A GALLERY IN THE OSWALDO CRUZ INSTITUTE, RIO DE JANEIRO, BRAZIL.

PAN AMERICAN SANITARY BUREAU · · · WASHINGTON, D. C.

Publication No. 160, March, 1941
DIRECTING COUNCIL
OF THE
PAN AMERICAN SANITARY BUREAU

DIRECTOR
DR. HUGH S. CUMMING
Surgeon General (Retired), U. S. Public Health Service

VICE-DIRECTOR
DR. JOÃO DE BARROS BARRETO
Brazil

COUNSELORS
DR. MIGUEL SUSSINI
Argentina
DR. ANTONIO PEÑA CHAVARRÍA
Costa Rica

ASSISTANT DIRECTOR
DR. EDWARD C. ERNST
United States Public Health Service

SECRETARY
DR. ARISTIDES A. MOLL
Editor, Pan American Sanitary Bureau

MEMBERS
DR. ATILIO MACCHIAVELLO
Chile
DR. LUIS MANUEL DEBAYLE
Nicaragua
DR. A. L. BRICEÑO ROSSI
Venezuela
DR. DAGOBERTO F. GONZÁLEZ
Peru
DR. MANUEL MARTÍNEZ BÁEZ
Mexico
DR. PEDRO MACHADO
Cuba
DR. JUAN ANTONIO MONTALVÁN
Ecuador

HONORARY MEMBERS
DR. JORGE BEJARANO, Honorary President
Colombia
DR. CARLOS ENRIQUE PAZ SOLDÁN
Peru
DR. JUSTO F. GONZÁLEZ
Uruguay
DR. LUIS GAITÁN
Guatemala

TRAVELING REPRESENTATIVES
SANITARY ENGINEERS
DR. JOHN D. LONG
MR. EDWARD D. HOPKINS
DR. FELIX R. BRUNOT
MR. WALTER N. DASHIELL
DR. JOHN R. MURDOCK
DR. ANTHONY DONOVAN
DR. HENRY HANSON
United States Public Health Service
| Institute of Experimental Medicine for the Study and Treatment of Cancer (Argentina) | 1 |
| The Bacteriological Institute of the National Department of Health of Argentina | 5 |
| The Institute of Physiology of Buenos Aires | 10 |
| Municipal Institute of Radiology and Physiotherapy (Argentina) | 13 |
| The Oswaldo Cruz Institute (Brazil) | 17 |
| The Butantan Institute (Brazil) | 23 |
| The Bacteriological Institute of Chile | 27 |
| The Federico Lleras Institute of Medical Research (Colombia) | 31 |
| Institute of Public Health and Tropical Diseases (Mexico) | 35 |
| The Institute of Hygiene (Mexico) | 38 |
| Institute of Biology (Mexico) | 41 |
| The National Institute of Hygiene and Public Health (Peru) | 44 |
The Institute of Experimental Medicine for the Study and Treatment of Cancer was inaugurated November 7, 1923, and is part of the University of Buenos Aires.

Under the leadership of its Director, Professor A. H. Roffo, the Institute has been developed to cover every phase of cancer research—including social welfare as well as scientific experimentation. The activities of the biologist, the chemist, the physicist, the microbiologist, the pathologist, and the physician are thus all brought to bear on the problem.

The Institute, which began with a single building, now has twelve, and occupies about twelve and a half acres. Its annual budget includes a fixed appropriation of 260,000.00 pesos argentinos (about $78,550), with additional grants and donations.

The organization of the Institute is on a three-fold basis: (1) medical research, (2) medical care (diagnosis and treatment), and (3) social work.

The Division of Medical (or Scientific) Research includes: experimental cancer; bio-chemistry; physical chemistry; experimental pathology; tissue culture; radio-biology; pathologic anatomy; experimental surgery. While research is directed chiefly to the study of malignant tumors, other diseases of obscure etiology are not neglected. Promising new findings on etiology and treatment of cancer are investigated by the Institute, and its laboratories are open to workers in this field, so long as they abide by the rules of the Institute. Accounts of all work carried on in the Institute are published in its Bulletin, the Boletín del Instituto de Medicina Experimental para el estudio y tratamiento del cáncer.

The Division of Medical Care or Relief includes a dispensary for the early diagnosis and outpatient treatment of cancer; and hospitalization facilities. To date, 82,000 persons have been registered in the dispensary. The clinics, at the disposal of the public as well as physi-
cians, are open every day. After a first examination in the general clinic, the patient is seen by a specialist in his type of the disease—throat, skin, digestive system, etc. Following a very complete examination, the patient is asked to return in 48 hours for definite diagnosis and treatment. The latter may consist in electro-surgery, deep radio-therapy, ultra-deep radio-therapy, radium, and other measures. The annual number of patients has risen from 1,772 in 1923 to 8,554 in 1938; the number of consultations from 6,767 to 91,752, and the number of treatments from 3,900 to 50,279, a total of 354,000 treatments to date.

There are three pavilions devoted to the hospitalization of patients, with a total of 600 beds. In 1923, 422 persons were hospitalized, and in 1938, 3,174, with a total of 27,599 for the 15 years.

Social welfare work is carried on by the Institute, not only by furnishing care to every patient coming to the Institute, whatever his social condition, but also by public education through leaflets and lectures. A cancer hour is held every Saturday, which cultural groups, schools, etc., may attend. A visiting nurse service has been established; the nurse visits the home of the patient, and is able in many instances to see that the patients, especially women patients, are not taken from their home duties. Thus a mother may continue her usual life, maintaining contact with the Institute through the visiting nurse, who will keep track of her condition, and tell her when to come to the clinic.

The Institute operates a School of Nursing, and also gives courses in Cancerology. Physicians are allowed to attend the clinics held in the dispensary.

The personnel of the Institute includes three resident physicians, six ward physicians, one medical radiologist, one radiobiologist, one biochemist, one physical chemist, one hematologist, four assistants; nurses, and clerical personnel.
FIG. 1.—Air view of the Buenos Aires Institute of Experimental Medicine.

Fig. 3.—View of the "Elena Laroque de Rojo" hospital for men. This was the only building in existence at the inauguration of the Buenos Aires Institute of Experimental Medicine in 1923.

Fig. 4.—"Emilio J. Costa" building for scientific research.
THE BACTERIOLOGICAL INSTITUTE OF THE
NATIONAL DEPARTMENT OF HEALTH
OF ARGENTINA

(EL INSTITUTO BACTERIOLÓGICO DEL DEPARTAMENTO
NACIONAL DE HIGIENE)

Director: Prof. Alfredo Sordelli

Forerunner of the Bacteriological Institute of Argentina in Buenos Aires was the Voges Bacteriological Office, organized toward the end of the 19th century. In 1901, on the initiative of Dr. Carlos G. Malbrán, then President of the National Department of Health, a law was passed providing for the founding of an Institute of Bacteriology with a smallpox vaccination service, and the cornerstone of the Institute was laid October 11, 1904. It was opened July 10, 1916, and its first Director was the noted Professor Rudolfo Kraus of Vienna, who later headed the Butantan Institute of São Paulo, Brasil, and the Institute of Bacteriology of Chile. He was succeeded after eight years by Professor Alois Bachmann, who served until 1924. Since that time the Institute has been under the direction of Professor Alfredo Sordelli, and during his temporary absences, of Dr. Leopoldo Uriarte, Chief of the Plague Section, who has been connected with the Institute since its foundation.

The Bacteriological Institute is under the administration of the National Department of Health, a dependency of the Ministry of the Interior. Since 1932 its funds have been lumped with the budget of the Department of Health.

The four principal duties of the Institute are: manufacture of biologic products; diagnosis, and epidemiological studies of autochthonous communicable diseases; research; and, finally, the control of biologic and certain other products used for medicinal or hygienic purposes, such as insecticides, raticides, disinfectants, filters, sterilizers, and submitted for acceptance to the National Department of Health.

On recommendation of the Tenth Pan American Sanitary Conference, the Institute was selected by the Health Committee of the League of Nations as the depository for the international distribution in South America of standards to be used in determining the strength and quality of certain products such as adrenalin, digitalis, glandular preparations, vitamin preparations, antitoxins, etc.
The number of analyses made in 1938 was 1,268, while 39,100 diagnostic investigations were made, including Wassermann, Kahn, Widal and other tests, and examinations for parasites.

Manufacturing of biologic products is carried on by the departments of Serumtherapy, Vaccines and Organotherapy. In 1938 the value of these products amounted to some 4,840,965.86 pesos (about $1,550,000.00). Expenses of the Institute were only about 262,000 pesos; less than the amount actually collected for products sold. About 90 percent of the sera, vaccines and glandular products are distributed free of charge to public hospitals, institutions, welfare services, Army and Navy hospitals, and health centers. Those remaining are sold through the Sales Office of the National Institute of Health. A considerable stock of essential materials is kept on hand at the Institute so that it is prepared to help not only in national emergencies, in for epidemics in neighboring countries.

In the field of research, attention is directed to the pathology of communicable disease in man and animals; the discovery of pathogenic organisms as yet unrecognized in the country; studies of the etiology of disease; immunological studies; bacteriological and serological methods; special problems including brucellosis, plague, bacillary dysentery, malaria, Chagas’ disease, anthrax, “Texas fever,” bovine hemoglobinuria, hookworm, and diphtheria; studies of insects, ectoparasites, wild rodents, and hosts and reservoirs of virus, and the improvement of methods for manufacturing biologies. Special new sections have been created in recent years for work on brucellosis, psittacosis, venereal lymphogranuloma, and smallpox virus. It is expected that the diagnostic section will have to be enlarged as a result of increased demands on it since the passage of the venereal disease law with its premarital examination section. The law also provides that standards for the operation of private and official serological laboratories shall be set up by the National Department of Health. This will be an additional duty for the Institute, which intends to establish branch serological laboratories in various parts of the country.

The buildings of the Institute include a main edifice with 42 laboratories, facilities for the preparation of culture media, refrigeration rooms, immunization and blood-letting rooms, Library, lecture hall, business offices, etc.; and various pavilions including the Pasteur section, with 18 laboratories; the tuberculosis section, with 10 laboratories; the organo-therapy section, with two laboratories and three machine rooms; the brucellosis section, with special equipment to prevent accidental infections; the smallpox pavilion, and other special buildings.

Publications of the Institute include the Revista del Instituto Bacteriológico del Departamento Nacional de Higiene, which contains the
Bacteriological Institute of Buenos Aires: Guinea Pig Farm

Bacteriological Institute of Buenos Aires: Blood-letting
scientific reports of its research workers, and the *Folia Biológica*, published by the Institute personnel, both being distributed free of charge. Work done in the Institute must be reported to the Staff Meetings before publication. Among the outstanding studies published have been those on plague, rural plague, psittacosis, bacillary dysentery, brucellosis, Chagas' disease, and diphtheria.

The Institute, in the interest of public health, prepares from time to time for various national medical journals, notices "To the Physician" calling attention to unusual diseases, offering diagnostic facilities, and so on.
The Institute of Physiology of the School of Medicine of Buenos Aires was founded in 1919, and its head was the first full-time professor and research worker in the School. At present the Institute has five other full-time members, and a total of about 130 instructors and investigators, not including students. About 75 persons regularly carry on research work. The Institute occupies a four-story building, covering nearly 27,000 square feet, with laboratories and facilities for the care of laboratory animals. The laboratories include those of Physiology, Biochemistry, Biochemical Analyses, Metabolism, X-Ray, Hemodynamics, Neurophysiology, Surgery, and so on.

The Institute offers courses in Physiology, Biochemistry and Biophysics to medical and dental students and to graduates working for a doctor's degree in Pharmacy and Biochemistry. Eleven courses are given annually, as follows: eight full year courses, two or three postgraduate courses (in tuberculosis, heart disease and neurology) and one supplementary course. Enrollment is unlimited, and between 800 and 900 students attend classes once a week. More intensive training is given some 20 selected students, who attend the Physiology Laboratory about 60 times during the year and the Chemistry and Biophysics Laboratories about 20 times. Professional men from Belgium, Brazil, England, Germany, Sweden and the United States, as well as Argentine students on scholarships, have availed themselves of the facilities of the Institute.

Some 1,000 original papers have been published on the activities of the various Laboratories of the Institute during the 20 years of its existence, many of them appearing in scientific journals, both national and foreign. More than 15 of its graduates have occupied full or assistant professorships in various universities throughout the country.
Staff and students attending one of the courses of the Institute of Physiology of Buenos Aires.
Institute of Physiology of Buenos Aires: A laboratory

Institute of Physiology of Buenos Aires: Animal cages
MUNICIPAL INSTITUTE OF RADIOLOGY AND PHYSIOTHERAPY

(INSTITUTO MUNICIPAL DE RADIOLOGÍA Y FISIOTERAPIA)

Buenos Aires, Argentina

Director: Dr. A. Saralegui

The Institute of Radiology and Physiotherapy was created in 1925 as a dependency of the Department of Health and Welfare of the City of Buenos Aires, for the purpose of providing diagnostic services, specialized training, and training of personnel and supervision of equipment for the associated hospitals. It consists of the divisions of Radiology, Radium-therapy, Electrology, Diathermy, Phototherapy, Kinesitherapy, and Hydrotherapy, as well as the library, laboratory, and a 60-bed ward for patients requiring brief hospitalization. It is housed in an H-shaped building covering 10,000 m² (107,600 sq. ft.), with six floors in the central part of the building and three in the wings, the whole being designed to afford ample light and air.

The various treatment and diagnostic sections have been arranged to provide a maximum of efficiency; thus, the radio-diagnosis division includes 11 roentgenography and 3 fluoroscopy chambers each designed for a single type of examination, avoiding the necessity of changing the position of X-Ray tubes and examination tables. The Roentgen-therapy section is equipped to treat as many as 100 patients in four hours. The Electro-diagnosis and electrotherapy division includes 14 treatment rooms for men and 14 for women in the low frequency division and 10 each in the diathermy section. Electrocardiography has its own room with provision for three patients. There are 8 rooms in the phototherapy (ultra-violet and infra-red ray) section; the kinesitherapy division is equipped with the necessary apparatus for massage and exercise; the Radium section possesses two grams of radium divided among 310 tubes and needles; a teleradiumtherapy apparatus is now being constructed. There is also an operating room for surgical procedures.

In addition to its treatment facilities the Institute has research laboratories: Bacteriology, Pathologic Anatomy, Chemistry, and Physics. Its Museum preserves wax models of cases before and after treatment, furnishing a clear picture of the results. Mention might also be made of the Radiography interpretation and Filing room, with
60 neon negatoscopes and a filing system making available the X-ray picture under the name of the patient, the physician, the number of the film, or the disease.

Monthly meetings are held in the Institute with the discussion of papers and clinical cases by the 45 members of the staff; the material later appearing in the *Anales* of the Institute, published every three months.

The Director of the Institute, as a special Professor of Radiology and Physiotherapy of the School of Medical Sciences, gives courses with the cooperation of the medical staff of the institute, three days a week. In the latter part of 1940 it was suggested that, through the Buenos Aires Department of Health and Welfare, two nine-months’ scholarships be awarded annually to foreign students, preferably to Pan-American students, who are interested in the special training available at the Institute, and the details of this project are now being studied by the municipal health authorities.
Panoramic view of the Buenos Aires Municipal Institute of Radiology and Physiotherapy.
Buenos Aires Municipal Institute of Radiology and Physiotherapy:
Chemical Laboratory

Buenos Aires Municipal Institute of Radiology and Physiotherapy:
Phototherapy Laboratory
The Oswaldo Cruz Institute, like the Butantan, was first established for the manufacture of plague vaccine and serum, after the initial outbreak of that disease in Santos in 1899. Organized under the administrative direction of Baron Pedro Affonso, the "Federal Institute of Serum-therapy" was inaugurated July 23, 1900, on the old fazenda or farm known as Manguinhos, about 50 minutes ride from the center of Rio de Janeiro.

Under the scientific leadership of the great Oswaldo Cruz, who soon (1902) became its Director (and who was also Director of Public Health of Brazil), the Institute rapidly became world-famous. When Brazil received first prize at the Berlin Congress and Exhibition of Hygiene in 1907 as the result of the reputation achieved by the Institute, the national legislature finally passed the long-pending decree formally establishing it as the "Institute of Experimental Pathology." On March 19, 1908, the name was changed to Oswaldo Cruz Institute in honor of the Director, who had eradicated yellow fever from Rio.

The story of the development of the Institute from its beginnings in the residence quarters originally built for the personnel of the abandoned city incinerators which stood on the farm donated by the municipality to the government, to the present research center with its distinctive main building of five floors, designed in Moorish style by the architect Luis de Moraes, its auxiliary pavilions, hospital, stables, animal houses and excellent technical equipment, is a fascinating one, studded with the names of scientists, both native and foreign, who were to become noteworthy for their achievements in various fields of research.

Mention can be made only of some of the high points, including the beginnings of a School of Experimental Medicine as early as 1901 with the opening of the facilities of the Institute to research students; initiation in the same year of the series of notable publications on mosquitoes; the discovery in 1906 by Godoy, who turned all rights in it over to the Institute, of a vaccine against black-leg of cattle (symptomatic anthrax),
proceeds from the sale of which enabled the Institute to enlarge its activities; and in 1909, the discovery by Carlos Chagas of the disease bearing his name (American trypanosomiasis, Chagas’ disease); and the appearance in the same year of the first number of the Memorias do Instituto Oswaldo Cruz. Thirty-three volumes of the Memorias, containing 544 papers, were published from 1909 to 1938, and the total number of papers by members of the staff from 1900 to 1938 was 2,269.

The Institute was scarcely a year old before it had extended its activities far beyond the manufacture of plague vaccines and sera; today its fields of research include Bacteriology, Immunology, Virus diseases, Protozoology, Pathology, Physiology, Mycology, Medical Zoology, (Helminthology, Entomology, and so on), Physics and Chemistry. Since 1911 the staff of the Institute has given a two-year course for medical students and young physicians desiring to specialize in laboratory work and scientific research.

The manufacture of biologic products for curative and preventive treatment of diseases of man and animals is an important part of the work of the Institute. Commissions are sent to investigate such matters as epidemics of malaria, plague and yellow fever; to assist in organizing laboratories in other cities, and to undertake other special studies.

The Oswaldo Cruz Institute has a library of 76,303 volumes and 2,470 different scientific publications, of which 859 are obtained in exchange for the Memorias. It has a museum rich in entomological specimens, poisonous animals, pathological exhibits, cultures, and macroscopic and microscopic preparations.

Among the outstanding papers published by the Institute in the course of its existence have been those on medical zoology and entomology, especially mosquitoes, parasitic protozoa, and ticks; plague vaccination and serum-therapy; malaria, smallpox, leishmaniasis, trypanosomiasis, blackleg, spirochaetosis avaria, bacteriophage, scorpion anti-venin, haematology, and classification of zoological specimens in Brazil. Among the early important scientific studies are those of Fontes on the tubercle bacillus, Vianna’s discovery of a treatment for cutaneous leishmaniasis, Aragão’s investigations on blood parasites, and the work of Cruz, Lutz, Neiva and Travassos on medical zoology and experimental medicine.

On the death of Oswaldo Cruz in 1917, Carlos Chagas became Director of the Institute, which continued the notable progress it had begun under Cruz. Chagas died in November, 1934, and was succeeded by Dr. A. Cardoso Fontes, the present Director, one of Cruz’ early associates, noted for his studies on tuberculosis.

The staff includes, in addition to the Director, a secretary, 10 chiefs of Services, 14 assistants, and 18 sub-assistants. The annual budget amounts to 4,567:000$000 ($228,350).
The Oswaldo Cruz Institute has taken part in several scientific exhibitions and congresses, including those in Berlin, 1907; Dresden, 1911; Rome, 1912; Strasbourg, 1923; New York, 1935; and Washington, 1940.

Directors of the Oswaldo Cruz Institute: Top, Dr. Oswaldo Cruz, founder of the Institute; bottom: left, Dr. Carlos Chagas, successor to the first Director; right, Dr. Cardoso Fontes, the present Director.
Panoramic view of the Oswaldo Cruz Institute
Oswaldo Cruz Institute: Central Building

Oswaldo Cruz Institute: Reading room of the library
Oswaldo Cruz Institute: Pavilion for bleeding and weighing horses

Oswaldo Cruz Institute: A laboratory
THE BUTANTAN INSTITUTE

Director: Dr. Jayme Cavalcanti

São Paulo, Brasil

The "Butantan Institute of Serum-Therapy," situated in the middle of a large park on the outskirts of São Paulo, was founded in 1899 by the Government of the State primarily for the purpose of preparing plague vaccine and serum. Dr. Vital Brazil, the first Director of the Institute, resumed there the studies on snake poisons which he had begun in 1895 on his return from France, and his work and that of his colleagues soon caused the Institute to become world-famous for its work in that field.

Dr. Brazil was one of the first workers to observe the specificity of snake venom, that is, that different species of snakes have different venoms and that, therefore, different sera must be made for treating their bites. His work on snake poisons included zoological studies of the various species of snakes in the country, with their geographic distribution, biology, common names, types of venom, etc.; the preparation of sera from various types of venom; the teaching of preventive measures, including the method of capturing snakes and sending them to the specialized centers; establishment of a system of exchange of live snakes for ampules of serum between the farmers and the Institute; the introduction into the death certificate of an entry for the recording of snake-bite as a cause of death, and the compiling of statistics of bites, treatment used, and results.

Dr. Brazil was followed in the direction of the Institute, in 1919, by Dr. Rudolph Kraus, a noted Austrian scientist who had headed the national bacteriological institute in Buenos Aires, and later by Dr. Afranio do Amaral.

In addition to the manufacture of snake-bite serum and the study and classification of snakes captured in all parts of Brazil as well as those received from other countries, the Institute carries on educational work, urging the use of leather shoes, boots and leggings by field workers, the destruction of the small animals upon which snakes feed, and the use of natural enemies of snakes.

According to reports received by the Butantan Institute, of 3,080 cases of snakebite in humans, treated with anti-venin during the period 1902 to 1929, 82 died, a mortality of 2.67 percent. It has been esti-
imated that in São Paulo the campaign against snakebites has saved at least 200 lives a year, the death rate from this cause having decreased from about 3 to 0.9 per 1,000 inhabitants. Smaller savings have been obtained in animals by treatment. The studies of snakes were later extended to other poisonous animals, such as toads, scorpions, and spiders. In a typical year, from rural districts, the following live specimens were received: non-poisonous snakes, 7,209; poisonous snakes, 19,828; spiders, 9,334; amphibians, 5,433; scorpions, 644; lizards, 449; and many other animals, to a value of about $4,438.00.

Although the study of snakes and manufacture of snake-bite serum and snake venom are the principal objects of the Institute, it carries on research in other fields, as shown by the scientific papers appearing in its important annual report, *Memorias do Instituto Butantan* and in special publications. Its divisions include Ophiology (study of serpents) and Medical Zoology; Experimental Immunology, Serum-therapy and Experimental Bacteriology; Virus and Virus-therapy; Experimental Physics and Chemistry; Parasitology and Protozoology; Medical Botany and Pharmacology; Experimental Chemistry and Pharmacy; Physiology, Endocrinology, and Histopathology; Cyto-embryology and Experimental Genetics.

The manufacture of biological products is a most important activity of the Institute. In addition to manufacturing them commercially, it supplies the State Department of Health of São Paulo. Besides various kinds of snake-bite and scorpion-bite sera, the Institute prepared in 1938: diphtheria serum and anatoxin; tetanus serum and anatoxin; typhoid and dysentery vaccines and sera; meningococcus serum and vaccine; pneumonia serum and vaccine; gangrene serum; serum for the treatment of whooping-cough; smallpox vaccine; pyogenic vaccine; streptococcus serum and anatoxin; staphylococcus anatoxin; colibacillary serum; scarlet fever, and plague serum. It also prepared snake venom for use in the relief of pain, especially in cancer.

Some 30,000 tourists visit the Butantan Institute annually, most of them attracted by its snake-farm where from morning till night a large number of poisonous and non-poisonous snakes may be seen. Other objects of tourist interest are the process of extracting the venom used in preparing the snake-bite serum, and the Museum in one of the buildings with its glass cases containing a great variety of snakes, spiders, scorpions and lizards. Sometimes desperate struggles between snakes may be seen, often ending in the devouring of a poisonous or non-poisonous snake by a non-venomous species such as the Mussurana (*Pseudoboa cloelia*).

The personnel of the Institute includes a Director, ten assistant chiefs, and 16 additional scientific assistants, as well as librarians, accountants, and other clerical workers, laborers, etc. Foreign scientists are given
Fig. 1.—Headquarters of the Guatemalan Institute, Sao Paulo, Brazil.
facilities to learn the methods and observe the work of the Institute. The value of the assets, animals, products, etc. of the Institute for the year 1934 was estimated at about $172,006; the value of the products manufactured during the year, around $27,475.

THE BACTERIOLOGICAL INSTITUTE OF CHILE
(INSTITUTO BACTERIOLÓGICO DE CHILE)

Santiago, Chile

Director: Dr. Eugenio Suárez H.

The Bacteriological Institute of Chile was opened in 1929, on the site of the old Institute of Hygiene (created under a law adopted in 1892, and discontinued in 1924). Its first director was Prof. Rudolf Kraus, of Vienna, who had previously headed the Bacteriological Institute of Argentina and the Butantan Institute of São Paulo, Brazil. Following Dr. Kraus' death in 1932, Dr. Eugenio Suárez II., who had been instrumental in the creation of the Institute, became its Director.

Originally a part of the Ministry of Education, the Institute is now autonomous, and is governed by the Director and a Council composed of high officials of the health service and headed by the Minister of Health.

The chief duties of the Bacteriological Institute are: (1) research; (2) the training of bacteriologists, laboratory technicians, and health officers; (3) the making of diagnostic examinations and scientific investigations necessary to the public health; and (4) the preparation of sera, vaccines and biological products.

Since 1932 purely scientific research has dealt mainly with typhus, rabies, anthrax, and bacterial antigens. The results of these studies have appeared both in the Institute journal, and in American and European journals, and have been presented at international congresses. Cooperating in the solution of public health problems, the Institute has made numerous investigations at the request of health authorities, industrial concerns, or because of national emergencies; among them may be mentioned regional epidemiological surveys of typhoid fever, diphtheria, whooping cough, foot-and-mouth disease, and rabies, and studies on milk pasteurization, nutrition, disinfection, and vital statistics.

One of the most urgent reasons for the establishment of the Institute was the need for public health training facilities, and an intensive program has been carried out in this regard. Periodic courses are given for the personnel of public health institutions, so that most of the laboratory workers in Chile have spent considerable time in the various Departments of the Institute, and many return occasionally for further training. A number of public health officers and technicians from other
countries, including Bolivia, Peru, Ecuador and Venezuela, have spent six months or more in the Institute. Assistance has been given in the organization of Institutes of Hygiene in other countries. In addition to the facilities offered at the Institute itself, courses and lectures are given to medical groups; articles are prepared for publication in different types of journals, and other methods of guiding medical opinion on the judgment and application of new treatments and preventive methods derived from experimental studies are used. Furthermore, the Library and laboratories of the Institute have been available to medical students working on their graduation theses. The Library is regarded as the most complete and modern in the country in its field.

Since its founding the Institute has published a journal, the *Revista del Instituto Bacteriológico*, designed to bring the work of the institution to the attention of the outside world.

In its seven Departments (Immunology, Filtrated Viruses, Chemotherapy, Organotherapy, Pharmacology, Central Diagnostic Laboratory, and Control) the Institute manufactures all the biologic products needed by the country, and supplies the public health services and institutions. Proceeds from the sale of its products— which supply 90 percent of the national consumption, and are also exported—are used to finance the scientific and educational work, but the commercial activity is subordinated to scientific research and public health needs. Among special developments in the biologic field may be mentioned the rapid agglutination tests used in Chile and other Pacific republics; the preparation of Vi typhoid vaccine and sera, and of specific pneumonia serum; the large-scale use (with original modifications through experience) of activated diphtheria toxoid; and experimental use of concentrated, sensitized whooping-cough vaccine. For two years the Institute has been engaged in extracting and purifying vitamin oil from the viscera of Chilean fish as an aid in the fight against undernutrition. The Institute has also organized and equipped regional laboratories.

The manufacturing possibilities of the Institute recently underwent a severe test as a result of the earthquake in the Concepción area (January 1939). In one week 25,000 doses of preventive and curative tetanus, anaerobic and gangrene serum—a quantity sufficient for all needs— were furnished; 2,000 doses of scarlet fever serum were supplied to check an outbreak in one of the stricken provinces, and in 15 days, 480,000 doses of typhoid vaccine were sent out and an equal reserve supply prepared, and 200,000 persons were vaccinated under the direction of Institute personnel, with excellent results.

The Institute is staffed by 24 physicians, 10 chemists, and 10 laboratory assistants, all on a full-time basis. The total personnel is 205. The annual budget was around 5,000,000 Chilean pesos (about $200,000) for 1938.
Bacteriological Institute of Chile: Vaccine laboratory

Bacteriological Institute of Chile: Culture media
The Federico Lleras Institute of Medical Research had its beginning in the Central Laboratory of Leprosy Investigation (Laboratorio Central de Investigación de Lepra) founded in 1934 with the late Professor Federico Lleras Acosta as its Director. After his death the Institute was renamed in his honor.

The work of the Institute is carried on through several divisions: Bacteriology, Serology, Biologic Chemistry, Anatomy-Pathology, Clinic, Therapeutics, Administration. While founded primarily to carry on research in leprosy, it is open to other studies, as, for instance, the work now being done with regard to bartonellosis. Its official duties include supervision of the investigative work to be performed by the physicians in charge of leprosy dispensaries, in accordance with legal provisions; studies of the etiology, epidemiology, pathology and therapeutics of leprosy; testing of the results of scientific investigation in this field in other countries; application and study of suggested treatments; training of personnel for leprosy control work; and consultation facilities for the Ministry of Health, Labor and Social Welfare.

At the present time the work begun by Professor Lleras on the culture and biologic study of an acid-alcohol-resistant bacillus isolated from the blood of lepers, and of the complement-fixation tests with methylic antigen prepared with the Lleras bacillus, and with antigens of strains of other acid-resistant bacilli, is being continued. Studies of treatment methods, and of the blood chemistry of lepers, as well as those relating to the preparation of an anti-leprosy serum are also carried on.

It is expected that eventually the Institute will become a center where both national and foreign physicians may pursue scientific studies, particularly those related to Leprosy.

When first established as the Laboratory, the Institute was housed in the Leprosy Dispensary at Cundinamarca, then in a building of the National Institute of Health, and later in the Santiago Samper Laboratory, Hospital San Juan de Dios, but in 1936 a special building was authorized, and is now occupied by the Institute. It consists of three
wings, or sections, one for Laboratories, Clinic, Administration, Library, and Museum; a second for hospitalization of patients undergoing experimental treatment, clinical observation, or observation by students; and a third for laboratory animals. The patients are provided with all modern comforts, and are attended by the Institute personnel and by Sisters of Charity. Much of the equipment for the patients' quarters and other parts of the building was furnished through the generosity of a lady of Bogotá (Srta. Doña Lucy Parga).

The personnel of the Institute includes a Director, Assistant director, Medical Assistant, Sisters of Mercy and others, and may be increased by the Ministry of Health, Labor and Social Welfare as the needs require. The present budget is $30,000.00 pesos (about $17,140.00) annually.
Federico Lleras Institute of Medical Research: A laboratory

Room of leprosy patient

Normal *Macaca rhesus* monkeys
INSTITUTE OF PUBLIC HEALTH AND TROPICAL DISEASES
(INSTITUTO DE SALUBRIDAD Y ENFERMEDADES TROPICALES)
Mexico, D. F.
Director: Dr. Manuel Martínez Báez

The Institute of Public Health and Tropical Diseases of the Department of Health of Mexico was inaugurated March 18, 1939, fulfilling the provisions of the 1934-40 Six Year Plan which had called for its creation in response to a long-felt need for a specialized research center in public health and tropical disease problems. It is also expected that the Institute's laboratories and library will be of service to national and foreign scientists in its field, in this sense complying with a recommendation of the Pan American Sanitary Conferences. It will also come to have, in its collections, excellent teaching material, and as one of its most important functions, furnish specialized training for public health personnel.

The Institute is housed in a main building of three floors, and several annexes including an animal farm, insect house and greenhouse, located on the old hacienda of San Jacinto in the center of a park, the land having been donated by the Federal District. It is governed by a Directing Council composed of the Chiefs of Laboratories and of the Clinical Department, and presided over by the Director, who is also Chief of a Laboratory.

The various laboratories include those of Epidemiology and Vital Statistics, Bacteriology and Immunology, Protozoology, Helminthology, Entomology, Mycology, Pharmacology and Experimental Medicine, Chemistry, and Pathologic Anatomy, all with leading men in charge. There are also the Clinical Section, with accommodations for 38 patients, the Library, and a Microphotography division.

One floor of the Institute is devoted to the School of Hygiene and Public Health, under the direction of Dr. Angel de la Garza Brito.

Since its inauguration, the Institute has already undertaken a number of studies, including those on typhus, pinto, pneumonia, Chagas' disease, blood parasites of birds, onchocerciasis, and other parasitoses, mosquitoes, phlebotomus, ticks, spiders, the poisonous plant tullidora, and the reputedly anti-malaria plant copalchí, the nutritive value of certain foods, a new quinine compound, fungi, and epidemiological and statistical surveys.

Reports on some of these studies have recently appeared in the Revista del Instituto de Salubridad y Enfermedades Tropicales, official organ of the Institute.

The Institute has already opened its doors to foreign scientists, and a number are now engaged in studies there.
Panoramic view of the Institute of Public Health and Tropical Diseases
Institute of Public Health and Tropical Diseases: Hall of the School of Hygiene and Public Health

Institute of Public Health and Tropical Diseases: Solarium of the Experimental Hospital
The Institute of Hygiene of Mexico had its beginning in the National Bacteriological Institute (Instituto Bacteriológico Nacional), a part of the Bacteriology section of the Anatomy-Pathology Museum created in May, 1895. In 1906 the Institute was made a direct dependency of the Department of Education, and in October, 1914 it was transferred to the Superior Council of Health, at which time it was moved to Jalapa. In 1916 it was brought back to the Capital, and in 1921 it was reorganized and became the Institute of Hygiene.

The Institute occupies an area of some 14,000 m² (about 150,000 sq. ft.), its buildings consisting of several wings or pavilions, including those for serum and vaccine manufacture, pathologic anatomy, and research.

Until 1938 the Institute published the Boletín del Instituto de Higiene, but in that year the publication was merged with the Boletín de Salubridad e Higiene of the Department of Health.

Besides supplying serums, vaccines and biologic products, the Institute has carried on notable research work, particularly in typhus, brucellosis, syphilis, malaria, and scorpion poisoning. In 1938 it produced around 75,500,000 international units of diphtheria serum; 115,000 series of diphtheria anatoxin; 54,500 doses of material for the Schick and Zoeller tests; 8,000,000 Dyer units of scarlet fever, 39,300,000 units of tetanus, 49,900 cc of antigangrene, and 40,400,000 units of pneumonia serum; 214,900 series of typhoid, 29,700 doses of pertussis, 58,500 cc gonococcus, 11,700,000 doses of smallpox, 371,600 cc of rabies, and 77,200 doses of measles vaccine; 19,400 cc of silver nitrate solution, and 51,700 cc of antiscorpion serum, as well as numerous other products.
Institute of Hygiene of Mexico: Laboratories

Institute of Hygiene of Mexico: Extracting scorpion toxin
The Institute of Biology of the National University of Mexico was established in 1929, upon the transfer to the University of the Department of Biologic Studies. Prof. I. Ochoterena has been its Director ever since.

At present the Institute, which has a staff of some 38 persons, includes the departments of Botany, Zoology, and Biology, the Library, and the National Museum of Natural History. The subdivisions include Histology, Biologic Chemistry, Bacteriology, Mycology, Phanerogams, Histo-Physiology, Hydrobiology, Helminthology, Entomology, Herpetology, Mastozoology and Comparative Anatomy. The Museum possesses excellent collections in zoology, mineralogy and paleontology, botany, comparative anatomy, and teratology.

Since its inception, the Institute has published the Anales del Instituto de Biología, usually four times a year, and papers by members have also appeared in other journals. A total of 324 papers appeared from 1930-1937. The library has 20,000 volumes; the Botany division has 3,067 volumes and a file of 13,000 bibliographic references on Mexican plants. The Institute maintains scientific relations with 837 similar institutions and societies, and receives 533 exchanges.

Among the outstanding work done by the Institute has been that in parasitology, entomology, helminthology, and botany. In the scientific section of the Herbarium, 36,500 Mexican plants have been classified, and the historical section has some 2,000 specimens, the work of previous botanists, including parts of the collections of Vicente Cervantes (expedition of Charles III), Lagasca (1776-1839), Bustamante and Septiem (1790-1844), Peñafiel (1834-1922), Villada (1843-1906), Altamirano (1848-1908), and many others. Studies on Mexican fungi, yeasts, lichens, and cacti have been made by members of the Institute.

The Histobiology section has published a series of papers on Neurological studies, and another on Teratology; other sections have analyzed medicinal plants, mineral waters, Mexican foods. The Institute has tried for the last ten years to arouse popular interest in entomology, with the publication of informational leaflets, lectures, and exhibits, and the work has resulted in the sending in of numerous specimens, and in several scientific papers. Snakes and spiders are also studied.

The budget of the Institute amounts to about $150,800 pesos yearly.
Institute of Biology of the National University of Mexico:
Histology Laboratory

Institute of Biology of the National University of Mexico: Main library
Organization.—The National Institute of Hygiene and Public Health of Peru was created by presidential decree under date of July 23, 1936. It was inaugurated on February 12, 1938.

The Institute took over the former National Institute of Vaccine and Serum Therapy and the laboratories of the Tuberculosis Dispensary and of the National Plague Service.

The Institute is invested with corporate powers and is managed by a Board of Directors composed of the Minister of Public Health who is the chairman, the Director General of Public Health, the Director of the Treasury, the Dean of the School of Medicine of Lima, and the Director of the Institute.

It is divided into five departments: (1) Pathology, with bacteriological and biochemical laboratories connected with the Hospital for Contagious Diseases; (2) Immunology and Organotherapy, with divisions of preventive and curative vaccines and sera, and control of foreign and domestic biologic products; (3) Applied Chemistry and Pharmacy, with a division of public health chemistry and laboratories of pharmaceutical chemistry and pharmacodynamics; (4) Management, with business and accounting offices; and (5) Library and Publications, with some 700 volumes and 86 journals.

The building.—An honorary scientific committee was appointed to plan the arrangement and supervise the construction of the building. It is located on General Salaverry Avenue not far from the center of the city of Lima.

The structure comprises three wings. The central wing has three floors and the side wings two. The various branches are distributed as follows: central wing: Divisions of Medical Entomology, and Experimental Medicine; Departments of Organotherapy, Chemistry and Pharmacology, and Bacteriology and Immunology, including a special Plague section; general services; Photography and drawing section; office of the Director; Library; conference room, and Restaurant; left wing: smallpox vaccine laboratories; right wing: facilities for preparation of sera and antigens; stables and animal quarters.

Functions.—The Institute is devoted primarily to research in problems of human and animal pathology and preparation of biologic
National Institute of Hygiene and Public Health of Peru

Laboratory of Experimental Pathology
National Institute of Hygiene and Public Health of Peru: Library

National Institute of Hygiene and Public Health of Peru: Personnel
products. It aids the Ministry of Public Health, Labor and Social Welfare in the training of personnel, and has a number of scholarships for students or professional men who may wish to undertake special research. Upon request of the Ministry of Public Health, members of the staff may be detailed to any part of the country for control of epidemic outbreaks or other duties. The laboratory facilities of the Institute are at the disposal of the welfare organizations of the Department of Public Welfare of the city of Lima. It cooperates also with the Department of Medicine of the Army, the School of Medicine, and the newly established School of Public Health. Other important topics of research are intestinal parasites and bubonic plague, including work on vaccine and standardization of plague serum.

Revenues.—Sources of revenue include a monthly appropriation of not less than 12,000 soles from the public treasury, income from sales of manufactured products, fees for registration of foreign laboratories and manufacturers under the government Resolution of August 21, 1935; income from sanitary control of milk under government Resolutions dated July 6, 1928, and August 9, 1931; and other revenues provided by law.

Products.—With the exception of those intended for branches of the government or for public welfare organizations, the products manufactured by the Institute are subject to the same taxation as similar foreign or domestic articles. The Institute supplies the National Department of Public Health with all necessary vaccines and sera. Other products manufactured or imported by the Institute may be purchased at cost by branches of the national government, city governments and public welfare organizations.

Biological products manufactured by the Institute include: Plain vaccines: B. coli, whooping cough, Ducrey, staphylococcus, streptococcus, gonococcus, influenza, pneumococcus, pyogenic, typhoid. Sensitized vaccines: common cold, B. coli, whooping cough, staphylococcus, streptococcus, pneumococcus, pyogenic, typhoid. Organotherapy products: from spleen, brain, corpus luteus, gastrointestinal tract, liver, anterior pituitary, whole pituitary, breast, breast and placenta, bone marrow, testicles, testicles and pituitary, ovary, ovary and pituitary, pancreas, placenta, combined feminine glands, combined masculine glands, kidney, suprarenal gland, suprarenal gland and pituitary, suprarenal gland and testicle, thymus, thyroid, thyroid and pituitary, thyroid and testicle, thyroid and ovary, bile, duodenum, posterior pituitary, and stomach, all either in tablet or powdered form, and some for parenteral use. Preparations for public health use: smallpox, rabies, whooping cough, plague and typhoid vaccines; and diphtheria and scarlet fever antitoxins. Diagnostic products: tuberculin, typhoid and paratyphoid A and B and Shiga specific sera; typhoid and paratyphoid A and B and Huddleson antigens; and diphtheria and scarlet fever toxins.
PUBLICATIONS OF THE PAN AMERICAN SANITARY BUREAU

No. 1.—Prevención de las Enfermedades Transmisibles. 60 páginas.
No. 3.—Higiene Pre-natal. 7 páginas.
No. 4.—Higiene de la Leche. 10 páginas.
No. 5.—Ordenanza Modelo para Leche. 11 páginas.
No. 7.—Organización del Servicio de Sanidad Pública de los Estados Unidos. 25 páginas.
No. 9.—La Profilaxis del Doco Endémico. 10 páginas.
No. 17.—Conservación de la Vista. 6 páginas.
No. 19.—Colecta, Examen e Identificación de las Pulgas Murinas. 11 páginas.
No. 22.—Maniobras Cerebroespinal Epidémica (Meningocócicas). 4 páginas.
No. 25.—Amigdalas y Adenoides (Vegetaciones Adenoideas). 6 páginas.
No. 26.—Tratamiento de las Enfermedades Transmisibles. 4 páginas.
No. 28.—El Diagnóstico de la Fiebre Amarilla. 14 páginas.
No. 30.—La Profilaxis del Bocio Endémico. 10 páginas.
No. 32.—La Profilaxis de la Fiebre Amarilla. 10 páginas.
No. 36.—Nomenclatura Internacional de las Causas de Muerte. 16 páginas.
No. 37.—El Diagnóstico de la Fiebre Amarilla. 14 páginas.
No. 38.—Vacunación Antidiftérica. 8 páginas.
No. 40.—La Higiene Mental. 11 páginas.
No. 42.—El Saneamiento del Suelo. 17 páginas.
No. 43.—Código Sanitario Panamericano. 23 páginas.
No. 44.—La Declaración Obligatoria del Embarazo. 10 páginas.
No. 45.—La Diánasia en el Trópico. 15 páginas.
No. 46.—La Difteria en el Trópico. 15 páginas.
No. 47.—Los Censos en Sanidad y en Epidemiología. 13 páginas.
No. 48.—Higiene Comunal para el Pre-escolar. 5 páginas.
No. 49.—El Diagnóstico de la Fiebre Amarilla. 14 páginas.
No. 50.—La Profilaxis de la Fiebre Amarilla. 10 páginas.
No. 51.—La Profilaxis de la Fiebre Amarilla. 10 páginas.
No. 53.—Vacunación Antidiftérica. 8 páginas.
No. 55.—La Lucha Anti-Larvaria no Impaludismo. 6 páginas.
No. 57.—Diagnóstico Retrospectivo de la Fiebre Amarilla. 6 páginas.
No. 58.—El Problema de la Alimentación en el Uruguay. 9 páginas.
No. 59.—Inmunización Profiláctica de los Niños Nacidos con BCG. 22 páginas.
No. 60.—Epidemiología de la Lepra. 5 páginas.
No. 61.—La Higiene Mental. 11 páginas.
No. 63.—Diagnóstico de la Tuberculosis. 6 páginas.
No. 64.—Nutrición. 46 páginas.
No. 65.—Antirratificación de los Buques. 40 páginas.
No. 66.—El Problema de la Alimentación en el Uruguay. 9 páginas.
No. 69.—La Lucha Antivenérea. 27 páginas.
No. 70.—Diagnóstico de la Tuberculosis. 6 páginas.
No. 71.—El Pan American Sanitary Conference. 8 páginas.
No. 72.—La Depuración de los Escuadrones. 17 páginas.
No. 73.—Report of the Director of the Pan American Sanitary Bureau. 8 páginas.
No. 74.—Fumigación de Buques con Acido Cianhídrico. 14 páginas.
No. 75.—Snake-Bites. 10 pages.
No. 76.—El Problema de la Fiebre Amarilla en América. 10 páginas.
No. 77.—La Declaración Obligatoria del Embarazo. 10 páginas.
No. 78.—El Problema de la Fiebre Amaxilla en América. 10 páginas.
No. 79.—El Saneamiento del Suelo. 17 páginas.
No. 80.—La Depuración de los Escuadrones. 17 páginas.
No. 81.—La Depuración de los Escuadrones. 17 páginas.
No. 82.—El Problema de la Fiebre Amarilla en América. 10 páginas.
No. 83.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 84.—El Problema de la Fiebre Amarilla en América. 10 páginas.
No. 85.—La Depuración de los Escuadrones. 17 páginas.
No. 86.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 87.—La Depuración de los Escuadrones. 17 páginas.
No. 88.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 89.—La Depuración de los Escuadrones. 17 páginas.
No. 90.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 91.—La Depuración de los Escuadrones. 17 páginas.
No. 92.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 93.—La Depuración de los Escuadrones. 17 páginas.
No. 94.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 95.—La Depuración de los Escuadrones. 17 páginas.
No. 96.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 97.—La Depuración de los Escuadrones. 17 páginas.
No. 98.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 99.—La Depuración de los Escuadrones. 17 páginas.
No. 100.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 101.—La Depuración de los Escuadrones. 17 páginas.
No. 102.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 103.—La Depuración de los Escuadrones. 17 páginas.
No. 104.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 105.—La Depuración de los Escuadrones. 17 páginas.
No. 106.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 107.—La Depuración de los Escuadrones. 17 páginas.
No. 108.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
No. 109.—La Depuración de los Escuadrones. 17 páginas.
No. 110.—La Profilaxis de la Fiebre Amarilla. 6 páginas.
THE PAN AMERICAN SANITARY BUREAU is an independent international public health organization. It was created by the Second International American Conference (1901-1902), organized by the First Pan American Sanitary Conference (1902), and reorganized by the Sixth (1920). It is governed by a Directing Council elected, together with the Director, at each Pan American Sanitary Conference, and supported by annual quotas contributed pro rata by all the American Republics. The Bureau is interested primarily in the prevention of the international spread of communicable diseases, and also in the maintenance and improvement of the health of the people of the 21 American Republics. Under the provisions of the Pan American Sanitary Code (1924), it has become the center of coordination and information in the field of public health, in the American Republics. It also acts as a consulting body at the request of national health authorities, carries on epidemiological and scientific studies, and publishes a monthly Bulletin, as well as other educational material.