PUBLIC HEALTH SURVEY OF ECUADOR (Cont.)*

Laboratories.—There are 16 clinical laboratories in Quito, 14 in Guayaquil, and three in Cuenca, most of them small and none equipped for handling all types of laboratory work. The National Institute of Health has the only research laboratory in Ecuador. There are eight industrial pharmaceutical laboratories in Quito and 11 in Guayaquil.

Drugs.—Ecuador is fairly well supplied with ordinary drugs. Recent shortages of cresol, phenol, opiates, certain sulfa drugs, iodine, and vitamin preparations are being somewhat relieved. Ecuador is a producer of cinchona, and the production of totaquine and quinine is being increased through the efforts of the Office of Economic Warfare and the Ecuadorian Development Corporation.

Recreation.—There are plenty of natural recreational activities in Ecuador such as fishing, boating, hunting, riding, and, in the Sierra, hiking and mountain climbing; there are tennis, soccer, swimming, bull fights, and baseball. Motion picture theaters in the main cities are modern and comfortable and show recent pictures; other theatrical performances are less common.

PART II

PUBLIC HEALTH AND ALLIED AGENCIES

National.—All official health organizations of Ecuador are placed under the Ministry of Public Welfare (Previsión Social), and consist of three main entities: Sanidad (the National Department of Health), Asistencia Pública (Public Welfare) and the medical department of the workers' insurance or social security fund (Caja del Seguro Obligatorio de Obreros).

The Department of Public Health consists of a Director General with headquarters in Guayaquil, and bureaus of laboratory, venereal diseases, antiplague service, aerial and maritime quarantine, epidemiology, tuberculosis, and rural hygiene. The Director General has under his immediate supervision the entire littoral of the country. In the Sierra, at Quito (central zone) and Esmeraldas (austral zone), there are two subdivisions, practically autonomous although nominally under the Director General; each has a director and departments of epidemiology, laboratory, venereal diseases, child welfare, tuberculosis, and rural hygiene. The health department has a yearly budget of three and one-half million sucres (approximately $250,000 U. S.), or about $0.15 U. S. per capita, which is far below the standard recommended by the Pan American Sanitary Conferences. Ordinarily the Department employs about 50 physicians (all part-time, except the Director General) and

180 administrative and other employees, although at present due to an intensive anti-plague campaign additional employees have been added.

Outstanding recent developments in the public health field have been the establishment of the National Institute of Hygiene at Guayaquil, sponsored by the Rockefeller Foundation and assisted by the Institute of Inter-American Affairs, and under the direction of Dr. Atilio Macchiavello of Chile; and the creation of the Quito School of Nursing, originally organized by the Pan American Sanitary Bureau and operating under the joint supervision of the Central University and the Ministry of Public Welfare and with the assistance of the Rockefeller Foundation and the Institute of Inter-American Affairs. It enrolled its first class of 29 students in November, 1942.

*The Department of Public Welfare* owns and operates about half of the hospitals and dispensaries of Ecuador (around 35 hospitals, with 3,013 beds). It is divided into three independent geographical areas, under the general supervision of the Ministry: Central Zone (Provinces of Carchi, Imbabura, Pichincha, León, Bolívar, Tungurahua, and Chimborazo, and part of Oriente; 14 hospitals, budget of 6,570,000 sueres annually); Southern Zone (Provinces of Azuay, Cañar, Loja; 7 hospitals, 2,006,000 sueres); Coastal Zone (Provinces of Esmeraldas, Manabí, Los Ríos, Guayas, El Oro; 14 hospitals, 7,278,000 sueres).

*The Workers' Insurance or Social Security* is a compulsory workers' insurance fund, covering about 40% of the workers with salaries or wages and soon to take in 70% of them (including laborers, private and public employees, bank employees, and members of the military forces but excluding persons without a wage or salary, hence most of the two million Indians of Ecuador). The medical department of the Caja del Seguro is under a general director at Quito; it has a modern and well-equipped 120 bed hospital in Quito which can be increased to 250 beds and will begin operating as soon as the equipment arrives; there are also a 30 bed hospital in Ambato, and a 35 bed hospital in Riobamba. Elsewhere beds are contracted from Public Welfare hospitals. There are 36 out-patient clinics connected with the Caja.

*Local and other.*—There are 30 cities and towns in Ecuador with local departments of hygiene, most of them not very well organized or equipped. Quito has three municipal physicians and Guayaquil two; in other cities personnel usually consists of one part-time physician, one secretary, and perhaps a janitor. The Church in Ecuador is not very active in public health matters. The Ecuadorian Red Cross is set up to handle minor emergency conditions. Guayaquil has a welfare society (*Beneficiencia*) which supports the three public hospitals of Guayaquil (880 beds) with funds, apparently insufficient, from the operation of a private lottery and several haciendas. There are about 23 private hospitals and clinics, with 476 beds, including those of industrial and mining concerns. The Army maintains two hospitals, with about 500 beds.

**Diseases.**—Due to its geographical situation Ecuador finds itself confronted with diseases of both tropical and temperate climates. In the Sierra the most predominant diseases and first cause of death are the intestinal, affecting mostly infants and children, followed by pulmonary affections such as pneumonia, bronchitis, and tuberculosis. Influenza is severe and during epidemics may become the first cause of death.
Typhoid fever is endemic in the dry season and often epidemic in the rainy season. Typhus is endemic throughout the Sierra. The infectious diseases of childhood are common although not so important in mortality rates; however, in 1939-40 there was an epidemic of whooping cough which killed more persons during that period than any other disease. A considerable amount of malaria is found, most of it brought up from nearby valleys or lower levels, although the disease does exist as high as 7,000 feet (vector, Anopheles pseudopunctipennis); the main foci of infection in the Sierra are Ibarra, Guayabamba, the valleys of Los Chillos, Pastaza, and Paute, and several near Loja.

In the coastal and Amazon areas of Ecuador a great variety of tropical diseases are found, including malaria (60% to 100% of the population of these regions have had malaria sometime during their lives), intestinal parasites (90 to 100% of the population), principally hookworm; yaws (7,000 cases estimated), and to a lesser extent, Chagas' disease, leishmaniasis, relapsing fever, leptospirosis, smallpox, leprosy, and tropical ulcer.

Taking up various diseases in detail, more data may be added. All known venereal diseases exist in Ecuador, most prevalent being gonorrhea and syphilis, and less common, granuloma venereum, chancroid, and lymphogranuloma inguinale. There are a few clinics maintained by the health department throughout the country. New cases diagnosed during the year ending April 30, 1942, at the Guayaquil clinic included 224 of gonorrhea, 82 of chancroid, and 122 of syphilis; in Cañar and Azuay provinces (population 300,000) during the year ended May 31, 1943, there were 76 cases of gonorrhea, 8 of chancroid, and 108 of syphilis reported. As to intestinal diseases, typhoid and paratyphoid are endemic throughout the country and epidemic in certain seasons; outbreaks in Guayaquil and other cities have been traced to deficient water supplies and cross-connections, but it is safe to assume that much of the infection is due to carriers, flies, and food; recent studies of a small group by the National Institute of Health indicated quite a large percentage of carriers. Natives are accustomed to take care of their bodily needs in any available semi-sheltered spot, and slops are also still thrown out of windows in some districts. Dysentery, especially amebic, is quite common. Common diarrhea is a universal ailment of the country, even adults usually having about six episodes a year. Cholera has not been present for many years. Insect-borne diseases: there is no urban yellow fever, but jungle yellow fever may, and probably does exist in the Oriente. Malaria is the chief scourge of Ecuador; in 1941 there were 6,318 deaths reported from it; in many localities the splenic index is above 70; complications are frequent, and a considerable amount of hemoglobinuria (black-water fever) is seen. No cases of dengue have been reported in Ecuador although the vector is present. Typhus is endemic in the highlands and is louse-borne. During 1942 there were 257 cases, 36 deaths in Quito and vicinity; during the year ending May 1943 there were 92 cases, 11 deaths reported in the Provinces of Cañar and Azogues. Preliminary investigations by the Institute of Health have failed to disclose any infection in rats or rat fleas. Some Chagas' disease (American trypanosomiasis) is present, and a few cases of relapsing fever have been reported. There is a moderate amount of elephantiasis, of unknown cause. The Institute of Health has isolated a variety of filaria in domestic animals. There is an undetermined amount of leishmaniasis, especially the cutaneous form and espundia.
Respiratory diseases include influenza, in sporadic, local epidemics, with more than 3,000 deaths in 1941 and 1,811 in 1942; pneumonia, prevalent in the Sierra, with about 3,500 deaths in both 1941 and 1942; common colds are frequent, especially in the Sierra; diphtheria reports for 1942 included 101 cases and deaths in Quito; 70 cases for Guayaquil (year ending April 1942), and Cuenca, 16 cases and deaths for the year ending May 1943; there were 696 reported deaths from measles in 1941, and 1,786 for 1942; mumps is scarce and mild; no cerebrospinal meningitis has been reported, but there are occasional cases of tuberculous meningitis; poliomyelitis has not been diagnosed in Ecuador, although certain residual paralytic states suggest an occasional case; tuberculosis is an important cause of death, with more than 1,000 yearly deaths reported in Guayaquil in 1937-1941; deaths reported for the rest of the country are under 3,000, evidently incomplete. There is a tuberculosis sanatorium and others are being built (but it is felt that an essential part of tuberculosis control lies in raising the economic and nutritional levels of the population). A national anti-tuberculosis society with an income of more than 3,000,000 sucre has recently been organized, but is not yet very active. Other communicable diseases present include smallpox, in limited epidemics, sporadic cases of chicken pox, a moderate amount of leprosy (5 new cases reported in Guayaquil during the year ending May, 1942, and 8 in Cuenca, year ending May 1943; Quito has a leprosarium with over 100 cases), a moderate number of cases of infectious jaundice (as high as 60% of Guayaquil rats examined have been found infected), some tropical ulcers of varied etiology, and a few cases of trachoma; tetanus is very rare, but yaws is quite prevalent, with about 7,000 cases estimated for the country. Other diseases which may be mentioned include rheumatic fever, occasional cases being reported in the temperate area of the Sierra, a few cases of articular rheumatism, most frequently in the Sierra, nutritional deficiency diseases, an important and not greatly studied group (pellagra and scurvy, teeth, skin, and eye defects, endemic goiter in the Sierra, etc.; the diet in the Sierra consists chiefly of potatoes, corn, wheat, and barley, and in fruit-producing areas most of the products are sold and not consumed locally; chronic alcoholism in the Indians probably adds to the deficiency syndromes); skin diseases of varied etiology are common, including pyoderma, mycotic infections, deficiency symptoms, syphilids, cutaneous leishmaniasis, furunculosis, pediculosis, allergies, and cancer. More than 90% of the population harbor intestinal parasites, including roundworm, hookworm, tapeworm, pinworm, and threadworm.

Control measures.—These include maritime quarantine measures following in general the pattern of the Pan American Sanitary Code; aerial quarantine based on maritime regulations and including disinsectization of planes; there is fumigation of freight going from plague foci in the Sierra by rail to Guayaquil in order to prevent the reintroduction of the disease into the port. Guayaquil was once a world yellow fever menace, but the scourge was finally eradicated through the efforts of the Rockefeller Foundation during and following World War I (and even before that, by representatives of the U. S. Public Health Service, such as Dr. B. J. Lloyd, working in cooperation with national authorities.—Ed.). The yellow fever service, which had been doing some work in control of domestic breeding places of Aedes, and vaccination, was recently reorganized under the supervision of the National Institute of Health, and is intensifying its work along the coast and plans to investigate the
possibility of jungle yellow fever existing in the Oriente. There has been some anti-malaria work in Guayaquil, including filling in, drainage, and use of larvicides; permanent drainage and use of insecticides are employed in San Antonio, Los Chillos, Guayabamba, and Ibarra; and control measures in Los Ríos and Guayas provinces are being undertaken through a joint effort of the Rockefeller Foundation, the Pan American Sanitary Bureau, and the national Department of Health.

Smallpox vaccine is produced in Quito and Guayaquil, and a large percentage of the population has been vaccinated; for instance, during the year ending April, 1942, more than 90,000 persons were vaccinated in the Guayaquil area; immigrants must be vaccinated or present a certificate of vaccination. Plague vaccine is also produced, and more than 3,000 persons were vaccinated during the year ending April, 1942. During the year ending in April, 1942, 2,500 diphtheria immunizations were made; and in the same period, 522 persons were vaccinated against typhus. Vermin control measures include mosquito control by the yellow fever and malaria services, as mentioned; and the rat control measures of the anti-plague service, which keeps the rat population of Guayaquil at a minimum by continuous trapping, poisoning, and rat-proofing of new buildings; careful records are kept and the flea indices confirm the efficient work. An intensive anti-rat campaign was undertaken in Chimborazo province in 1942-43 with the aid of the Institute of Inter-American Affairs, and a similar project is under way for Loja, the only potentially active plague focus in Ecuador; the last case in Chimborazo occurred in June, 1942; and in Loja, December 1942.

Diseases of animals.—Diseases important to man include bovine tuberculosis, believed to be quite low (probably 1 or 2%; 10,000 cattle tuberculin-tested in Manabí were negative); undulant fever (probably higher in cattle than in the United States; there are 20 known infected haciendas in Chimborazo; very few human cases reported); hydatid disease (about 40% of cattle slaughtered near Quito were reported infected); rabies (very little; only two infected dogs have been reported, near the Colombian border); anthrax (present, extent unknown); psittacosis (probably present); syphilitic plague (there is rural plague, with epizootics in rat colonies, but Ecuadorian plague has always been associated with man, whether or not he becomes infected); cystercerosis (40% of pork infected, 10% of cattle); salmonellosis (many calves infected). Of disease confined to animals, mention may be made of: equina encephalomyelitis (present in limited outbreaks) and clostridia abscess (present); hoof and mouth disease has occurred in the past but none has been observed lately; glanders and rinderpest are not known.

Projects being carried on with the assistance of international and other agencies.—The Pan American Sanitary Bureau, to which Ecuador of course contributes and on which she is represented, has assisted in organizing the department of health and in drawing up the sanitary codes, and has furnished technical assistance to the Ministry of Public Welfare when requested; notable achievements include the eradication of plague in Guayaquil and assistance in plague work in the interior, consultation in connection with water supplies, sewage and garbage disposal, malaria control, epidemiology, public health statistics, nursing education, leper control, hospital administration; and granting of scholarships to promis-
ing physicians. The Rockefeller Foundation has assisted in the eradication of yellow fever and in other public health projects; recently it has sponsored the establishment of the National Institute of Health, and aided in the formation of the Quito School of Nursing; as well as cooperated in special campaigns against various conditions of national or regional importance as is the case with yellow fever, malaria, hookworm, and yaws.

The Health and Sanitation Division of the Office of the Coordinator of Inter-American Affairs began its South American program in Ecuador, and has allotted about $2,500,000 for the construction of hospitals and improvement of health conditions, including: Quito, construction of 40 km. of sewers; assistance to the school of nursing, construction and equipping of a 200 bed maternity hospital, 100 bed infectious disease hospital, 300 bed psychiatric hospital, a large health center and polyclinic, and a laboratory for the Municipal Hygiene department, and remodeling of a child health clinic; Guayaquil, construction and equipping of a 300 bed tuberculosis hospital, a 100 bed communicable disease hospital, a 200 bed maternity hospital, addition of two pavilions to the general hospital (150-200 beds), and one (70 beds) to the children's hospital, filling in 30 blocks of lowlands, added construction for the National Institute of Health, completing construction of a medical school building; Cuenca, hospital improvement; addition of two pavilions (200 beds), an operating room, and outpatient clinic to the hospital, some sewer construction; Azogues, hospital improvement; Loja, antiplague campaign, possible hospital improvement; Tulcan, hospital and water supply improvement; Ibarra, hospital improvement, malaria work; Otavalo, completion of hospital; Latacunga, construction of hospital; Ambato, hospital improvement; Riobamba, hospital construction; Guaranda, Esmeraldas, Portoviejo, and Chone, hospital improvement; Manta, hospital construction; Bahia, construction of hospital laboratory; Babahoyo, improvement of hospital and equipment; Salinas, construction of health center; Chimborazo, plague campaign. The Institute is also financing and administering the medical program for rubber workers (12 dispensaries, one hospital), and conducting antimalarial activities in various districts, including the towns of San Antonio, Pomasqui, Guayabamba, Puellaro, Perucho, and Ibarra.

Vital statistics.—There were 116,506 births (11.7 per 1,000 population) and 62,855 (22.5) deaths reported in Ecuador for 1941. Chief causes of death in 1941 and 1942, respectively (with rates based on a population of 2,789,000 in 1941 and 2,800,000 in 1942, the estimated number covered by registration facilities) were: diarrhea-enteritis, 7,357 (264 per 100,000) and 6,868 (245); bronchitis, 6,973 (250) and 6,602 (236); malaria, 6,318 (226) and 5,279 (188); influenza, 3,059 (110) and 1,811 (65); tuberculosis, 6,861 (103) and 2,247 (80); pneumonia and bronchopneumonia, 4,492 (161) and 3,664 (131); whooping cough, 2,848 (102) and 3,270 (117); dysentery, 1,499 (54) and 1,313 (47); measles, 696 (25) and 1,786 (64); nephritis, 613 and 592; cancer, 513 and 592; typhoid fever, 491 (17) and 468 (16.7). Figures for Guayaquil, 1941, include: births, 7,804 (53.3), deaths, 6,120 (41.8) chief causes of death, diarrhea-enteritis, 1,218; tuberculosis, 1,171 (800); malaria, 580 (339); pneumonia and bronchopneumonia, 495 (338.4); diseases of first infancy, 331; heart and circulatory conditions, 244; nephritis, 183 (128.9); accidents, 155; bronchitis, 130 (104.8); cancer, 132 (90.4); dysentery, 112 (76.5); measles, 104 (71.1); and influenza, 97 (66.3).