards; water purification, and general sanitation of prisons, schools, maternity wards, barracks, public buildings, and swimming pools, and in rural housing.

MALARIA

Dr. Spangenberg reported that in *Argentina* the *Anopheles* mosquito is represented by four widely distributed species (*A. pseudopunctipennis*, *argyritarsis*, *albitarsis*, and *tarsimaculatus*), two less common species (*rondoni* and *bachmanni*), four rare (*annulipalpis*, *maculipes*, *pseudomaculipes*, and *mediopunctatus*), and three doubtful (*davisi*, *perezi*, and *strodei*). In general, the heaviest incidence is in the coastal and the northern areas. In the northern littoral, where *pseudopunctipennis* does not exist, the malaria vector has not been definitely determined, both *albitarsis* and *bachmanni* being found in human dwellings. Legislation provides, among other things, for compulsory reporting of cases, though this is not

strictly complied with, and for free medical attention. Business enterprises are required to provide treatment for their employees. There is an appropriation of 684,000 pesos to fight the disease. The endemic area includes seven provinces with an area of 120,000 square kilometers, with the disease concentrated in the north. The number of cases of malaria is unknown, but 161,034 consultations are recorded for 1938 and 153,557 for 1939. Actually, malaria is not an important cause of death in Argentina, nor do the pernicious forms exist there. With respect to medicinal resources, various types of cinchona are produced in Jujuy and Salta but their true content of anti-malarial alkaloids is unknown.

Dr. Barros Barreto of *Brazil* believes that at present the most important problem in malaria control in his country is presented by the *A. gambiae*. The invasion of this African mosquito has greatly worried the Brazilian authorities, not only because of its fondness for man, its fecundity and its natural infectiousness (65% and 30% in the stomach and salivary glands respectively) but also on account of its easy acclimatization and decidedly domestic habits. In 1938, when an epidemic broke out in Rio Grande do Norte, with 40,000 cases and 8,000 deaths, affecting also the State of Ceará, the Federal Government took charge of the campaign, which required the services of six malaria experts and hundreds of laboratory assistants. Fifty stations and dispensaries were set up, and the mosquito was tenaciously combated both in its larval and adult forms with the aid of larvicides and insecticides. More than 20,000 patients were treated, and in Ceará alone, more than 50,000 water reservoirs were inspected and over 15,000 anophelic foci were destroyed. In 1939, there was another epidemic, during which nearly 176,000 cases were treated, but by April 15, 1940 the *gambiae* had been eradicated from some sectors, and the success obtained with the methods followed warrants the hope that the mosquito will disappear from the entire territory of Brazil. The Northwestern Malaria Service, organized for this purpose with the collaboration of the Rockefeller Foundation, has a staff of 2,500. Another sector where malaria is being intensely combated is in the lowlands, Baixada Fluminense, which include part of the State of Rio de Janeiro and the Federal District. It is calculated that Brazil has several million cases of malaria a year and about 80,000 deaths. The chief vectors appear to be: *Nyssorhynchus darlingi*, *albitalarsis* and *strodei*.

Dr. Bejarano of *Colombia* stated that with the exception of the mountains, the plateau and a few urban centers, malaria extends throughout the territory of Colombia, which, it is estimated, has about 18,000 deaths annually as a result of this disease. If a death rate of 0.5% is assumed, this would give a total of 3,600,000 cases per annum. Colombia has to import annually about 35,000 kilograms (77,000 lbs.) of quinine. The anopheles found include: six species of the group *Nyssorhynchus*: *albitalarsis*, *albimanus* (the most frequent carrier in the banana zone), *argyrtarsis*, *argyritarsis* (a species widely scattered at altitudes between 200 and 1000 meters), *bachmanni*, *darlingi* (the most dangerous carrier in Colombia), and *tarsimaculatus* (the most widely diffused species); four species of *Anopheles*; eight species of *Arribalzagaia*; three species of *Kerteszia*; the *Stethomyia nimbus*; the *Lophopodomyia squamifemur*; and two species of *Chagasia*. At the present time, important epidemiological studies are being made; regional dispensaries for diagnosis and treatment are being set up; abridged courses in malariology are given to physicians, in addition to those shortly to be begun in the Ministry of Health on the same subject and on public health, and the sanitation of the Maritime Terminal of Barranquilla has been undertaken.

Dr. Peña Chavarria of *Costa Rica* made detailed references to an interesting epidemiological study completed in Costa Rica under the direction of Dr. Henry M. Kumm, of the Rockefeller Foundation, covering 158 different towns with 3,838

microscopic examinations. It was found that *Plasmodium vivax* and *P. falciparum* are well distributed throughout the Atlantic and Pacific zones, while *P. malariae* is more common in the Pacific section. There were 88 species of mosquitos caught, including 14 of anopheles, and it was observed that *A. albimanus* thrives in zones of endemic malaria, while *A. argyritarsis* is most prevalent in places where the disease does not exist. Out of 593 dissections of mosquitos found in houses, only one *albimanus* carried the infection in a salivary gland. This was the common species caught in houses and traps in a mature state. To date, there is no evidence in Costa Rica to indicate that there is any other natural carrier of malaria than *albimanus*.

In *Cuba*, likewise, as reported by Dr. Finlay, the *albimanus* is thought to be the chief malaria carrier, although less important species exist, such as *A. grabhamii*, *A. crucians*, and *A. vestitipennis*, as well as a few *A. atropos*. A large part of the rural area of the island is affected by malaria, and studies made in the Province of Oriente have revealed the presence of enlargement of the spleen in all the municipalities located at an altitude of less than 150 meters (findings based on a splenic index of children of school age). Malaria seems to be limited to zones of less than 300 meters of elevation. The anti-malarial campaign was carried out with the cooperation of the Rockefeller Foundation. The important rôle of sanitary engineering is realized, and an elaborate plan has been worked out with emphasis on the improvement of the water supply and sewage.

To date, but two species of anopheles have been identified in *Chile*: *argyritarsis*, which is extremely rare, and *pseudopunctipennis*, the real malaria-carrier. Dr. Garcés, of Chile, remarked that malaria does not constitute a major sanitary problem in the country. Nevertheless, in 1937, a sanitation campaign was begun in the Valley of Azapa, Province of Arica, which wiped out the anopheles in that region. Dr. Garcés also presented a paper by Drs. Noé and Neghme on malaria in the Province of Tarapacá, another by Dr. Noé on carriers, and a third by Dr. Miguel Massa on the adrenalin-quinine treatment of Ascoli for chronic malaria, by means of which the following results were obtained in 126 cases: marked general improvement; disappearance of anemia and of enlarged spleen; elimination of relapses.

Dr. Montalván, of Ecuador, stated that the Pacific coast is the region of greatest malaria incidence in his country. It has been estimated that 50% of the rural population suffer from malaria, and there is a high index of infection in some urban zones as well. On the other hand, the disease does not appear to exist in certain jungle areas. With regard to the causative agent, *P. falciparum* is predominant. *P. malariae* is also found in the more temperate regions, but to a small degree, scarcely 3% in Guayaquil, where the genus *Cellia* and *A. tarsimaculatus* species occur most frequently as carriers; the carrier being *pseudopunctipennis* in cooler zones. The rôle of *A. albimanus* in the Guayaquil region is not definitely known, but the malaria problem in this zone and its environs has been a great source of trouble to the authorities, since the forms it assumes are highly resistant to treatment. It is thought that malaria control legislation is still insufficient. It is difficult to ascertain the exact degree of malarial morbidity of the country; as to mortality, 3,110 deaths were reported in 1938 and 4,045 in 1939, a very high coefficient for a population of a little over two millions. In spite of the fact that Ecuador is the cradle of quinine and has for years been an important supplier of the magic bark, this commodity is being exhausted and there is not at present a sufficient amount to satisfy the needs of the country.

Dr. Boyd (*United States*), a malariologist of the Rockefeller Foundation, called attention to the part played by extensive engineering projects in the propagation of malaria through the creation of conditions fostering the breeding of anopheles

and through obstruction of the natural drainage, as in road-building. The National Malaria Committee has made all possible efforts toward the education of engineers in the United States in regard to this danger.

In a detailed discussion of the observations made as a member of the Medical Committee which visited southwest China at the invitation of the Chinese Government, Dr. L. L. Williams reported that recently two Chinese malariologists have reached the conclusion that a certain malignant disease of southwest Yunnan, commonly known as "chunki" among the natives, is none other than a virulent form of tertian malaria. Malaria was the only epidemic disease observed by the Committee. Plague investigations in rats yielded negative results, despite the existence of the disease in a neighboring region.

Dr. Siurob, of *Mexico*, revealed that neither the exact number of Anophelinas involved in the transmission of malaria in his country nor their geographic distribution has yet been determined, although not less than 16 species have been counted. The most widely spread *Anophelinae* are: *A. pseudopunctipennis* and *A. albimanus*, and of these, the first affords a higher index of natural infection (1 to 2%) and seems to be the most dangerous. *Albimanus* thrives on the Pacific and Atlantic coasts, while *quadrimaculatus* is the principal carrier in the north of Mexico and also on the Atlantic coast, especially in the city of Tampico. In 1938, the National Malaria Control Committee was organized in Mexico. Although practically the whole republic is affected by malaria, it is more concentrated on the shores of the Gulf and the Pacific, and in the States of Sinaloa and Chiapas. Malaria morbidity figures, possibly incomplete, reached 128,975 in 1937, 127,564 in 1938, and 97,944 in 1939. Mexico produces no anti-malaria plant, but 80,000 cinchona trees are under experimental cultivation.

In the report sent in by Dr. Debayle, of *Nicaragua*, it was stated that the fight against malaria in his country is carried on by sanitary engineers, and public health education and propaganda. There is a law reducing the price of the necessary medical remedies. Good results have been obtained. The principal carrier in Nicaragua is *A. albimanus*, whose activity is intensified on the Atlantic coast, next in order come *argyritarsis*, *tarsimaculatus*, and *pseudopunctipennis*. The worst center on the Pacific side is the zone of Chichigalpa.

In *Panama*, according to Dr. Mastellari, the most important carrier is *albimanus*. Although malaria exists throughout the Republic, it is concentrated in the densely-populated centers on the coast. The anti-malaria campaign was organized with the cooperation of a technician from the Rockefeller Foundation. A law was passed in 1936 setting aside 15% of all municipal income for malaria control; in addition, the tax on anti-malarial products and insecticides has been lifted. There are no natural medicinal resources in the country, but the importation and sale of quinine are government-controlled, and minimum prices are maintained for the benefit of the entire population. Dr. Mastellari explained that with the cooperation of the authorities of the Canal Zone, malaria had been almost eradicated there as well as in the cities of Panama and Colon, but that the malaria indices had increased with the intensification of activities in this region and the influx of workers, since the anopheles had never been completely eliminated.

According to Dr. Hurtado's calculations, there are around 300,000 cases of malaria annually in Peru, a great many of whom do not receive adequate treatment.

Dr. Batlle, of the Dominican Republic, reported that the principal carriers of malaria in that country are *A. albimanus* and *A. grabhamii*, which thrive in the rice fields. With the exception of the compulsory reporting of the disease, there is not sufficient protective legislation. While 692 deaths were recorded in 1939, it was impossible to determine the true incidence of the disease, but it is known

to be widely distributed, appearing in epidemic form during the rainy season. All the quinine which is used must be imported; its importation and distribution are superintended by the Government for the benefit of the people.

In a detailed discussion, Dr. A. Gabaldón revealed that in *Venezuela* 25 species of Anophelinae are known, and that dissection studies have proven the *albimanus* and the *darlingi* to be the principal malaria carriers. The latter is apparently responsible for most of the cases, and is found in the plains and the southern coast of Lake Maracaibo. *Albimanus* prefers the Caribbean coast and the lake of Valencia. Both species are found together in only one region, Barcelona. Previous rather ineffective attempts at control were supplanted by the organization of the Division of Malariology and the passing in 1936 of a Malaria Control Law and its regulations which embody all the modern concepts. In view of the lack of epidemiological studies of all regions and of reliable morbidity statistics, it has not been possible to determine the exact incidence of malaria in Venezuela. From the number of treatments reported and registered deaths (1939: 1,420, a figure which falls short of the true number), the number of malaria cases can be calculated to be approximately 300,000 in the Republic. Despite the consumption of about two tons of quinine per year, the plant is not cultivated in Venezuela. Some species are found wild, but these are very poor and lacking in alkaloids.

AVIATION

Dr. Spangenberg declared that the imposition of health measures applied to aerial navigation in *Argentina* has met with the difficulties characteristic of any innovations, in addition to lack of the proper equipment at airports. Nevertheless, a decree to regulate the sanitary measures to be applied to airships coming in from other countries is being studied, and an investigation will soon be made of the *Aedes aegypti* index of airports and their vicinity.

Dr. Barros Barreto called attention to the fact that experience in *Brazil* has shown the necessity of modifying certain provisions of the International Sanitary Convention of 1933. With respect to the destruction of insects, spraying was first used on a large scale in Brazil in 1928-29, during the Rio yellow fever epidemic. Mixtures of pyrethrum extract and carbon tetrachloride used in compressed air sprayers, proved effective in ridding dwellings of mosquitos, without danger of fire or discomfort to those working with it, except for a light case of dermatitis. This system has also been successfully employed in the destruction of mature Anopheles and today is a powerful weapon in the campaign against *A. gambiae*.

Dr. Finlay, of *Cuba*, suggested that in view of the inadequacy of present systems of disinsectization in preventing the importation of infected mosquitos, more weight be given to the sanitary inspection of airplanes. As to quarantine measures, the provisions of the Hague Conference seem satisfactory to him, with the exception that each country should be allowed a certain amount of liberty, in special circumstances, to use extraordinary measures which might completely prevent the importation of diseases not already existing in its territory. He also recommended that contagious diseases be reported more promptly, so that the information may be received before the arrival of the airplane and the inspection of the ship and its passengers may be more effectively carried out.

Dr. C. L. Williams pointed out that aerial navigation is of interest to the health of the *United States* principally from two points of view: the possible introduction of yellow fever in some susceptible states in the south, and of the *gambiae* from the eastern part of Brazil. At present, a new system of disinsectization is being tried out in Port of Spain, Trinidad, and will possibly be instituted in Barranquilla and Maracaibo as well. Since the South American ports nearest the yellow fever zones are for the most part free from the principal carrier, Dr. Williams is of the

opinion that the aerial transportation of infected mosquitos should not cause a great deal of worry at the moment, even though there is always the possibility of the introduction of some human case. At the present time, passengers proceeding from infected zones are kept under surveillance for nine days, the quarantine doctor and the local director of public health cooperating in this work.

Dr. Moise reported that only one air line makes regularly scheduled stops in *Haiti* at the Port-au-Prince field, and that this links Miami, Cuba, Porto Rico, Kingston and South American ports. The airport is quite modern and meets sanitary conditions well.

Dr. Leon Debayle presented the recommendations of the Director of Health of *Nicaragua*, which impose certain obligations on the pilot, on the aviation companies, the passengers and on the airport doctor.

According to information supplied by the Colonial Office in London to the International Office of Public Health in Paris, the Pan American Airways airport in the *Bahama* Islands includes one building which is very well equipped as a medical center. The sanitary fixtures are served by the water and sewage systems of Nassau. The Oake's Field airport also commands medical services, but is not within the region supplied by the water and sewage lines. Regulations now in force require the presence of the airport physician at the landing of every plane coming from an infected zone. None of the airports is equipped for yellow fever prophylaxis.

In *Jamaica*, there is an airport in the outskirts of Kingston which complies with the recommendations offered by the Convention of 1933. Although it is not equipped for yellow fever control, it has medical services and sanitary inspection and disinfection equipment, drinking water, water supply system, and a quarantine station for the care of the sick and isolation of those under observation.

Reviewing some of the principal provisions in force with regard to aviation, Dr. Cumming, Director of the Sanitary Bureau, emphasized the fact that the Convention at the Hague tried to make its demands agree with those of the Paris Convention of 1926 and those of the Convention of Aerial Navigation; as a result, there seems to be no contradiction. With regard to the fundamental matter of notification or rapid exchange of information, the Convention of 1926 authorized direct communication between local quarantine offices, a measure included in the Pan American Sanitary Code of 1924.

NUTRITION

Dr. Spangenberg summarized the achievements of *Argentina* with respect to nutrition along three lines: technical, educational and administrative. There are three technical centers: the Institute of Physiology, the National Institute of Nutrition, and the Bacteriological Institute of the National Department of Health. Investigations made in Buenos Aires show that 30% of the families there are insufficiently or improperly fed. The National Institute of Nutrition considers that the value of the "restaurantes populares" is only relative, and that they are only an emergency solution to the problem of feeding the needy classes. School gardens date from 1850 in Argentina. Escudero studied the nutritive variations in mother's milk, discovering that at times, due to some deficiency, it does not offer the best food for the child. Despite the commercial tendency toward vitaminizing foods, the National Department of Health is opposed to this practice in the case of foods freely consumed in the ordinary diet, and justifies it only in exceptional cases where vitamin D is concerned. The National Committee on School Health has been doing very good work. In 1940, 1,600 school restaurants offered a varied and abundant diet to more than 160,000 children. Dr. Spangenberg also contributed a series of extremely interesting papers on

different aspects of diet, prepared by Professor Pedro Escudero, Director of the National Institute of Nutrition in reply to the questionnaire of the Pan American Committee on Nutrition.

According to Dr. Barros Barreto, three examples of the interest of the *Brazilian* Government in problems of popular nutrition are: the establishment of minimum wages; the selection by the Ministry of Agriculture of special zones for the cultivation of vegetables, and the setting up in 1939 of the Central Nutrition Service, to coordinate studies and put into practice measures providing for the proper diet of the people. The principal activities of this Service during its first few months have been: the preparation of an economical plan for the establishment of Popular Restaurants capable of serving 4,000 daily meals each; recruiting of a technical personnel; studies for the standardization of biological and chemical methods for the proportioning of vitamins, the determination of the chemical composition of the various Brazilian foods; and the training of dietitians.

Dr. Wodehouse reported that in *Canada*, the scarcity of cod liver oil necessitated its production in that country in order to insure the normal supply for both humans and animals—the latter incidentally consume four times as much as the former. He remarked that almost every country in the world is attempting to follow the ration plan employed by the United States in the last World War for its armed forces. Since whole wheat flour is superior to wheat, and commercial efforts are directed along opposite lines, he favored campaigns to prevent the extraction of the embryo of wheat flour for sale separately as a vitamin product. Investigations carried out among Canadian families show that the fathers eat the most, even more than necessary, followed by the children, and lastly, the mothers.

Dr. Bejarano pointed out that with the creation of the National Council on Nutrition in *Colombia* a great step was made toward rational diet. The problem of nourishment, according to Dr. Bejarano, is intimately related to that of education: there are in Colombia social groups in fairly comfortable circumstances who are poorly fed. He concluded by suggesting that each country present its nutritional folklore at the next Sanitary Conference in Rio de Janeiro and that emphasis be laid on the dietetic education of the people.

In reporting on nutrition work in *Cuba* Dr. Lage mentioned the organization in 1937 in the Finlay Institute of the Laboratory of Nutrition, to take charge of the study of this problem. Analyses of various commodities have been made in Cuba, but without giving the exact values in vitamins and minerals. Conclusions have not yet been reached with regard to the dietetic investigations carried out, but in general, there seems to be a deficiency in the consumption of minerals and vitamins: fruits, milk, green vegetables, even though in the middle and wealthy classes the consumption of meat, fish and eggs is too large. The Government has not yet created restaurants for the people, but the "school lunch" has existed for over 20 years. There are school gardens in almost every municipality, and the cultivation of home gardens is encouraged. The per capita consumption of milk in the Republic is low, despite abundant production.

Pointing out that the nutritional problem is at present occupying the most of the attention of the *Chilean* health authorities, Dr. Garcés reviewed the results of an investigation made in 1936, which revealed the insufficient consumption of animal proteins by all the families visited, and a calory ration 84% below normal. Another study showed undernourishment in 49%, and scarcely sufficient in 22%. The major underlying causes seem to be the limited buying power of the masses, the low level of livestock production, and the popular ignorance of dietetic precepts. The school lunch has already been introduced in many places, and now serves 58,000 children. It is estimated that the production of milk meets only 19% of the demand.

In replying to the questionnaire of the Sanitary Bureau, the Director of Health

of the Austral Zone of *Ecuador* pointed out that in that territory there have been no analyses of foods or dietetic investigations, nor are there Popular Restaurants, although school restaurants for the benefit of needy students have been operating for four years. There is no pasteurization plant, and the consumption of milk in rural section is nil, while in cities it is very low. In general, very little has been done to date toward the improvement of the diet of people in this region.

Dr. McCollum, of the *United States*, President of the Pan American Committee on Nutrition, reviewed the progress made and specified that an adequate diet should include as much as 10 amino-acids, 13 mineral elements, one fatty acid, and at least 10 vitamins. A fundamental fact discovered through investigation is that the greater part of natural foods do not have a very satisfactory nutritional composition, so that for proper nourishment, elements of varying nutritive values must be combined. He mentioned and explained methods which may be used to determine the insufficiency of diets, to wit: (1) detailed studies of the class and quantity of foods consumed by different individuals, and of the specific deficiencies which arise; (2) careful medical examination of a representative number of individuals in some region of typical diet. Either of these methods will permit the discovery of the nature of diet changes necessary for the maintenance of health. Present knowledge of the composition of foods permit the formulation of practical and effective recommendations for the improvement of human nourishment wherever malnutrition exists. Dr. McCollum concluded by calling attention to the important rôle played by the application of modern nutritional science in the preservation and amelioration of the health of whole peoples.

Dr. Sebrell, Chief of the Section of Nutrition of the Public Health Service of the *United States*, favored the continuation of the work in behalf of nutrition in the Americas, especially today, when the League of Nations can no longer function efficiently in this respect. He recalled that only in the last few years have the departments of health in the *United States* begun to recognize the rôle of nutrition in a program of preventive medicine. In his opinion, two major groups must be given preference: expectant and nursing mothers, and children. The mother may be reached through the clinic, and the child, through the school. The greatest difficulty consists in improving the nutritional value of food without increasing its cost, and this requires a certain amount of educational work and the domestic cultivation of products.

Dr. López Herrarte reported that the National Committee on Nutrition has recently been organized in *Guatemala*, and that dietetic investigations are being conducted among the people.

According to Dr. González Guzmán, the problem of nutrition received formal recognition in *Mexico* three years ago with the creation of the National Committee on Nutrition, and a series of subsidiary committees already numbering 7,500 in the State capitals and other municipalities. In 1940, numerous brigades were created as well, consisting of a doctor, nurses and dieticians, for health education in rural districts. In the opinion of Dr. González Guzmán, the basic causes of undernourishment in *Mexico* spring from the sociological problem of the Indian, that is, the miserable state in which he now exists as a result of his exploitation by the white and mixed races. Dr. Siurob added that in *Mexico* the proletariat consumes scarcely any meat or milk, and that an attempt is now being made to force restaurant proprietors to print on the menus the nutritive value of foods, according to tables supplied by the Department of Health, with the idea of popularizing this information.

Dietetic research carried on in *Nicaragua* has shown that the diet of the rural laborer is deficient in albumins and fats. In order to remedy this situation, the Department of Health has recommended that the farm-owners raise the cheese

ration of the workers by 40 grams. The same deficiency in the members of the National Guard is to be corrected by the daily addition of 80 grams of meat to their diet.

With reference to the nutritional problem of *Peru*, Dr. Hurtado reported the creation of the "Dirección de Subsistencias," an organization which deals with the cooperation of the agricultural industry, the provision of foods at low prices, and the 'popular restaurants.' In addition, a dietetic investigation has been undertaken, and breakfast and lunch are being supplied free of charge to thousands of students.

Dr. Batlle reported that in the *Dominican Republic* 635 school gardens have been established for the cultivation of tropical fruits, and that this number will be increased to include all the 745 rural elementary schools in the country.

Dr. González, of *Uruguay*, a member of the Pan American Committee on Nutrition, reviewed the work carried on in Uruguay on behalf of nutrition, under the supervision of the Department of Nutrition, Foods and Vitaminology, and the National Committee on Nutrition of the Ministry of Public Health. A dietetic investigation made some years ago among the school population revealed a nutritional insufficiency in 25%. In many towns in the interior, school farms are operating, and in several of the principal cities, popular restaurants supply balanced meals at an extremely small cost, the total number of meals reaching one million in 1938. The sanitary production of milk has been greatly improved, but the consumption of meat per person is still too small. The exact degree of vitaminization has not yet been determined, but the existence of pathological states related to lack of vitamins has been observed.

In order to improve nutrition in *Venezuela*, according to Dr. García Maldonado, popular and school restaurants have been established, and a physician is being trained under the guidance of Dr. McCollum to direct the work and prepare a program of nutrition studies which may be applied in Venezuela. Under the direction of the Institute of Puericulture, studies of dietary deficiency diseases have been made.

Prefacing his discussion of nutrition with some observations he made in the Philippines in 1914, Dr. Long, Chief Traveling Representative of the Bureau, agreed that the problem in America is intimately related with traditional customs and with dietetic education. He spoke in favor of school gardens and advocated the preparation by the Sanitary Bureau of a manual containing the principles of nutrition, human requirements and the nutritive values of foods.

FIELD WORK OF THE BUREAU

Dr. Long, Chief Traveling Representative of the Bureau, reviewed briefly the field work conducted by the Bureau. He presented some of the interesting observations made during his years of carrying out sanitary missions throughout America, and spoke very enthusiastically about the anti-plague campaigns and the ground gained in this direction: the eradication of the disease in Chile since 1930, from all Argentine ports since 1935, from the Brazilian ports, from Guayaquil and in general, from almost all the important Pacific ports except Pacasmayo and Salaverry. The notable reduction of plague morbidity in Brazil, with almost total elimination of urban plague, and diminution of its virulence were also mentioned. With respect to organization and administration, Dr. Long cited the establishment of national health departments in all the American republics, and the adoption of pertinent regulations, warning, however, that the work is just beginning and that many towns of Central and South America lack even the most fundamental services of modern sanitation: safe drinking water supplies and sewage disposal systems.

To be continued