ANNUAL REPORT

OF THE

SURGEON GENERAL *of the* PUBLIC HEALTH SERVICE *of the* UNITED STATES

FOR THE FISCAL YEAR

1935

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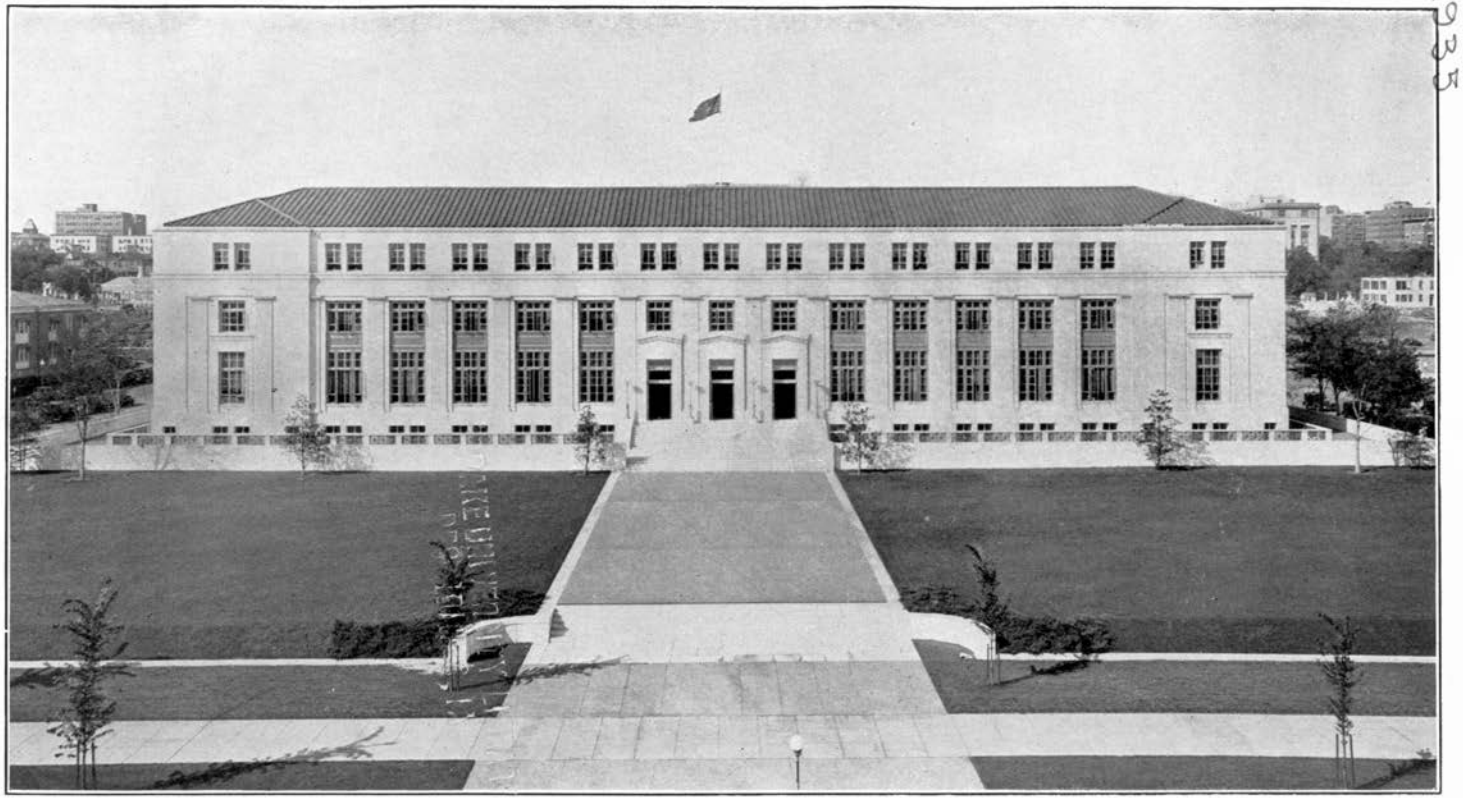


THE UNITED STATES PUBLIC HEALTH SERVICE BUILDING, NINETEENTH STREET AND CONSTITUTION AVENUE, WASHINGTON, D. C.

LETTER OF TRANSMITTAL

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, January 3, 1936.

SIR: In accordance with section 9 of the act of Congress approved July 1, 1902, I have the honor to transmit herewith the report of the Surgeon General of the Public Health Service for the fiscal year 1935.

Respectfully,

H. MORGENTHAU, Jr.,
Secretary.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

CONTENTS

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE

TREASURY DEPARTMENT,
UNITED STATES PUBLIC HEALTH SERVICE,
Washington, D. C., October 15, 1935.

SIR: In accordance with the act approved July 1, 1902, I have the honor to submit for transmission to Congress the following report of the transactions of the Public Health Service of the United States for the fiscal year ended June 30, 1935. This is the sixty-fourth annual report of this Service, covering the one hundred and thirty-seventh year of its existence.

The duties imposed upon the Public Health Service as the principal public health agency of the Federal Government are specified by law. One of these important duties is the prevention of the introduction and spread of infectious diseases from foreign countries into the United States. For several centuries the relation between the spread of communicable diseases and commercial traffic has been well recognized. In order to secure adequate protection for the United States from the introduction of disease from without, it is necessary to keep currently informed as to the prevalence of disease throughout the world insofar as is possible. The rapidity of modern transportation by land, sea, and air makes it especially important that current information regarding the prevalence of disease in all parts of the world be made promptly available. The time required to go by ship or airplane from many foreign countries to the United States has been materially reduced within recent years; and the incubation period of many dangerous communicable diseases is well within such period.

WORLD HEALTH CONDITIONS

An epidemic of influenza occurred in many European countries during the winter of 1934–35. The disease spread rapidly and attacked a considerable percentage of the population about the same time, but it was unusually mild and caused few deaths as compared with the fatalities in some other epidemics.

During the calendar year 1934, 287,000 cases of cholera were reported in Asia and the adjacent islands, with 147,000 deaths. Of these, about 1,000 cases and 650 deaths occurred in the Philippine Islands. In 1933 about 100,000 cases of cholera were reported, with 48,000 deaths.

Plague caused 98,000 deaths during the calendar year 1934. Most of these occurred in Asia, but the disease was present in nearly all parts of the world. In 1933 there were about 77,000 recorded deaths from plague. Two cases of plague, with one death, occurred in the Territory of Hawaii, and 11 plague-infected rats were found in the islands during 1934. Plague did not appear in the Philippine Islands.

Preliminary reports showed 65,000 recorded deaths from smallpox during the calendar year 1934, as compared with 75,000 in 1933. Very few cases of smallpox were reported in Europe, but the disease was present in most countries of Asia, Africa, and the American continents.

The incidence of typhus fever increased during the calendar year 1934 over that for the 2 preceding years. Preliminary reports included 100,000 cases for 1934. The greatest reported prevalence of typhus fever was in eastern Europe, but cases were reported from all sections of the globe. In Chile typhus fever caused 3,377 deaths in 1934. The disease is responsible for many deaths in Mexico.

During the calendar year 1934 yellow fever was reported in Brazil and Colombia in South America and in the Anglo-Egyptian Sudan, Gambia, Gold Coast, Guinea, Ivory Coast, Niger Territory, Nigeria, and Senegal in Africa.

HEALTH CONDITIONS IN THE UNITED STATES

The death rate for the calendar year 1934 in States reporting to the Public Health Service was 10.9 per 1,000 population. This is 0.4 per 1,000 population (3.8 percent) higher than the rate for 1933 for the same States (10.5 per 1,000), but it is lower than any recorded rate earlier than 1932, when the rate was 10.8 per 1,000.

The birth rate for the United States for 1934 is 17.1 per 1,000 population. For 1933 the rate was 16.6 per 1,000. The difference in the rates results from 93,975 more births in 1934 than there were in 1933. The increase of 3 percent is noteworthy, because the birth rate has been decreasing for several decades.

The infant mortality rate increased in 1934 over the rate for 1933. In the later year there were 129,400 deaths of infants under 1 year of age, as compared with 120,199 such deaths in 1933. The rates were as follows: 1934, 59.9 deaths under 1 year per 1,000 live births; and 1933, 58.2 deaths per 1,000 live births. However, the 1934 rate is lower than the rate for any year earlier than 1932.

The tuberculosis death rate continued to decrease, and the 1934 rate (56.2 per 100,000 population) was the lowest ever recorded by the Public Health Service.

The typhoid fever death rate for the calendar year 1934 was 3.3 per 100,000 population, and the diphtheria death rate was the same. The decrease in the deaths from these diseases is one of the marvels of the twentieth century and an outstanding example of the results of the application of the principles of modern public health science. In 1900 the typhoid fever death rate was 35.9 per 100,000 and the diphtheria death rate was 43.3. The figures indicate that there were in the United States 91,000 fewer deaths in 1934 from these two diseases than would have occurred if the rates of 1900 had prevailed in 1934.

Neither cholera nor yellow fever appeared in the United States during the year 1934. About 1,000 cases of cholera were reported in the Philippine Islands.

In May 1934 an outbreak of poliomyelitis (infantile paralysis) occurred in California, reaching its peak during June. For the year the incidence of poliomyelitis was higher than usual in the Pacific

Coast States and in Montana, Idaho, Arizona, and Nevada. In the United States for the calendar year 1934, 6.4 cases of poliomyelitis were reported per 100,000 population, as compared with 4.4 cases in 1933 and 3.3 cases in 1932. Late in the fiscal year 1935 an outbreak of poliomyelitis occurred in North Carolina and Virginia, and after the close of the fiscal year increases in the incidence of the disease occurred in most of the New England States, New York, New Jersey, Michigan, Kentucky, and some other States.

Dengue fever appeared in Florida late in July 1934. For the calendar year 1934, 2,005 cases of dengue were reported in Florida, 1,962 cases in Georgia, and 1,072 in Alabama. The actual numbers of cases were much larger, as many cases of dengue fever are not reported. For the calendar year 1934, 775,000 cases of measles were reported to the Public Health Service, as compared with 397,000 cases for 1933. For the first 13 weeks of 1935, 650,000 cases of measles were reported. The average for the corresponding weeks of the preceding 7 years was 387,000 cases.

The death rate from pellagra has been decreasing since 1928. Forty-five States reported pellagra deaths, which give death rates as follows: 1932, 3.9 deaths per 100,000 population; 1933, 3.6 deaths per 100,000; and 1934, 3.2 deaths per 100,000.

A fatal case of plague was reported in Lake County, Oreg., in May 1934, and a case in Tulare County, Calif., in June 1934. During that year 197 plague-infected ground squirrels and one plague-infected rat were found in California. During the first 6 months of 1935, plague-infected rodents were found as follows: California, 98; Oregon, 15; Montana, 1.

A total of 5,371 cases of smallpox was reported to the Public Health Service for the calendar year 1934. This is the smallest number reported since records have been kept. No case of smallpox was reported during 1934 in Maine, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, or the District of Columbia.

PREVENTION OF THE INTRODUCTION OF DISEASES FROM ABROAD

None of the quarantinable diseases was imported into the United States during the year under report. One vessel was found upon arrival to be infected with smallpox and after appropriate treatment was granted free pratique, and 1,228 vessels were granted provisional pratique conditioned upon the accomplishment of preventive quarantine measures.

During the year quarantine officers of the Public Health Service inspected 15,262 vessels and 1,924,556 persons; 12,482 vessels, 544,255 passengers, and 981,361 seamen were inspected upon arrival at continental United States ports; 2,612 vessels, 133,149 passengers, and 219,852 seamen were inspected upon arrival at insular ports; and 168 vessels, 43,860 passengers, and 2,079 seamen were inspected at ports in foreign countries prior to departure for the United States or its dependencies. Of a total of 4,081 arriving airplanes, carrying 34,135 persons, only 2,636 airplanes, carrying 30,249 persons, of whom 1,991 were aliens, were accorded the medical inspections required by law; the remaining airplanes arrived at airports of entry

at which medical officers of the Public Health Service are not available for duty.

Fumigations of 1,147 vessels were made at United States ports either because of the presence of disease on board or for the destruction of rats to prevent the possible introduction of plague. Examinations for plague infection were made of 4,207 of the 5,951 rats retrieved.

The International Sanitary Convention for Aerial Navigation, which was opened for signature at The Hague on April 12, 1933, and was signed on behalf of the United States on April 6, 1934, was ratified by the United States on June 13, 1935, and will become effective on November 22, 1935.

At the suggestion of the Public Health Service, the Consular Regulations of the United States of America were amended so as to instruct American consular officers in foreign ports to authenticate at ports of issuance foreign certificates of deratization exemption as well as foreign certificates of deratization issued under the provisions of article 28 of the International Sanitary Convention of Paris, revised 1926.

The Public Health Service has recommended favorable consideration on the part of the United States to a proposal submitted by the International Office of Public Health at Paris to amend article 25 of the International Sanitary Convention of Paris, revised 1926, so as to permit, under special circumstances, the fumigation of a vessel arriving from a plague-infected port before or during the unloading of its cargo, and also to permit a repetition of such fumigation if necessary to complete deratization of the vessel.

MEDICAL INSPECTION OF ALIENS

Medical officers at the various ports of entry in the United States examined 730,777 alien passengers and 696,562 alien seamen, of whom 14,569 passengers and 1,250 seamen were certified to the proper immigration officials, in accordance with the act of February 5, 1917, as being afflicted with some mental or physical defect or disease.

A total of 35,978 applicants for immigration visas was examined by medical officers of the Public Health Service attached to American consulates in foreign countries, 23,868 having been examined in Europe and the remainder in the Western Hemisphere. Five hundred and seventy-four of those examined in Europe and 130 of those examined in the Western Hemisphere were found to be afflicted with one or more of the defects or diseases which render exclusion from the United States mandatory, and 4,745 of those examined in Europe and 1,443 of those examined in the Western Hemisphere were reported as being afflicted with a disease or condition which was likely to affect their ability to earn a living. Only two of the aliens who had been given a preliminary medical examination in American consulates in foreign countries and to whom visas had been issued were certified upon arrival at United States ports as being afflicted with a defect or disease requiring deportation.

At the request of the Commissioner General of Immigration and Naturalization, medical officers of the Public Health Service were authorized, upon competent request of immigration officials, to make

thorough physical examinations, in accordance with the standards set forth by the United States Civil Service Commission, of any nominees tentatively selected by immigration officials for appointment to the position of immigration patrol inspector.

Because of the high mortality rate from malaria now existing in the southern part of Texas, and in an effort to restrict the introduction of malaria into the United States from Mexican territory, medical officers of the Public Health Service on duty at Texas-Mexican border stations were directed, in cooperation with the State health officer of Texas, to make a microscopic examination of the blood of any arriving person suspected of having malaria and to notify the Texas State Health Department of the name and destination of every person with malaria released for entry into the United States. Arriving aliens found to be infected with malaria are certified to the proper immigration authorities for consideration of exclusion until cured.

PREVENTION OF THE SPREAD OF CONTAGIOUS AND INFECTIOUS DISEASES IN INTERSTATE TRAFFIC

On December 31, 1934, there were 540 counties or districts in the United States with whole-time health service, as compared with 530 in 1933. The slight gain was due in part to cooperative Federal aid.

With the cooperation of the State health authorities, trachoma eradication activities were continued in Kentucky, Missouri, and Tennessee.

Plague-control measures were continued in the Pacific Coast States, and on the Island of Maui, Territory of Hawaii, in cooperation with the Territorial board of health. Various measures, including trapping and poisoning, and experiments in control procedure were carried on under the program previously inaugurated. Plague was reported in ground squirrels in 3 counties and in wood rats in 2 counties in California. A new mobile field laboratory proved useful in locating new foci of infection in Oregon.

Special activities relating to Negro health work, extending throughout the year and culminating in the Twenty-first Annual National Negro Health Week, were conducted in cooperation with official and voluntary health agencies, the various groups participating in the National Negro Health Week program, and organizations and institutions affiliated with the year-round movement for the improvement of Negro health. Included in this program were health surveys, clinical and educational projects, and the publication of the National Negro Health News, issued quarterly as a helpful medium for reporting pertinent data in connection with these activities.

From November 1 to the close of the fiscal year the sum of $1,000,000 granted to the Public Health Service by the Federal Emergency Relief Administration was expended in aiding State health authorities to establish and maintain adequate rural health service.

The certification of sources of drinking and culinary water used on railroads, busses, vessels, and airplanes was continued with the assistance of State health agencies. Of the 2,269 supplies listed in 1935 by the carriers, 95 percent were inspected and certified, 4,157 certificates being issued. During the year the use of 58 supplies was prohibited and 401 supplies were provisionally certified.

Of the 1,750 vessels actively engaged in interstate traffic during the calendar year 1934, 51.4 percent were reinspected and certified as complying with the regulations governing drinking and culinary water systems. Curtailed shipping activities interfered somewhat with the efficiency of the inspection service, since inspections preferably should be made while vessels are operating.

Since systematic inspections of vessels were inaugurated in 1933, no case of typhoid fever has been reported among members of crews of Great Lakes vessels. Down to that year there had been a steady decline in the incidence of typhoid fever since 1916, when 70 cases were recorded.

The district superintendents of the Lighthouse Service and the Engineering Corps of the United States Army were advised as to the design and installation of suitable water-treatment devices for their vessels on the Great Lakes.

In order to determine the efficiency of State control of shellfish areas and establishments, routine surveys and inspections were continued.

Assistance was rendered to States engaged on stream-pollution programs. The study of the pollution of the Hampton Roads area, made at the request of the Chesapeake Bay authority with funds allotted by the Public Works Administration, was completed.

There has been a steady increase in the amount of public health engineering service afforded other Federal agencies. In 1935 the field force devoted 44.9 percent of its time to this service. The increased volume of consultative work was due to new construction made possible by allotments from the Public Works Administration and to the enlargement of the National Park Service. Requests for assistance in solving sanitary problems were also received from the Lighthouse Service and the Coast Guard.

INVESTIGATION OF PUBLIC HEALTH PROBLEMS

At the cancer investigations station at the Harvard Medical School, Boston, Mass., a number of studies are in progress which fall into the general headings of (1) studies of the biological effects of radiation, (2) studies of resistance and susceptibility to malignant growths, (3) biochemical studies, and (4) cytological studies.

The action upon biological material of homogeneous beams of X-rays at different frequencies is being studied, and an X-ray tube has been especially designed and constructed for this purpose. The work of studying the ultraviolet absorption spectra of carcinogenic compounds was continued, and some 23 different compounds have been studied spectroscopically. The results of experiments in the production of dibenzanthracene tumors in pure strain mice are now in press. Experiments have also been conducted upon the effects of trypan blue upon resistance to the carcinogenic action of dibenzanthracene which have shown that trypan blue lowers the resistance of mice to the development of spontaneous tumors. A study of the effects of bacterial filtrates upon a series of transplantable tumors is in progress, and an effort is being made to determine why transplantable tumors vary in their reaction to the filtrate.

Biochemical studies have included chemical studies upon tumor tissue, the chemical treatment of tumors, and studies of carcinogenesis. The cytological studies have dealt with tissue culture and the effects of dibenzanthracene on cells *in vitro*.

Studies of heart disease have been concerned chiefly with the geographical distribution of the etiological types of heart disease, the methods of reporting, recording, and statistically presenting heart-disease mortality, the epidemiology of rheumatic-heart disease in a locality, and the etiology of rheumatic-heart disease.

Observations have been continued on the clinical development of leprosy in children born of leprous parents. Investigations were made of the reactions of patients to a formalinized sterile vaccine made from the inoculum of rat leprosy. The findings suggest the advisability of further study of these procedures as a means of developing a method of diagnosis of cases in early stages. Further studies on the significance of the Wassermann test led to the conclusion that the presence of a positive Wassermann or Kahn test in a leprous patient is of little value in differentiating leprosy from syphilis. Studies of the pathogenesis of leprosy have included experiments in the transmission of rat leprosy and tests of the vasomotor mechanism in patients.

Studies of malaria control by means of the drugs atabrine and plasmochin were completed during the year, as a result of which it was proved conclusively that drug administration methods as known today do not control the malaria infection rate in the tropics.

Researches in the malaria therapy of paresis have been continued and improvements in the technique, preparation, and shipment of this material effected.

The determination of the pellagra-preventive value of seven different foodstuffs was completed during the year. Chicken, rabbit, and pork shoulder were found to be good sources of the pellagra-preventive vitamin, cottonseed meal and evaporated peaches relatively poor sources, and prunes and canned beets were found to contain little or none of the pellagra-preventive vitamin.

The 1935 net production of Rocky Mountain spotted fever vaccine was 284.4 liters, 36.6 liters more than the 1934 net supply. The Emergency Conservation Corps was furnished 53.7 liters of vaccine. It was impossible to supply vaccine for all the camps located in endemic areas, but there was sufficient to provide for the immunization of personnel in camps in areas where the danger was greatest.

Cases of Rocky Mountain spotted fever have been reported for the first time from the States of Illinois and Oklahoma, while new endemic areas have been reported in Montana, California, and Idaho. There are now 34 States in which spotted fever is known to be endemic.

Considerable research work on spotted fever and other tick-borne diseases and their vectors has been done at the Hamilton (Mont.) Laboratory in addition to its main function, the manufacture of spotted-fever vaccine.

Further studies on growth and the economic depression have shown that no striking differences exist in the weight of children in 1934 as compared with averages of weight for 1921 through 1927.

Other studies of physical status, growth, and development of children have included a continuation of the study of the hearing of school children (begun in 1931), age changes in physical resemblance of siblings, selective mortality in childhood, and sectional variations in physique and growth of children.

Midwifery as practiced by the colored midwife constitutes one of the problems in maternal and child hygiene throughout the southern States. Therefore, a study of midwifery practice was undertaken in Brunswick County, Va., where approximately 75 percent of the deliveries of both colored and white mothers were attended by midwives.

Over a million and a half dental examinations of children in 26 States were compiled, the data including items relating to present dental needs and to past dental treatment, with the children classified according to color, sex, age, and size of area in which they lived.

Studies of mottled enamel have dealt with, first, the development of a quantitative methodology for use in epidemiological surveys of endemic areas to replace the qualitative measures heretofore in use, and, second, basic studies leading to the determination of the minimal threshold of toxicity.

Activities in industrial hygiene have related primarily to (*a*) studies of the effect of dust on the health of the worker, particularly an intensive survey in the anthracite coal fields of Pennsylvania, a general review of factors involved in the determination and control of industrial dust, and laboratory research in the physiological response of the peritoneal tissue to dusts introduced as foreign bodies; (*b*) the completion of a study of air pollution in large American cities; (*c*) the preparation of a report on the distribution of daylight within an experimental building as an aid in meeting problems of natural illumination in factories, schools, and hospitals; (*d*) studies of sickness among industrial workers as carried out in previous years; (*e*) field and laboratory studies of specific industrial poisons, including the commencement of an intensive survey of mercury poisoning among fur cutters and a pathological study of dogs exposed to benzol; (*f*) a review of known facts in regard to the relation between housing and health and participation in various conferences of housing agencies; and (*g*) the development of further agreements with the chemical industry to safeguard users of dangerous substances, those adopted during the year relating to aniline oil, carbon bisulphide, and benzol.

About 5,000 employees of 22 plants were examined for the occurrence of industrial skin diseases. The sickness records of these plants, as kept by the plant physician, were examined in order to determine the frequency of occurrence of skin diseases and their causes.

A study of the California outbreak of poliomyelitis during the summer of 1934 constituted the major work of the Office of Epidemiology, which was established during the present fiscal year. The outbreak was mild as to severity and showed a tendency to attack older children and young adults to a greater extent than epidemics of former years. This outbreak presented problems new in the history of epidemiology which have not yet been settled.

In May 1935 an epidemic of poliomyelitis occurred in North Carolina and a study was begun of the possible value of the Park-Brodie vaccine.

Studies of public health methods have been continued to evaluate prevailing practices of health departments in relation to needs of the people and to render consultation service to other agencies, national, State, and local, on matters pertaining to health administration.

Investigations of milk sanitation have dealt with the effect of variations in pH concentration and the effect of variations in buffer concentration upon the thermal resistance of the Public Health Service test organism used in testing milk pasteurization equipment. As a result of these tests it was determined that future studies of pasteurization equipment should be conducted at a pH concentration of 7.2 or a buffer concentration of m/675. Further studies were made of the bacteriocidal treatment of milk cans by means of hot air, as a result of which it was concluded that a temperature of 170° F. for 30 minutes would devitalize all milk-borne pathogens.

Studies of various phases of the relation of sickness to the depression have been undertaken. Persons of low income, and particularly those whose economic status decreased from that of reasonable comfort to very poor during the depression, have high sickness rates. However, the greatest difference in sickness rates appears between persons on relief and those not on relief. An analysis of data on physical impairments and chronic diseases among the relief and the nonrelief population of a large city was undertaken in cooperation with the Federal Emergency Relief Administration. A study was undertaken to determine whether mortality in the families of the unemployed and others severely affected by the depression increased, remained stationary, or decreased during the period 1929–34. The data are now being analyzed.

Studies in sewage treatment have as their primary objective the determination of conditions which affect detrimentally the biological activity upon which purification of sewage by the activated sludge process depends. A small experimental treatment plant has been maintained as a source of laboratory material as well as for observing the changes in efficiency of purification.

A series of experimental observations has been instituted dealing with the physical and biochemical changes occurring in sewage sludge deposits under conditions approaching those in natural streams. The data thus far obtained have indicated that the rate of oxidation of the sludge deposits under stream-flow conditions is somewhat lower than that of normal biochemical oxidation under strictly aerobic conditions.

There was a definite increase in the number of cases of typhus fever in some of the Southern States, spotted fever remaining practically the same. Additional foci of spotted fever were located in New York State and in North Carolina, and cases which were probably spotted fever were found in northern Alabama.

A total of 881 cases of tularemia was reported from 41 States and the District of Columbia in 1934. Naturally infected red foxes were found in Maine during the year.

Studies indicate that immunity to the St. Louis type of encephalitis is wide-spread in the United States. It has been shown that the instillation of alum into the nostrils of white mice tends to render them less susceptible to intranasal infection with this virus.

Following the work on encephalitis virus in mice, monkeys treated intranasally with sodium aluminum sulphate solution were rendered resistant to intranasal instillation of poliomyelitis virus.

Studies on the epidemiology of the amoebic dysentery outbreak originating in Chicago in 1933 have been completed and the report has been submitted for publication. Approximately 1,300 cases occurred in this outbreak, of which about 100 were fatal.

Further studies have been undertaken on dysentery, with special reference to the bacillary type as it occurs among Indians of the Southwest.

Special studies on prophylactic and therapeutic agents covered by the act of July 1, 1902, for the control of biologic products have included gas gangrene antitoxin, hemolytic streptococcus, meningococcus, alum precipitated antigens, staphylococcus, and arsenical preparations.

Cancer research at the National Institute of Health has been concerned with cell division in tumor growth, the growth of the Walker 256 rat mammary carcinoma *in vivo* and in tissue culture, the systematic attempt to influence the growth of a spontaneous mammary tumor of the mouse, the histological characteristics of the Jensen rat sarcoma and Walker 256 rat carcinoma after subcutaneous, and intramuscular inoculations.

Formaldehyde sulfoxylate was employed as a chemotherapeutic agent in mouse pneumococcus septicemia. It had a striking curative action on a strain of pneumococcus I grown at the National Institute of Health. So far other strains of pneumococci were not so easily influenced by the drug as the Institute strain.

Sugar researches included studies on the oxidation of sucrose, on the action of various acidic hydrolizing agents on methyl glycosides, and on the four carbon sugar threose.

As a result of the researches on invertase a relatively convenient method has been developed for obtaining concentrated solutions of this enzyme.

THE MARINE HOSPITALS AND OTHER RELIEF STATIONS

Hospital and out-patient care was furnished to American seamen and other beneficiaries at 154 ports; 332,034 accredited persons applied for treatment and other medical service. The Coast Guard, for whose personnel of 9,413 the Public Health Service has sole medical responsibility, was served at the regular stations and 103 other places, and 20 medical and dental officers were assigned to Coast Guard ships and shore stations. The usual assistance was rendered the Employees' Compensation Commission in treating injured Federal employees, to the Civil Service Commission in examining applicants and employees, and to other Government agencies that utilize the Public Health Service.

On September 26, 1934, Treasury Department Order No. 9 directed that all medical relief activities in the Treasury Department in the District of Columbia not then a part of or under the supervision of the Public Health Service be transferred to the Public Health Service and placed under the general supervision of the Surgeon General. These activities are located in the main Treasury Building, Treasury

Annex No. 1, Internal Revenue Building, Old Southern Railway Building, Office of the Register of the Treasury, Branch Treasurer's Office, Federal Warehouse, Division of Loans and Currency, Bureau of Engraving and Printing, and the DeMoll Building; and, upon request of responsible heads, medical supervision of relief activities in the following departments and agencies has also been undertaken: Securities and Exchange Commission, Rural Electrification Administration, Federal Housing Administration, Reconstruction Finance Corporation, National Bureau of Standards, Department of Commerce, Shipping Board, and Suburban Resettlement Administration.

There were 176,032 more hospital days furnished all classes of patients during the fiscal year 1935 than in the fiscal year 1934.

During the year important new hospital facilities were completed and occupied at Baltimore, Norfolk, Carville, Chicago, and Memphis, and appropriations will be available in the fiscal year 1936 to replace the old pavilion ward buildings at Memphis and St. Louis with modern, fire-resistant structures, and it is intended that these buildings shall be under construction before the end of 1935.

Merchant seamen and dependents of Coast Guardmen continued to avail themselves, in increasing numbers, of the liberalized amendments to the regulations approved April 3, 1934. In March 1935 the Veterans' Administration increased its patients at the Detroit marine hospital to 150 and requested that this number be hospitalized at Detroit during the fiscal year 1936, but is prepared to avail itself of only 300 beds in all marine hospitals (including Detroit) in 1936. Patients from the Civilian Conservation Corps and the Civil Works Administration were hospitalized in considerable numbers (see summary of services by class of beneficiary, p. 107), and it is expected that there will be a much greater demand for hospital beds for patients of the Civilian Conservation Corps and Works Progress Administration in 1936. As the Works Progress Administration has replaced the Civil Works Administration, patients from the Civil Works Administration should markedly decline.

PREVENTION AND CONTROL OF VENEREAL DISEASES

Venereal disease control work continued along the same lines as in the years immediately preceding. The Public Health Service extended advisory assistance to State and local health departments upon request, stimulated and encouraged the development of programs directed against the venereal diseases, and contributed to the general informative and educational programs. While in some places the respective health departments have been tardy in providing for the control of syphilis and gonorrhea, in many localities reasonably effective work is being conducted. In several States preliminary reports indicating encouraging results have been made, and it appears evident that it will be possible to show definite progress in the prolonged campaign against the venereal diseases within the next few years.

The investigative work of the Public Health Service in the field of the venereal diseases has included studies both of a clinical and laboratory nature. Some of the former have demonstrated the effectiveness of treatment in early syphilis, both from a public health standpoint and for the infected person. A series of scientific papers on

the treatment of cardiovascular syphilis, completed but not yet published, indicates the possibility of the prevention of this form of cardiovascular disease which causes such a high mortality rate. Definite progress has been made in experimental work on chemical prophylaxis.

The informative and educational program has met with considerable success. The subscriptions to Venereal Disease Information have more than doubled during the current year, and a great deal of educational material has been distributed upon request to individuals and to organizations.

During the year 254,551 cases of syphilis and 161,810 cases of gonorrhea were reported to State health departments. One-day surveys of sources of treatment to determine the prevalence and establish the trend of syphilis and gonorrhea were continued. As a result of the latter surveys it has been possible to estimate the number of new cases of syphilis and gonorrhea which are treated annually in the United States. This estimate places the number of new cases of syphilis each year at approximately 518,000 and of gonorrhea at 1,555,000. The need for extensive and concerted effort on the part of all health organizations is therefore evident if progress is to be made in the campaign against these diseases.

NARCOTIC FARMS AND MEDICAL AND PSYCHIATRIC CARE OF FEDERAL PRISONERS

The narcotic farm at Lexington, Ky., was completed and opened for the reception of admissions on May 29, 1935. The second narcotic farm at Fort Worth, Tex., is in process of being developed. The preliminary plans have been approved, and it is anticipated that the contract for the necessary buildings will be accepted some time during the autumn of 1935. Preliminary contracts for beginning work at the institution mentioned above were approved on October 13, 1934, and ground was broken with appropriate ceremonies for the beginning of grading and other preliminary construction work.

The Service continued to supervise and furnish the medical services for the Federal penal and correctional system. The Attorney General has requested an extension of the psychiatric service to the Federal courts.

COOPERATION WITH OTHER AGENCIES

During the fiscal year the Public Health Service continued its cooperative activities with official and unofficial organizations in matters concerning public health. A number of these cooperative activities are required by law and the remainder are deemed necessary in the interest of economical and efficient administration. By means of this cooperation similar or related activities are coordinated and duplication of effort is avoided. Among the more important cooperative activities of the Service the following may be mentioned:

1. With the Department of State by detailing medical officers for duty at consulates in Europe, Canada, Cuba, and the Philippine Islands to examine medically applicants for immigration visas, to furnish information respecting the sanitary condition of ports and

vessels departing for United States ports, required for the issuance of bills of health by American consuls, and for related quarantine work; in efforts to establish an international uniform method of assaying opium; in notification of the occurrence of plague or cholera in the United States or its possessions.

2. With other bureaus of the Treasury Department in hospital care and other medical services for the Coast Guard; furnishing advice and assistance on public health engineering matters to the Procurement Division and Coast Guard; emergency medical relief to Treasury Department employees in the District of Columbia; advising with the Bureau of Narcotics relative to medicinal and scientific needs of the country concerning narcotic drugs; with the Bureau of Customs in adjudication of violations of act of February 15, 1893, resulting from the failure of masters of vessels to present American consular bills of health to collectors of customs upon entry at United States ports.

3. With the War and Navy Departments in physical examination of applicants for Officers' Reserve Corps and citizens' military training camps; medical services for civilians employed on vessels of the Mississippi River Commission, Army Engineer Corps, and Army transports; treatment of officers and enlisted men of the armed forces (pay patients); hospitalization, upon request of the commanding officer, of patients from the Civilian Conservation Corps; with the Army Medical Center, Washington, D. C., and the naval hospital, Washington, D. C., in evaluation of serodiagnostic tests for syphilis in the United States; with the Army in furnishing advice and assistance on public health engineering matters; with the Navy Department in studies of dust exposure of foundry workers; with the Naval Academy in survey of lighting facilities.

4. With the Department of Justice and local United States district attorneys in matters relating to the protection of the interests of the United States in which the administration of the quarantine laws and regulations is concerned, or in which the proper care and preservation of public property used for quarantine purposes are concerned; in advisory assistance in connection with milk sanitation; with the Bureau of Prisons in furnishing medical and psychiatric and other scientific and technical services in the Federal penal and correctional system; with the Criminal Prosecution Division in rendering psychiatric service in connection with the prosecution of Federal offenders; with the Division of Investigation in furnishing first-aid instruction to special agents.

5. With the Post Office Department in supplying first-aid and special physical examinations; in furnishing expert witnesses at hearings involving fraud orders.

6. With the Department of the Interior by detailing officers for duty in the Philippine Islands to perform the medical examinations required under regulations approved by the Secretary of the Interior in connection with the issuance of workers' permits to Filipino laborers destined to the Hawaiian Islands; with the Bureau of Indian Affairs in detailing medical officers to supervise medical services, in furnishing advice and assistance on public health engineering matters, in a study of health problems among the Indians, in advisory assistance in connection with milk sanitation, and in a

study of bacillary dysentery among Indians in southwest United States; with the National Park Service in the maintenance of the venereal disease clinic at Hot Springs National Park, Ark.; with St. Elizabeths Hospital and Freedmen's Hospital in the valuation of serodiagnostic tests for syphilis; with the Bureau of Mines in connection with a study of the health of miners; with the Department relative to the establishment of a hospital on the west coast for the care of the mentally ill Alaskan and North American Indian and other beneficiaries of the Government.

7. With the Department of Agriculture in physical examinations and outpatient treatment for members of the Civilian Conservation Corps in Alaska operating under the Forest Service; by assisting in the enforcement of plant and of animal quarantine measures on vessels arriving from foreign ports; with the Forest Service and Bureau of Agricultural Engineering in furnishing advice and assistance on public health engineering matters.

8. With the Department of Commerce in standardizing and administering quarantine procedure required of aircraft arriving in the United States from foreign countries, and the development of marine standards, in cooperation with the American Marine Standards Committee, relating to ship sanitation; in physical examinations, and instruction and examination in the prnciples of first aid of applicants for license as ship's officers, at the request of the Steamboat Inspection Service; treatment of lighthouse keepers and seamen from vessels of the lighthouse establishment, Coast and Geodetic Survey, and Bureau of Fisheries; furnishing medical supplies to lighthouse vessels.

9. With the Department of Labor by detailing medical officers for the medical examination of aliens at United States ports of entry and furnishing medical care to detained aliens.

10. With the Federal Trade Commission in advice concerning health aspects of various products.

11. With the Federal Emergency Relief Administration in the treatment of transients at Hot Springs National Park infected with the venereal diseases, and in other medical relief activities; in lending the services of a psychologist and statistician for the purpose of organizing statistical studies with special reference in predicting the outcome of parole for prisoners; in investigation of cases of meningitis occurring in transient camps in Virginia, Tennessee, and Arkansas; in malaria control work in the southern States.

12. With the Civil Works Administration in hospitalizing, upon request of the proper authority, workmen engaged on Federal Civil Works Administration projects injured in line of duty.

13. With the National Resources Board in furnishing advice and assistance on public health engineering matters.

14. With the National Emergency Council in advisory assistance in connection with milk sanitation.

15. With the Emergency Conservation Corps by furnishing Rocky Mountain spotted fever vaccine.

16. With the Public Works Administration in a study of relation between housing and health.

17. With the Tennessee Valley Authority in furnishing advice and assistance on public health engineering matters, in assisting in

malaria control, and in the study of possible phosphorus poisoning among workers.

18. With the Agriculture Adjustment Administration in advisory assistance in connection with milk sanitation.

19. With other Government departments and agencies as follows: Securities and Exchange Commission, Federal Housing Administration, Rural Electrification Administration, Reconstruction Finance Corporation, National Bureau of Standards, Shipping Board, and Suburban Resettlement Administration in furnishing emergency medical relief to employees on duty in the District of Columbia, upon request of responsible authorities.

20. With Puerto Rico and the Virgin Islands in a study of the system of public medical care, and the Virgin Islands in a survey of their leprosy problems.

21. With all States, Territories, District of Columbia, and Canada in certification of water supplies used on interstate carriers and in shellfish sanitation; with California, Oregon, Nevada, and the Territory of Hawaii in plague-control activities; with Missouri, Kentucky, and Tennessee in trachoma eradication; with Virginia, Minnesota, and Tennessee in stream-pollution problems; with Alabama in typhus fever eradication; with South Carolina, Washington, West Virginia, Texas, and North Carolina in the detail of an officer to assist in the reorganization of the health department; with St. Louis County, Mo., Phoenix, Ariz., and San Antonio, Tex., in making surveys of local health organizations; with 34 States in aid to State and local health organizations; with 16 States in malaria-control drainage; and with 30 States in community sanitation.

22. With all States in collection of morbidity reports and epidemiological data relating to communicable diseases.

23. With the Alabama State Board of Health and the Macon County Health Unit in the observation of a group of syphilitic male Negroes and a control group to determine the effects of untreated syphilis in the Negro.

24. With the Florida State Board of Health in a post-graduate course for physicians, in cooperation with the State medical association and the University of Florida, by assistance in a general malaria-control program, and in the control of an epidemic of dengue fever at Miami.

25. With California and North Carolina in detailing officers to assist the State health department in connection with studies of outbreaks of infantile paralysis.

26. With North Carolina and Ohio in control of localized malaria outbreaks.

27. With Georgia, Alabama, North Carolina, and Virginia by examination of 7,000 blood specimens to determine the malaria-infection rate.

28. With Oklahoma, Missouri, and Pennsylvania in appraisal of facilities for health protection and medical care.

29. With Virginia in malaria control.

30. With Texas by survey of various communities to determine the incidence of mottled enamel.

31. With Pennsylvania in a study of health of anthracite-coal miners.

32. With Arizona in survey of health conditions of Phoenix.
33. With Illinois by survey of tuberculosis in the southern part of the State.
34. With 21 States by advisory assistance with reference to milk sanitation problems.
35. With a number of States by furnishing Rocky Mountain spotted fever vaccine.
36. With the Territory of Hawaii in care and treatment of patients at the leprosy-receiving station.
37. With the Office International d'Hygiene Publique, Paris, and the Pan American Sanitary Bureau, Washington, D. C., in matters relating to public health and maritime quarantine, and the exchange of information relative to the prevalence of quarantinable diseases.
38. With the following institutions in the evaluation of serodiagnostic tests for syphilis in the United States: Blue Ridge Sanatorium, Charlottesville, Va.; Central State Hospital, Petersburg, Va.; Charity Hospital, New Orleans, La.; Cook County Hospital, Baltimore, Md.; Mayo Clinic, Rochester, Minn.; Miami Valley Hospital, Dayton, Ohio; Municipal Social Hygiene Clinic, Chicago, Ill.; tuberculosis hospital of the Baltimore City Hospital, Baltimore, Md.; University of Illinois College of Medicine, Chicago, Ill.; University of Virginia Department of Medicine, University, Va.; also the American Society of Clinical Pathologists.
39. With the American Social Hygiene Association, Inc., in 1-day surveys to determine the number of cases of syphilis and gonorrhea under treatment in the United States.
40. With the syphilis clinics of Johns Hopkins University, Mayo Clinic, University of Pennsylvania, University of Michigan, and Western Reserve University in cooperative clinical studies of the treatment of syphilis.
41. With the Milbank Memorial Fund in the study of untreated syphilis in the Negro in Macon County, Ala.
42. With the University of Hawaii by lectures to classes in public health nursing.
43. With the Gorgas Memorial Laboratory and Health Department of Panama in studies of malaria control.
44. With the Brookings Institution in survey of State government of Oklahoma.
45. With the Johns Hopkins Medical School by furnishing solution of the four-carbon sugar d-threose.
46. With the Roscoe B. Jackson Memorial Laboratory in connection with investigations of cancer.

Cooperation was also continued with the Health Committee and Opium Advisory Committee of the League of Nations, with various committees of the American Psychiatric Association, with the Scientific Administration Committee of the National Committee for Mental Hygiene, and with the Committee on Drug Addiction of the National Research Council.

The Public Health Service desires to acknowledge assistance received from the following agencies:

Harvard Medical School by furnishing quarters for Field Investigations of Cancer and various departments of the school for cooperation in these investigations, University of Pennsylvania for use of office space and clinical material in connection with investigations

of heart disease, South Carolina State Hospital for laboratory space and material in connection with malaria researches, National Canners' Research Laboratories for cooperation in connection with studies of nutrition, Milbank Memorial Fund for assistance in studies of sickness and the depression, and the Bureau of the Census in survey of dental needs of school children.

RECOMMENDATIONS

The protection of the public health is an essential function of government. Natural and material resources of any area cannot be fully developed unless health conditions are safe. In order to protect the public health of the United States, recommendations are necessary as to the measures and means to be employed to that end.

There can be no truce in the warfare against disease. Each year brings new problems. Constant developments in the field of industry present additional problems in industrial hygiene; epidemics of communicable diseases present new phases from time to time; and new developments in methods of preventing disease are evolved and must be evaluated. The outbreak of infantile paralysis in North Carolina and Virginia just before the close of the present fiscal year is an instance of a new phase of old problems that constantly arise. Heretofore we have had no record of a similar outbreak of this disease in the southern section of the United States. The reasons for this unusual prevalence in this area must be studied, as well as many other important factors in epidemiology and control.

The recommendations submitted herewith constitute the more important public health needs at the present time.

SCIENTIFIC RESEARCH

If the additional funds and personnel for research under the Social Security Act become available early in the next session of Congress, as expected, the matter of providing adequate facilities for the carrying on of certain new projects will present a very difficult problem. The situation could best be met by the construction of suitable buildings on the 45-acre site at Bethesda, Md., which has recently been donated to the Public Health Service.

STATE AND LOCAL HEALTH WORK

One of the chief handicaps in providing health service is the lack of efficient public health organizations, especially in small cities and rural areas. This lack of local organization is particularly noticeable and detrimental when efforts are being put forth to prevent the interstate spread of disease. Realizing the importance of increasing local health service in rural areas, the Public Health Service has for a number of years cooperated with the States in promoting this effort. However, owing to the inadequacy of funds and personnel, it has been difficult to make substantial and lasting contributions to this important work.

The enactment of the Social Security Act, with its contemplated allotments to State departments of health for local health service, opens a new and bright era in the field of public health. However,

the advantage that has been gained must not be permitted to lapse through complacency or indifference. Vigorous and continued endeavors will be required on the part of the State health authorities to insure that these essential funds are used to stimulate the further expansion of adequate full-time local health service and the appropriate assumption of responsibility by State and local governing authorities.

The occurrence of a fatal human case of plague and the discovery of two foci of rodent plague in Lake County, Oreg., direct attention to the extension of this disease. As the infection has also been found in Wallowa County, Oreg., about 50 miles from the State lines of Washington and Idaho, it is possible that the disease has spread to these and other States. In view of these facts it is important that adequate Federal funds be made available for investigations and suppressive measures in the northwestern States in which the infection is or may be present.

MARITIME QUARANTINE

The advisability of giving appropriate consideration to the personnel requirements of all the inspection services maintained at ports of entry is respectfully recommended in connection with the consideration of the extension of the hours during which a United States port may be declared open for entry or the designation of new ports of entry. Inasmuch as these various inspection services are maintained pursuant to requirements of law for the protection of the country, it would appear that ports should be declared open for entry only for such hours as can be maintained by available personnel. In this connection it must be noted that neither legal authority nor funds have been provided for the payment of overtime compensation to employees engaged in the quarantine work of the Public Health Service, such as exists with reference to employees of the Customs and Immigration Services, which serves to accentuate the difficulty faced by the Public Health Service in carrying out, with existing personnel, the duties placed upon it by law requiring all arrivals from foreign territory to undergo quarantine inspection and such other quarantine procedures as may be necessary in ports declared open for entry beyond the usual hours of duty.

It is the view of the Public Health Service that airplanes destined to interior airports should be required to undergo the quarantine, customs, and other Federal inspections required by law at airports of entry located on or near international borders or the coast. These inspections should be accomplished at such of these airports as may be most convenient to the line of flight; and therefore it is recommended that the designation of airports as airports of entry be restricted to those airports which are located near the international land borders or coast lines of the United States, as it is regarded that the necessary maximum protection is afforded thereby to the United States with the minimum expenditure of Federal funds.

It is recommended that the Government of the Panama Canal Zone amend the maritime quarantine regulations issued by it for the Canal Zone so as to agree exactly with the quarantine regulations of the United States administered by the Public Health Service in all other United States ports.

VENEREAL DISEASE PROBLEM

Since shortly after the inception of the present campaign against syphilis and gonorrhea, the work has been handicapped not only by inadequate appropriations but also by failure of health organizations to make equable allotments for the control of these diseases. On the basis of present morbidity reports, syphilis and gonorrhea represent 20 percent of all communicable diseases. Venereal diseases are as serious and as crippling as other communicable diseases, but funds are not allocated for their control in an amount which nearly approximates 20 percent of all allocations available for the communicable diseases in general. With a distribution of funds on a reasonable basis the attainment of the control of syphilis and gonorrhea would be realized much more rapidly and a real advance in the field of public health attained.

MARINE HOSPITALS

Appropriations should be made in amounts sufficient to permit the marine hospitals and relief stations to render first-class professional services to beneficiaries. New hospitals should be erected at Miami, Fla., Portland, Me., and Los Angeles, Calif. The marine hospital at Stapleton, N. Y., should be completed to provide for a total of 1,200 beds. Additional quarters for commissioned and other personnel are required in Baltimore, Norfolk, Fort Stanton, Seattle, and Savannah, and recreational buildings at New Orleans, Carville, and Fort Stanton.

PERSONNEL

The most important single factor in the work of the Public Health Service is an adequate well-trained personnel. The erection of commodious hospitals, the construction of sufficient quarantine stations, the completion of extensive laboratory facilities with modern equipment and supplies are important for the performance of the work of the Service required by law. Without the proper personnel, however, none of the activities of the Service can be acceptably conducted. The commissioned personnel of the Public Health Service should be enlarged so as to meet the ever-increasing demands occasioned by the addition of new duties such as the opening of the first United States narcotic farm at Lexington, Ky. The brunt of the important work of the Public Health Service must of necessity fall upon the commissioned officers. It is necessary that the commissioned corps be maintained at a high degree of efficiency by the regular admission of qualified young men into the career service. The commissioned corps of the Public Health Service constitutes a mobile sanitary corps whose members are available for duty anywhere in the United States or in foreign countries. Such a mobile corps is indispensable for the control of epidemics, for quarantine, and for the prosecution of investigative studies.

H. S. CUMMING,
Surgeon General.

Hon. HENRY MORGENTHAU, JR.,
Secretary of the Treasury.

DIVISION OF SCIENTIFIC RESEARCH

Asst. Surg. Gen. L. R. THOMPSON in charge

CANCER

Field investigations of cancer at the Harvard Medical School have been continued under the direction of Medical Director J. W. Schereschewsky.

STUDIES OF THE BIOLOGICAL EFFECTS OF RADIATION

Biological action of X-rays.—In the preceding annual report it was concluded, with the provisions made for studying the action of homogeneous beams of X-rays upon biological material at different frequencies, that the intensity of the beams furnished by the apparatus was inadequate for the purpose. Accordingly an X-ray tube has been designed and constructed in which different target materials can be placed so that by using the characteristic radiation of the target more or less homogeneous beams may be obtained having a sufficient intensity for the purpose.

Absorption coefficient of Xenon.—In the previous annual report mention was made of a series of measurements on the absorption coefficient for X-rays of Xenon to be used in the Xenon ionization chamber. The observed measurements differed by as much as 10 percent from the theoretical values calculated from Jönsson's universal absorption curve.

This raised the question of the purity of the Xenon on which the measurements were made. However, spectral analysis showed the Xenon to be pure, and the absorption data were published in the Physical Review. It is interesting to note that comparable data from other laboratories have been in better agreement with the Xenon results than with Jönsson's universal absorption curve.

Spectroscopic study of carcinogenic compounds.—The work of studying the ultra-violet absorption spectra of carcinogenic compounds was continued. Through the kind cooperation of Professor Fieser of the department of organic chemistry, Harvard University, this laboratory has been supplied with a series of compounds to be tested for carcinogenic action and related to those known to possess carcinogenic properties. Thus far some 23 different compounds have been studied spectroscopically. Since the compounds were all anthracene derivatives, a certain similarity was found in the spectra. Three more or less distinct groups of bands can be found in almost all of them, differing, however, in the position and intensity of single bands. In those having the strongest carcinogenic action, the position of the bands is shifted somewhat toward the longer wave lengths.

From the evidence obtained from the known carcinogenic compounds, the tentative hypothesis may be made that all compounds

showing these bands in approximately the same position are carcinogenic. A number of such compounds have been injected into mice, in conjunction with the spectroscopic observations. There is obviously considerable interest attached to the outcome, which is still pending, of these experiments.

Thus far all the carcinogenic compounds which have been found are anthracene derivatives. Recently, however, Cook has synthesized a derivative of phenanthrene-benzphenanthrene, which he has shown to be carcinogenic.

This compound is being prepared by Professor Fieser. A comparison of its absorption spectrum with that of the carcinogenic anthracene derivatives should yield information bearing upon the validity of the hypothesis just mentioned.

Low temperature absorption spectra.—Additional information in regard to these absorption spectra is being sought by obtaining them with the absorption cell cooled to the temperature of liquid oxygen. At these low temperatures a considerable increase in sharpness and structural details may be obtained, because of the decrease in thermal agitation of the molecules and the lowering of the dielectric constant of the solvent with extreme cold. A mixture of equal parts of anhydrous ether and alcohol, distilled several times, made a solvent which would not freeze at a temperature of −190° C. for several hours and yet dissolve enough of these compounds to obtain the complete absorption spectrum.

STUDIES OF RESISTANCE AND SUSCEPTIBILITY TO MALIGNANT GROWTHS

Production of dibenzanthracene tumors in pure strain mice.—The results of an experiment in which pure strain mice were given injections of 1:2:5:6–dibenzanthracene dissolved in lard were published in the Public Health Reports May 25, 1934.

During the past fiscal year further experiments in which pure strain mice were injected with a dibenzanthracene-lard solution were carried out, the results of which are now in press.

Lung tumors following subcutaneous dibenzanthracene injections.—During the course of the experiments with dibenzanthracene it was found that members of two strains of mice develop a high percentage of lung tumors following the subcutaneous injections of a dibenzanthracene-lard solution. On microscopic examination of the lung growths it was found that practically all were carcinomas, whereas tumors arising at the site of injection were nearly all sarcomas.

This finding suggests an organ susceptibility to the carcinogenic action of dibenzanthracene.

Effects of trypan blue upon resistance to the carcinogenic action of dibenzanthracene.—Previous work from this laboratory has shown that the injection of trypan blue lowers the resistance of mice to transplantable tumors.

The influence of trypan blue upon the resistance of mice to the carcinogenic action of dibenzanthracene has been studied in two experiments. In both these experiments it was found that the mice receiving the injections of trypan blue developed tumors earlier than the control animals. This finding may be of some value in further studies relating to resistance to malignant growths.

Effects of bacterial filtrates upon malignant growths.—The effect of the injection of bacterial washings upon the growth of a transplantable lipo-sarcoma in the guinea pig has been reported by Gratia and Linz, and upon mouse sarcoma 180 by Schwartzman and Michailovsky. The injections of the bacterial washings produced hemorrhages in the tumor, followed in some instances by complete regression. The findings with respect to mouse sarcoma 180 were confirmed in this laboratory. In addition it was pointed out that the washings were without effect upon the growth of spontaneous tumors. Mention has been made of the effects of a vaccine prepared from a Gram-negative, motile liquefying bacillus isolated from tumors propagated in this laboratory which, when injected, produced hemorrhages, followed by about 60 percent of regressions in the case of mouse sarcoma 180.

Interest in the problem was increased during the past year because of a paper published by Duran-Reynals in which he presented a simple and easy method for obtaining active material from *B. coli* broth cultures.

The following studies have been carried out at this laboratory by using a filtrate from a week-old broth culture of *B. coli:*

Cutaneous tumors obtained by the intradermal injection of a tumor emulsion are excellent test objects for activity of the filtrate. In such tumors macroscopic hemorrhage is evident 3 to 4 hours after the injection of the filtrate. A number of factors enter into the reaction, namely, the strains of mice or of tumor used, the age of the tumor, and the amount of filtrate injected. By careful selection of these factors it is easy to cause the regression of 100 percent of certain transplantable tumors (e. g., S37).

In the case of spontaneous tumors no regressions were noted following injections of the filtrate. The filtrate is not specific for carcinomas or sarcomas, as both may be affected. The first transplant of a spontaneous sarcoma (dibenzanthracene tumor) may be affected, but no influence on the growth of the first passage of any spontaneous carcinoma was noted. The study of a series of transplantable tumors is in progress, some of which are influenced by the filtrate while others are unaffected. An effort is being made to determine why transplantable tumors vary in their reaction to the filtrate.

BIOCHEMICAL STUDIES

Chemical studies upon tumor tissue.—These experiments have been continued and extended. The second report of these studies, entitled "The Effect of Protein on the Swelling of Normal and of Tumor Cells of Mice *in Vitro*" appeared in the American Journal of Cancer for April 1935.

With the collaboration of Dr. M. Belkin it was shown that tumor cells which stain after the manner of living cells with vital dyes exhibit this swelling behavior, and, hence, the phenomenon is not attributable to post-mortem changes. In the course of the vital staining of *in vitro* preparations of cells, certain staining anomalies were observed which led to extended observations of the vital staining reaction of neutral red. Extensive data in regard to tumor cells have been secured as to type of staining, time of survival, effects of temperature, and the like. Reports on these experiments are being prepared for publication.

Among the interesting observations was the difference in staining reaction to neutral red shown by the spindle cells of mouse sarcomas, as compared with the round cells from the same tumors. This difference in behavior is being further studied. By the use of micromanipulative technique, single tumor cells have been isolated from preparations of tumor cells in balanced salt solutions and have been inoculated into mice. Thus far, attempts to initiate tumor growth by the inoculation of single cells have been negative.

These experiments form a part of a study in which attempts are being made to distinguish malignant from nonmalignant cells by means of physical and chemical criteria. Although pathologists are generally of the opinion that this is not practicable as yet, both MacCarty, of the Mayo clinic, and W. H. Lewis, of the Carnegie Foundation, have recently described criteria which are useful in this endeavor. The findings of both these investigators are based upon the study of living cells. In this laboratory, too, the work is being done with fresh living cells, and the observations are being correlated with those made upon fixed and stained preparations of the same material.

Studies on the chemical treatment of tumors.—The second report on these studies entitled "The Effect of Disturbances in Fluid Exchange on Transplanted Mouse Tumors" has been accepted for publication by the American Journal of Cancer. In this report experiments upon some 2,000 tumor-bearing mice are summarized. In most of the attempts the results were negative.

Action of bacterial products.—Some progress has been made in an attempt to isolate the active principle in *B. coli* filtrates which affects certain types of transplantable tumors. By means of inorganic precipitants and adjustment of pH, much of the accompanying inactive material has been removed.

Dosimetry of tumor emulsions.—A technique has been developed in aid of certain types of experiment. It consists essentially in preparing suspensions of tumor cells in gelatin-containing solutions and determining the dilution at which, with constant dose, 50-percent takes are obtained. The gelatin acts in two ways—it counteracts the excessive water intake of tumor cells when they are suspended in salt solutions and it prevents the rapid sedimentation of cells. By using homogeneous-tumor suspensions, and injecting equal volumes into pure strain mice, the comparative virulence of different tumors may be determined.

In addition, when dilute suspensions are used, the time required for tumor development is materially lengthened, thus increasing the time available for the trial of preventive or curative treatments.

Studies of carcinogenesis.—These studies have been pursued for the past 3 years, commencing with the carcinogenic action of 1:2:5:6-dibenzanthracene in rats. The development of sarcomas in a high proportion of the treated animals confirmed the findings of the English investigators who, by the discovery and synthesis of carcinogenic substances of specific chemical structure, have widely developed this particular field.

Collaboration with the department of organic chemistry of Harvard University.—The work of the British investigators has shown that further progress in this field requires the collaboration of organic chemists expert in the synthesis of complex polycyclic hydro-

carbons. Consequently, the collaboration of Prof. L. Fieser of the department of organic chemistry, Harvard University, was sought. During the past fiscal year he and his colleagues have synthesized a number of interesting compounds which are being subjected to spectroscopic study and tests for carcinogenic action in this laboratory.

Current studies of carcinogenic substances.—The various compounds furnished this laboratory by the Cambridge collaborators are being studied in various ways. They are first subjected to qualitative test for carcinogenic action by subcutaneous implantation in pure strain mice. The substances are introduced parenterally either in lard solutions, or, more simply, by implantation of the crystalline substance. In the case of carcinogenic substances, this latter technique has been found to produce tumors rapidly.

When neoplastic tissue is produced by a compound, it is studied in two ways—fresh, living tissue is examined in the presence of vital stains; fixed and stained preparations are studied with the collaboration of the pathological department of Harvard Medical School.

When a compound is found to be carcinogenic, quantitative experiments are made to determine the minimum amount required for tumor production.

The active compound is dissolved in varying percentages in melted cholesterol, which is then cast into pellets of different lengths and diameters. After tumors are produced, the pellets are removed and the amount of active compound remaining is determined by spectroscopic analysis.

CYTOLOGICAL STUDIES

Tissue culture.—The study of the effects of bacterial products upon normal and malignant cells *in vitro* was carried on during the first part of the fiscal year in conjunction with *in vivo* experiments upon mice with the same products. It was shown that these products had a far greater toxic effect upon tumor cells *in vitro* than upon normal cells. They also caused regression of mouse sarcoma 180 in about 60 percent of the mice treated. The effect upon tumors was analogous to the effects reported by Gratia and Linz, Shwartzman and Michailovsky and Duran-Reynals. A report on these experiments is being prepared for publication.

Effects of dibenzanthracene on cells in vitro.—Normal mouse fibroblasts are being grown in tissue cultures in contact with dibenzanthracene. This substance does not appear to have an inhibiting effect upon the growth of the cells, which proliferate in contact with this substance like the controls. As yet no change in cell characteristics has been observed from the action of the dibenzanthracene. The experiments will be continued.

Heart Disease

Studies of heart disease have continued under the direction of Medical Director A. M. Stimson.

Studies of the geographical distribution of the etiological types of heart disease have been carried on through questionnaires ad-

dressed to several hundred hospitals throughout the country. A large bulk of valuable material has been secured, which after analysis it is hoped will form the most extensive contribution to this subject up to date.

Studies of heart-disease mortality statistics were suggested by the grave discrepancies which had been encountered in previous work between the true facts as revealed by clinical and post-mortem studies and the apparent facts as presented in vital statistics. These studies have shown that, owing to various imperfections in the existing system, the true situation is not revealed by official statistics. Misleading conclusions are therefore current among the profession and laity, and the health officials are not accurately informed as to the direction which their studies and efforts should take.

Studies of the epidemiology of heart disease have been made chiefly in the suboffice established in Philadelphia during this fiscal year, where there is a rich and accessible mass of material. These studies are still in progress and no report can be made on their results as yet.

The etiology of rheumatic heart disease has been studied at the office situated at the National Institute of Health in Washington. The streptococcal, allergic, and dietetic theories have been reviewed chiefly by means of animal experimentation. It has been found impossible to elicit convincing support to these, either alone or in combination, by the means employed. The chief difficulty appears to be the impossibility up to the present time of producing a disease or pathological lesions in experimental animals which are the recognizable counterparts of the human disease. While there is much in the known or assumed epidemiology regarding rheumatic heart disease and rheumatic fever which lends plausibility to one or another of these theories, and while some of the experimental work is more or less suggestive, no one has yet adduced direct and acceptable proof in favor of them.

Leprosy

Studies of leprosy at the Leprosy Investigation Station, Honolulu, and the care and treatment of patients in the adjoining Territorial receiving station have been continued under the direction of Senior Surg. N. E. Wayson.

The experience at the station suggests that the control of leprosy may be advanced by the development of better criteria for the diagnosis of early stages of the disease. The observations of the clinical development of leprosy in children born of leprous parents have been continued throughout the year. Though these children have been exposed only to a relatively casual contact with infected persons during their lives, several have become leprous. In some of them it has been determined that minor neurological findings were the earliest detectable signs, and these have been followed through the development of the typical syndrome. Investigations were made of the reactions of patients to a formalinized sterile vaccine prepared from the inoculum of rat leprosy, and evidence was obtained to suggest that there is a reaction of sensitivity of leprous patients to such antigens. The total number of patients in residence (106) was tested by intracutaneous inoculation, and it was found

that, among a group of 24 who were classified as clinically quiescent, or in whom the involvement was clinically mild and the progress indeterminate, 79.1 percent gave positive tests, while among 62 who were regarded as active cases 77.4 percent gave negative tests. Other evidence suggestive of sensitivity was noted in the responses or reactions at the site of inoculation several weeks later when the patient developed an acute leprous reaction.

The significance of the Wassermann test in leprous patients has been a subject of dissenting opinions. Supplementing the studies made at the station several years ago, additional investigations were made this year on the findings in 481 patients in whom syphilis was not detected after many repeated clinical examinations. Of these, 29.6 percent were found positive to the Wassermann and/or Kahn tests. A greater percentage was positive to the Kahn test than to the Wassermann, and the Kahn unit estimates ran into the thousands rather than hundreds in many cases. In comparison with this frequency among the leprous patients, the findings among individuals of the same racial group of comparable ages and economic status were made. Thus, among 834 patients attending the venereal clinic of a local public general dispensary there were 32.6 percent with positives; among 1,007 selected cases from the general dispensary (including many individuals between 5 and 24 years of age) there were 10.8 percent positive; among 526 attending the prenatal clinic of the dispensary there were 4.2 percent positive; among 526 individuals whose ages were between 5 and 24 years who were brought before the juvenile court there were 5.4 percent positive; while among 221 of the leprous patients within this latter age group there were 32.1 percent positive. These findings and the correlation observed between the variations in the test and the variation in the progress of the leprous process seem confirmatory of the conclusion that the presence of a positive Wassermann or Kahn test in a patient is of little value in differentiating leprosy from syphilis.

Since the acute reactions of leprosy are commonly accompanied by a neutrophilic leukocytosis, and are many times followed with apparent recession of the leprous process, 14 patients were treated by the administration of an heterologous antigen to produce a mild fever and leukocytosis. Freshly isolated streptococci were suspended, killed, and injected subcutaneously or intracutaneously. The injections were made once or twice a week during periods of from 2 to 5 months. A slight rise in temperature occurred with each injection of some patients, and a low-grade leukocytosis of 24 to 48 hours' duration was obtained in several. It was found that intracutaneous injections produced these results in better degree and with more constancy than those given subcutaneously. Improvements in the leprous condition were noted in some patients. The method seemed to be of value in the destruction of local lesions, but its general systemic effects were indefinite.

Colloidal and soluble bismuth preparations and sodium iodide in small doses have been found to be stimulative to acute or subacute progressions of the disease with succeeding regressions in some cases. The results of treatments which have been carried on during this and previous years with these drugs seem to warrant definitely further study of their therapeutic usage and ultimate value.

Some types of acute reactions are succeeded by progressive phases of the disease; and since it was found that many patients showed some sensitivity to antigens made from the inoculum of rat leprosy, attempts were made to desensitize a group of 12 patients. These were given subcutaneous injections of a vaccine made of sterile formalinized suspensions of the inoculum of rat leprosy in increasing doses over a period of 3 months. However, acute reactions occurred in some of the 12 after what seemed a significant period of time, and the results are not regarded as conclusive. A complication to the injections in most of the group was the subsequent development of a necrosis and indolent ulcer at the site of injections, which, though of minor significance, was slow to heal.

Studies of the pathogenesis of leprosy have included experiments in the transmission of rat leprosy and tests of the vasomotor mechanism in patients. The experiments this year have contributed additional evidence that rat leprosy may be transmitted among white rats through the nose without direct contact with leprous rats. These findings may be important in considering the transmission of human leprosy.

Several clinical findings in leprosy suggest an early involvement of the autonomic nervous system, and preliminary tests made by alternately exposing an extremity to baths of 5° to 10° C. and 40° to 50° C. may offer some corroboration of this hypothesis.

Renewed efforts have been carried on during the year to grow the bacterium of rat leprosy and human leprosy, respectively. The newly published methods, including the modification of media, for growing acid-fast bacteria have been used, but without success.

Malaria

Malaria investigations were continued under the direction of Senior Surg. L. L. Williams, Jr.

Studies of malaria control by means of drugs.—These studies were continued in cooperation with the Gorgas Memorial Laboratory and the Health Department of Panama.

For many years it has been the hope of sanitarians in the Tropics that a method might be devised for control of the malaria-infection rate by means of drugs, thus avoiding expensive mosquito-control procedure. Many students have reported success and an equal number have reported failure. The recent introduction of two new synthetic antimalaria drugs, namely, plasmochin and atabrine, have greatly stimulated the study. Studies with these drugs have again resulted in conflicting reports.

Four years ago a careful plan of research on this question was commenced. A monthly blood index of six Chagres River Valley villages was made. The inhabitants of five of these villages have been given various combinations of drugs, but the sixth village has been left untreated in order to measure the natural ebb and flow of malaria for the region. In each case the study has been continued through a natural fall in the rate and into the subsequent rise in order to determine whether any of the falling malaria rates seen under drug administration would remain low during a rising rate and thus make the experiment conclusive.

20980—35——3

Failure to control the malaria-infection rate with quinine alone, or with quinine and plasmochin, or with plasmochin alone has previously been reported. In 1934, after failure to control the rate with atabrine alone, a study was begun to determine the effect of atabrine followed by plasmochin. Studies were started on what proved to be a naturally falling malaria rate. The atabrine plus the plasmochin villages showed a rate falling so much more rapidly than the untreated village as to induce the belief that perhaps this combination was going to prove effective. However, during the latter half of the year there was an exacerbation of malaria with a sharply rising rate, and within a 3-month period the rate in the drug-treated villages had risen as high as the rate in the untreated village. The rate in all villages became as high as it had ever been in any of the villages.

As a result of the studies, it is concluded that, although drug treatment in the Tropics does improve the general health of the population and increases its capacity to work, it does not control the infection rate of malaria.

Data have been collected during the course of these studies on drug control which indicate a decided familial immunity and susceptibility to malaria. It is planned to pursue these observations at greater length.

In the 1934 report it was stated that an effort would be made to study the flight of *A. albimanus* into the sanitated area, which was suspected of having originated in *Chara* growth of Gatun Lake 12 to 15 miles distant. Lack of funds prohibited any intensive studies, but it was determined that the profuse plant growth in the lake was not *Chara* but a flowering plant, *Naras*. This fact will lend to the complexity of control measures, should it be determined that the flights originated in Gatun Lake.

An important contribution was made to the validity of the types of certain species of North American mosquitoes and a paper was published on the subject, namely, Notes on the Validity of the Types of the Species in the Subgenera Mochlostyrax and Melanoconion in the United States National Museum (*Diptera, Culicidae*).

Researches in malaria therapy of paresis.—These studies were continued in cooperation with the South Carolina State Hospital. Improvements in the technique of the preparation and shipment of malaria sporozoites and other material used in the therapy of paresis were effected. Much time was given to the determination of methods for preparation of sporozoite cultures by first treating the malarial infected *Anopheles* externally with bactericides. These preparations were then tested for pathogenic bacteria. The results obtained were favorable toward pathogen-free cultures but were not so conclusive as to warrant discontinuance of the researches on this point.

Memphis station.—Activities of this station were varied and were concerned for the most part in cooperating with State health departments in connection with the supervision of malaria-control projects of the Federal Emergency Relief. Observations were made on the life habits of *Anopheles* and *Aëdes* mosquitoes at the Reelfoot Lake experimental station and in the laboratory, the latter with special reference to the viability of eggs under various laboratory conditions. Some experimentation was possible on certain types of larvicides, chiefly the finely ground leaves of indigenous plants. Observations

were made on the preseason broods of *Anopheles* hatching in high-water river floatage and seasonal broods from the rolling country both in relation to the prevalence of *Anopheles* and malaria. Traps utilizing principles of light attractivity were designed to measure and sample mosquito fauna. These researches are preliminary to a more extensive inquiry into the development of an easy method for measuring the effectiveness of any mosquito-control project.

Florida station.—Studies were initiated in 1933 designed to determine the feasibility of controlling county-wide malaria by the elimination of only the heaviest foci of infection within the county. Because of lack of funds and the advent of the Relief Administration malaria-control projects, these studies were canceled.

Norfolk station.—Studies of the prevalence of mosquitoes in southeastern Virginia have been conducted. The findings have been correlated with the adequacy, efficacy, or lack of control measures in sections of this area.

Thick-film laboratory.—Seven thousand blood specimens have been examined from Georgia, Alabama, North Carolina, and Virginia in cooperation with the State health departments. These gave an average of 9.1 percent positive.

Commencing in March 1934, a blood index was taken over a large part of the malarious section of the country as a Civilian Works Administration project. This index included approximately 158,000 blood specimens, of which 116,000 were sent to our laboratory for examination. The present laboratory staff was augmented by two microscopists for the period February 1934 to February 1935. The results of the examination of 158,313 blood specimens showed a general infection rate of 5 percent.

Indexes of local areas from many States and reports from State health officers taken in conjunction with this index indicate that in the fall of 1934 there was a higher malaria rate than has been seen for over 15 years. It is estimated that during the malaria season there were approximately 5,000,000 cases.

Nutrition

Nutrition studies were continued under the direction of Passed Asst. Surg. W. H. Sebrell.

Studies on the effect of sodium fluoride in the drinking water on the teeth of experimental animals were continued, and a report of the effect of varying amounts of sodium fluoride on the teeth of white rats was published in Public Health Reports for September 14, 1934.

In collaboration with Dr. S. P. Kramer, experiments were started in order to determine whether the fluorine can be removed from water by special filters. The results indicate that with certain filters the amount of fluorine can be considerably reduced. Further experiments were in progress at the close of the fiscal year.

Experiments were started to determine the effect of various deficient diets on the incubation period of rat leprosy. These experiments were reported in the Public Health Reports for June 29, 1935.

During the year numerous fractions were prepared from yeast in an effort to secure fractions of high vitamin G potency and, if possible, to isolate the pellagra-preventive vitamin. The vitamin G

value of these fractions was tested in rats. Several fractions of considerable activity were obtained, and the work was being pursued intensively at the close of the fiscal year.

Experiments on the effect of ultraviolet irradiation and of ethyl alcohol on rats on vitamin G deficient diets were completed during the fiscal year. There was no demonstrable effect on the onset, severity, or appearance of the lesions in either experiment.

A test on rats indicated that the liver of dogs dying of black-tongue contained vitamin G.

Observations on cataracts in rats produced by vitamin G deficient diets were continued during the year. After it was shown that cataracts were not affected by tryptophane, cystine, or several dessicated glandular products, the experiments were temporarily discontinued.

In collaboration with Dr. E. F. Kohman of the National Canners' Association Research Laboratories, experiments were conducted with rats which essentially confirmed his findings on the decalcifying effect of oxalic acid in certain foods.

There is in course of publication a report on the value of seven different foodstuffs, namely, chicken, rabbit, pork shoulder, evaporated peaches, cottonseed meal, beets, and prunes. Rabbit meat, lean pork shoulder, and chicken were found to be good sources of the pellagra-preventive vitamin. Cottonseed meal and evaporated peaches were found to be relatively poor sources of the pellagra-preventive vitamin. Prunes and canned beets were found to contain little or none of the pellagra-preventive vitamin. Tests on canned mackerel, lima beans, and liver extracts were in progress at the close of the fiscal year.

The black tongue preventive value of several different liver preparations has been determined, and a comparison is being made between their efficacy by mouth and parenterally in order to make a more complete study. The results to date yield data which seem to indicate that the extrinsic pernicious anemia factors and the pellagra-preventive vitamin may not be identical.

Psittacosis

Investigations of psittacosis at the field laboratory in Pasadena, Calif., were brought to a close during October 1934, and the laboratory was turned over to the State department of health for testing purposes.

Rocky Mountain Spotted Fever

The study of Rocky Mountain spotted fever and other tick-transmitted and tick-caused diseases of man and animals and the manufacture of the public health service vaccine for the prevention of Rocky Mountain spotted fever have been carried on at the Rocky Mountain Laboratory at Hamilton, Mont., under the administration of Director R. R. Parker.

Vaccine.—The manufacture of spotted fever vaccine for the season of 1935 was severely handicapped, owing to unavoidable delays which arose in connection with the construction of a new refrigeration plant. As a result, the total gross production for 1935 use was only 315.6 liters (789 lots of 400 cc each), as compared with 335 liters for 1934.

In spite of this fact, the net usable 1935 production of 248.4 liters exceeded the 1934 net by 36.6 liters. This was due to the fact that 78.7 percent of the 1935 vaccine was of sufficient potency for administration, as opposed to only 63.22 percent for the preceding year.

Emergency Conservation Corps funds were again available for the production of vaccine for the immunization of Civilian Conservation Corps enrollees. For this purpose 53.7 liters were supplied. It was impossible to supply vaccine for all the camps located in endemic areas, but it was feasible to provide for the immunization of the personnel in camps in areas where the danger was greatest.

The data for the first 10 years' use of the vaccine (1925–34) have been summarized. The figures concerning the administration in the area of highly fatal infection in western Montana are of especial significance, since this is the only locality in which it is possible to keep full and accurate records of vaccinations and cases over a considerable period. During the 10 years concerned, there was, in this area, a total of 83 cases—52 in nonvaccinated individuals, 31 in vaccinated. Excluding the records of children under 13 years of age because of their questionable significance, there were 39 cases in nonvaccinated adults and 32 deaths; that is, a case fatality rate of 82.5 percent. In the vaccinated group there were 24 recoveries and 3 deaths, a case fatality rate of only 11.11 percent. In vaccinated persons, therefore, the case fatality rate has been reduced by 70.94 percent. Fifteen of the vaccinated group were employees of the Rocky Mountain Laboratory. Only one death occurred in this group, the case fatality rate being 6.66 percent, as compared with 100 percent in laboratory workers who became infected while working with highly fatal strains prior to the use of the vaccine.

The complete data covering the general use of the vaccine in all parts of the country and against types of the disease of all degrees of severity have justified the broadening of the scope of the conclusions which were published after the first 4 years' use. The new conclusions are as follows: (1) The degree and duration of protection vary with the individual and with the degree of virulence of the infecting strain of spotted fever virus. (2) The average person vaccinated in the spring retains a considerable degree of immunity during at least the remainder of the calendar year. This degree of immunity is usually sufficient to afford full protection against the relatively very mild strains of spotted fever, but is apparently progressively less effective as the virus virulence is increased. The degree of protection against the highly fatal type is sufficient to ameliorate markedly the usually very severe course of infection and to insure the recovery of most persons; the complete protection of occasional persons is not unlikely. (3) Children are perhaps better protected than adults, and among them full protection against virus strains of high virulence may be more frequent. (4) If a person is infected during the vaccination period, there is a strong probability that the subsequent clinical course of the disease will be affected favorably, even in areas of high case fatality rates. (5) In areas where relatively mild infections prevail and the incubation period is prolonged, the administration of vaccine as soon as possible after tick bite may ameliorate an impending infection. This appears particularly probable in persons who have been vaccinated in previous years. This procedure is not recommended in areas of highly fatal

infections where the incubation period is short. (6) It is probable that a considerable percentage of vaccinated persons carry some degree of immunity over into the second year, even against highly virulent virus. The degree of this residual immunity appears to be greater in persons who have been vaccinated 2 or more successive years. The evidence as to whether or not any degree of immunity is carried beyond the second year is less suggestive. Until further and more definite data are available, however, it is necessary to recommend that the vaccination of exposed persons be repeated each year and that three 2-cc injections, instead of the usual two, be used in areas of high virulence, especially the first year that vaccine is given. (7) Of persons vaccinated and infected the same year, those who have received vaccine 2 or more successive years appear to have greater resistance than those who have received vaccine only 1 year.

Epidemiology.—Cases of Rocky Mountain spotted fever were reported for the first time from the States of Illinois and Oklahoma. Also, new endemic areas have been reported in Montana, California, and Idaho. These reports bring to 34 the total number of States in which spotted fever is now known to be endemic, 21 having been added during the past 4 years. The occurrence of a highly fatal type of spotted fever in northern Idaho and eastern Washington during the past few years is of particular interest, owing to its seeming restriction to the vicinity of lakes, a condition not met with elsewhere.

Experimental studies.—Considerable research work on spotted fever, other tick-borne diseases, and their vectors, has been done in spite of the limited funds available for such studies. Spotted fever and Sao Paulo typhus-infected rabbits have been shown to produce *Proteus* OX2 agglutinins in sufficient titer to be of diagnostic value, this fact providing a useful differentiation between these diseases and endemic typhus. Convalescent sera of cases of spotted fever-like infection in India have been shown to be without spotted fever virus-neutralizing properties, thus indicating the nonidentity of Indian tick typhus and Rocky Mountain spotted fever.

Tularemia

Tick-caused diseases of domestic animals, especially tularemia in sheep, have again been prevalent in eastern Montana, where epizootic outbreaks were more wide-spread and the losses greater than in 1934. *Bacterium tularense* was recovered in pure culture from a sick, heavily tick-infested calf. Tularemia infection in man has also been more than usually frequent in both eastern Montana and Wyoming. Tick transmission has been the most important source.

Relapsing Fever

Species of *Ornithodorus* occurring in the Northwestern States are being studied to determine whether or not they are present or potential carriers of relapsing fever. It has been found that ticks of this genus are more wide-spread in the part of the country concerned than had been supposed.

Tick-Host Anemia

Experimental studies have shown that a condition known as "tick-host anemia" is produced in experimental animals by the rapid withdrawal of blood which results from the feeding of large numbers of female ticks. This is an exsanguination anemia that is frequently fatal. This condition may be at least a contributing cause to the considerable losses reported each year among heavily tick-infested game animals, such as elk or deer.

Child Hygiene Investigations

The activities of the Office of Child Hygiene Investigations continued under the direction of Surgeon Estella Ford Warner during the fiscal year.

Studies and Investigations

Study of the hearing of school children.—This study was begun in 1931 in the schools of the District of Columbia for the purpose of determining the incidence and degree of hearing defects, the causative factors, and the degree of progression. At that time approximately 14,000 4–A audiometer tests were made in duplicate (by simply repeating the test) and 2–A audiometer tests were given to some 1,500 children who had a loss of nine or more sensation units. This year about 500 of the children who previously received the 2–A audiometer test were retested, a careful oto-laryngeal examination was made, and pertinent history recorded. There have been some preliminary analyses made of the materials obtained from the 4–A audiometer and the original 2–A audiometer tests. An analysis of the second 2–A audiometer tests in relation to the first test is now in process. It is hoped to continue this study for at least a third test on these same children and then to report the total findings.

Studies of physical status, growth, and development.—During the year the following reports have been published: (1) Further Studies on Growth and the Economic Depression (Public Health Reports, Dec. 7, 1934); (2) Age Changes in Physical Resemblance of Siblings (Child Development, December 1934); (3) Selective Mortality in Childhood (American Journal of Hygiene, March 1935); (4) Sectional Variations in Physique and Growth of Children (Public Health Reports, Mar. 8, 1935).

Measurements were taken on approximately 4,000 school children in Hagerstown, Md., during the year. The data on height and weight have been added to the records of growth of these children. However, in addition to the usual observations made, additional measurements were taken to satisfy the requirements for computing the "A C H Index of Nutrition and Growth" for these same children.

Study of midwife practice.—Midwifery, as practiced by the colored midwife, constitutes one of the problems in maternal and child hygiene throughout the Southern States. Therefore, an area was selected in southern Virginia (Brunswick County) where approximately 75 percent of the deliveries of both colored and white mothers were attended by midwives, and a study of midwifery practice undertaken. Observations were obtained by personal interview with the

midwife, and by accompanying her as she made prenatal, natal, and postnatal visits. A preliminary report has been prepared which concerns (1) the social and economic status of the midwife, (2) her preparation and education, (3) observations on 46 prenatal visits made with 14 different midwives, (4) observation of three deliveries, (5) 50 postnatal visits with 20 different midwives, (6) conclusions and recommendations.

Dental Studies

DENTAL HEALTH SURVEY

The dental health survey, consisting of a survey of existing facilities and a survey of the dental needs of children of school age, was continued under the supervision of Senior Dental Surgeon C. T. Messner.

Facilities.—The survey of dental facilities of State departments and institutions of the United States was completed and is ready for publication as a public health bulletin.

Survey of dental needs of children of school age.—Over a million and a half dental examinations of children in 26 States were edited, coded, the data transferred to punch cards, assistance in tabulation being received from the division of machine tabulation of the Bureau of the Census. Data on 1,438,318 children 6 to 14 years of age, from 1,007 areas in 648 counties of 26 States will form the basis of a public-health bulletin. These data include, for each child examined, items relating to present dental needs and to past dental treatment. The children are classified according to color, sex, age, and size of area in which they lived.

Data have also been tabulated and represented graphically for a study of the relation of retardation in school to dental needs.

A sufficient number of examinations of preschool children was included by the examining dentists to permit a study of dental conditions as observed in this group of children. Tabulations similar to those dealing with the children of school age have been made.

A questionnaire which had for its object the determination of the methods of examination that were actually used was mailed to the various dentists to whom examination blanks had been sent. Thus far 72 percent of the questionnaires have been returned with the information requested.

CHRONIC ENDEMIC DENTAL FLUOROSIS (MOTTLED ENAMEL)

These studies were limited to two fundamental phases—first, the development of a quantitative methodology for use in epidemiological surveys of endemic areas to replace qualitative methods heretofore in use, and, second, basic studies leading to the determination of the minimal threshold of toxicity. In connection with the former, a classification of severity based on degree of affection was developed. The application of this classification permitted the development of a mottled enamel index, either actual or approximate, of a community. During the year 53 communities in 37 counties of west Texas and 13 communities in 7 counties of east central Texas were surveyed for mottled enamel. An analogous pathology in cattle apparently developed under natural conditions was again observed.

In connection with obtaining information on the minimal threshold, monthly water samples from the 11 cities selected for study during the preceding fiscal year were analyzed. The chemical phase of this study, as in the past, was carried on by the Division of Chemistry, National Institute of Health. Four of these cities (Monmouth and Galesburg, Ill., and Colorado Springs and Pueblo, Colo.) were surveyed in detail and their actual mottled enamel index was determined and correlated with the mean annual fluoride content. In four other cities the approximate mottled enamel index has been ascertained. While the minimal threshold is as yet undetermined, it is definitely less than two parts per million of fluoride.

There are at present more than 300 endemic areas of mottled enamel in the United States distributed among 23 different States.

Dermatoses Investigations

During the year the Office of Dermatoses Investigations has continued under the direction of Senior Surg. Louis Schwartz.

Studies were made of manufacturing processes and their relations to skin hazards in 22 plants employing 8,770 employees. About 5,000 employees of these plants were actually examined for the occurrence of industrial skin diseases. The sickness records of these plants, as kept by the plant physicians, were also examined in order to determine the frequency of occurrence of skin diseases and their causes.

SPECIAL STUDIES

This office cooperated in a study to discover the cause of dermatitis which had been occurring among cable splicers of telephone companies. The study proved that the two dyes, malachite green and crystal violet, used to cover the paper insulation of the wires, decomposed under the 400° F. heat of the boiling-out process and that the decomposition products which were carried to the skin of the cable splicers by the hot fumes of a mineral oil used in the boiling-out compound caused the dermatitis. The substitution of another group of dyes, the decomposition products of which were different, was recommended and adopted.

In the course of the work of this Office, it is necessary to perform patch tests. It was noted that many of those patch tested developed dermatitis from the adhesive plaster used in making the tests. A study was made to determine the irritating materials in the various adhesive plasters, so that nonirritating materials may be substituted.

At the request of a safety glass manufacturing company, an outbreak of dermatitis among a certain group of their workers was investigated and found to be due to mineral oil used in one of their manufacturing processes. Recommendations, which included the furnishing of protective clothing, frequent cleaning of work clothes, and compulsory shower baths after work, stopped the occurrence of new cases.

At the request of a watch-manufacturing company an outbreak of dermatitis among the wearers of their wrist watches and caused by the wrist-watch straps was investigated. It was proved that the chief irritant in the straps was a dye—amido azo toluene hydro-

chloride. The chrome-tanned leather used in the straps was also responsible for a small percentage of the cases. It was recommended that amido azo toluene hydrochloride and chrome-tanned leather not be used in articles to be worn next to the skin.

Epidemiology

The Office of Epidemiological Studies established during the fiscal year is under the direction of Medical Director J. P. Leake.

The major epidemic of the year on which work was done by this Office was the California outbreak of poliomyelitis during the summer of 1934. This outbreak presented problems new in the history of poliomyelitis which have not yet been settled. These concerned particularly cases diagnosed as poliomyelitis among the medical and nursing personnel of the hospital in which the greatest number of poliomyelitis patients were cared for. The outbreak itself was mild as to severity and showed a tendency to attack older children and young adults to a greater extent than epidemics of former years. This tendency has been increasingly apparent during the last decade. Evidence was obtained, through the study by the Public Health Service, that the disease is particularly likely to attack persons who undergo unusual physical exertion during the epidemic period. Swimming pools and beaches were exonerated as being of any special importance in the dissemination of the infection.

During the latter part of the fiscal year a study was begun of the possible value of the Park-Brodie vaccine against poliomyelitis in the 1935 epidemic in parts of North Carolina and Virginia. It is unlikely that any positive decision can be made from this study as to the value of the vaccine, but it is nevertheless believed that the use of such a product is justifiable only under conditions which give some hope of yielding trustworthy conclusions as to its efficacy.

All the recent studies on poliomyelitis justify the opinion which has been expressed by the Public Health Service that the spread is chiefly by means of human carriers rather than by declared cases of the disease and that there is no good evidence that nonhuman sources are of any importance in the dissemination of the infection. As a result of its studies, the Public Health Service has also been able to state that the affected carriers are most frequently found among the portion of the population previously not immunized to the disease, that is, among the more juvenile and the more rural groups of the population.

Industrial Hygiene and Sanitation

Dust studies

Health of anthracite-coal miners.—A study of the effect of dust exposure on the health of miners in the anthracite coal field of Pennsylvania was conducted on request of the Governor of the State, with the cooperation of operators and workers. It involved (*a*) dust determinations and occupational analyses in three representative mines; (*b*) individual occupational histories, physical examinations, and X-rays of the chest on all workers (underground and surface) in these three mines; and (*c*) supplementary information on disabled miners, mortality, silica content in urine, and pathology.

The preliminary report of the study was published by the Pennsylvania Department of Labor and Industry (Special Bulletin No. 41); the complete report is being published as Public Health Bulletin No. 221; a paper on the findings as to urinary excretion of silica was published in the Public Health Reports (Mar. 29, 1935).

Determination and control of industrial dust.—The methods and instruments used in conducting dust studies in industry, the manner of interpreting the results of such studies, and their practical application to industrial problems, especially those phases dealing with the control of the dust hazard, are discussed in Public Health Bulletin No. 217.

The physiological response of the peritoneal tissue to dusts introduced as foreign bodies.—A series of injections of dusts of known chemical and petrographic composition was made intraperitoneally into guinea pigs to determine the nature of the response, and the results were reported in the Journal of the American Medical Association (Sept. 22, 1934), and the American Journal of Public Health (April 1935).

Pulmonary infection in pneumoconioses (other than tuberculosis).—An investigation was made of the relation of pulmonary infection (other than tuberculosis) to pneumoconiosis, both bacteriologically and experimentally, with the view of obtaining a better understanding of the predisposition to, and the mechanism of, infection of the lung in certain dusty trades. (Public Health Reports, July 20, 1934, and Oct. 12, 1934.)

Study of silicosis and tuberculosis in certain mines.—In connection with a clinic cooperatively maintained by the Public Health Service, Bureau of Mines, mine operators, and the Metropolitan Life Insurance Co., physical examinations and X-rays were made, for a period of 5 years, on a group of lead and zinc miners in the Tri-State (Oklahoma, Kansas, Missouri) District. These data have been under further analysis, with a view to the preparation of a brief, final summary of the results.

POLLUTION OF AIR AND ILLUMINATION STUDIES

Air pollution in American cities.—The study of atmospheric pollution in 14 cities was made to determine the average conditions and various fundamental relations which might prove of importance in programs for smoke abatement. Over a period of 2 years, four trips (of about 5 days each) were made to each city, records being obtained as to the number of particles in the air (Owens jet dust counter), the weight and composition of these particles (impinger), the number of hygroscopic nuclei, and certain other observations, including meteorological factors. In 10 of the cities Owens automatic air filters were set up to furnish a continuous record, day and night, over the whole period of the study.

The report of this study is being published as Public Health Bulletin No. 222.

Natural illumination of factories, schools, hospitals, etc.—The study of the distribution of daylight within an experimental building was published as Public Health Bulletin No. 218. While measurements of illumination were being made within the building

measurements of the brightness of the portion of the sky producing the illumination were made outside the building. The results are expressed as the illumination that would be produced by a sky having a brightness of 100 candles per square foot (338 millilamberts) and are therefore independent of variations in the brightness of the sky and depend only on the dimensions and location of the windows, the reflecting power of the walls and ceiling, and the physical properties of the glass used in the windows, its thickness, index of refraction, coefficient of absorption, and its degree of cleanliness.

STUDIES OF SICKNESS AMONG INDUSTRIAL WORKERS

Incidence of illness among industrial workers.—The frequency of sickness and nonindustrial accidents causing disability for more than 1 week among industrial employees, with cases classified according to nature of the illness, were presented quarterly in the Public Health Reports. This is the fourteenth consecutive year in which industrial morbidity rates have been published. In 1934 the frequency of cases in this sample of the industrial population was the lowest of any year of record, bettering by 3 percent the previous low record obtained in 1933.

SPECIFIC INDUSTRIAL POISONS

Mercury absorption and poisoning among fur cutters.—A study of mercury absorption and poisoning among hatters' fur cutters has been started. Surveys of the five plants selected for study have been made, and occupational histories and medical examinations of the workers were obtained.

Benzol poisoning.—In cooperation with the Bureau of Mines and the industry, experimental studies have been made on the toxicity resulting from inhalation of benzol vapors. The data are being analyzed.

Acute response of guinea pigs to vapors of new commercial organic compounds.—Reports in this series finished during the year relate to butanone, pentanone (methyl propyl ketone), and hexanone (methyl butyl ketone). This work has been conducted by the Bureau of Mines in cooperation with the Public Health Service.

Spectroscopic methods for the determination of inorganic substances in body tissues and fluids.—These studies were continued, special attention being given to the problem of quantitative analysis. The metals studied were silica, mercury, lead, and silver.

AGREEMENTS WITH CHEMICAL INDUSTRY

Agreements between the United States Public Health Service and manufacturers (chemical industry) at the present time cover tetraethyl lead gasoline, methanol (synthetic alcohol), carbon tetrachloride and similar volatile chlorinated liquid hydrocarbons, carbon tetrachloride fire-extinguishers, aniline oil, carbon bisulphide, and benzol. These agreements are similar in nature and aim to safeguard the health of users of the products. They provide for the use of warning labels on containers. The manufacturers agree to use these

labels and to advise repackers and dealers of the agreement. In some cases (as methanol) other terms are included, such as the use of coloring matter. It is felt that the control of the distribution of substances under these agreements has been satisfactory and has safeguarded the public health.

Milk Investigations

The activities of this Office were carried on under the direction of Sanitary Engineer Leslie C. Frank.

The testing of pasteurization machinery.—The laboratory studies on the thermal resistance of the *B. coli communior* test organism (strain 11–B) were continued during the year with the ultimate objective of developing a nonpathogenic criterion organism for use in testing the efficiency of milk pasteurization machinery and the testing of devices and processes for the germicidal treatment of dairy and milk plant containers and equipment.

Previous research work had shown that if the test organism is suspended in distilled water, buffered to pH 6.9, the time required at 145° for a 99.99 percent reduction of the test organism averaged about 18 minutes.

Effect of variations of pH.—It was considered important to determine the effect of varying the pH concentration and also to determine the pH range within which the resistance of the test organism is maximum. For practical purposes it is desirable to make equipment tests within the maximum resistance range, since there is reason to believe that for given variations in pH there will be less variation in resistance at this point than at any other.

During the year, therefore, studies were made to determine the effect of variations in pH upon the thermal resistance of the organism, both at 145° F. and at 160° F. These are the two temperatures most widely used in commercial pasteurization practice. A 50-gallon commercial pasteurizer was used in order to obviate any factors peculiar to small scale laboratory type equipment.

As a result of this experimental work it appears wise to concentrate future research work and the subsequent tests of pasteurization equipment at approximately the midpoint of the pH range 6.9 to 7.5, that is pH 7.2.

Effect of variations of buffer concentration.—It was considered possible that the buffer concentration used in adjusting the pH value to 7.2 might affect the thermal resistance of the test organism. Accordingly, tests were made to determine the effect of doubling and halving the buffer concentration above and below the concentration which had heretofore been used, from which it was concluded that future research work should be confined to a buffer concentration of m/675.

Importance of speed of mixing inoculum and of taking treated samples in the higher temperature range.—In the experimental work at 160° F., in which the reducing time was only about 29 seconds, it became evident that the interval required for obtaining a uniform mixture of the inoculum and the distilled water and the time required for taking the treated samples were extremely important factors. Hence methods were devised for introducing the inoculum and taking the treated samples at maximum speed.

Tests were conducted upon the effect of increasing the number of revolutions per minute of the agitator from 72 to 216 revolutions per minute. It was found that there was no material difference in the results with the two speeds and that from the standpoint of vibration the speed of 72 revolutions per minute was more practicable. The time required for approximately uniform mixing as determined by bacteriological testing at 1-second intervals from the moment of introduction of the inoculum was about 5 to 6 seconds.

In order to take the treated samples as quickly as possible and have them at the pasteurizing temperature until the moment they were introduced into the chilled sample tubes a siphon was introduced into the pasteurizer so as to lead over the side and down toward the floor. Flow was started through the siphon after the water had been brought to the pasteurizing temperature and immediately before the inoculum was introduced. The respective sample tubes were then passed through the siphon effluent at the designated sampling intervals. The sample tubes were immersed in ice water so as to chill the sample instantly as it flowed into the tube from the siphon. By this method it was found that the time interval for withdrawing a sample could be reduced to 1.3 seconds and that the temperature drop in passing from the tank proper to the sample tube was so small as to be hardly measurable.

It is believed, therefore, that the time of mixing the inoculum and the time of withdrawing the treated sample have been reduced to the minimum practicable.

Studies of the bactericidal treatment of milk cans by dry heat.—In view of the fact that dry-heat and moist-heat sterilizing cabinets are coming into wider and wider use in the dairy industry, and since past experience has shown that the lethal efficiency of dry heat is lower than the lethal efficiency of moist heat, it appeared desirable to conduct experiments to determine an effective and practicable temperature and holding time for use in operating dry-heat cabinets. Accordingly a 46 cubic-foot dry-heat cabinet equipped with two gasoline burners was installed in the experimental plant. Experiments were conducted to determine the temperature required for a holding period of 10 minutes to produce a 99.99 percent reduction in the previously mentioned criterion test organism which is being developed by this Office for use in determining the efficiency of pasteurization machinery. Four temperatures were studied, namely, 150° F., 160° F., 170° F., and 180° F.

In order to limit the lethal effect of the heat as nearly as possible to the holding period, the heating and cooling periods were reduced to the minimum practicable. The heating period was approximately 30 minutes, and the cans were cooled by removing them from the cabinet into the outer air immediately at the close of the holding period.

In order to reduce temperature variations within the cabinet to a minimum, a 16-inch fan was installed in the top of the cabinet and kept in operation throughout the heating and holding periods.

The initial inoculation of the cans varied from 42,000 to 51,000 per cubic centimeter of can content. The mean reduction in bacterial counts was 99.935 percent at 150° F., 99.989 percent at 160° F., 99.997 percent at 170° F., and 99.999 percent at 180° F. It was concluded,

therefore, that a dry heat cabinet operated so that the temperature in the coolest zone was not less than 160° F. for at least 10 minutes would produce adequate bactericidal treatment of milk cans. In order to provide an adequate factor of safety, it is recommended that the actual temperature and holding time be set at least 170° F. for at least 30 minutes, with the proviso that the thermometer must be located in the coolest zone of the cabinet. This must be determined for each model by actual tests with maximum registering thermometers.

Survey of milk-borne disease outbreaks for the year 1934.—The following outbreaks of milk-borne disease were reported to the Office of Milk Investigations by State and city health authorities for the year 1934: Typhoid fever, 28; paratyphoid fever, 1; scarlet fever, 3; septic sore throat, 5; diphtheria, 1; miscellaneous, 5.

Advisory assistance to State and local health departments.—During the fiscal year municipalities in the following States were visited at the request of the State health departments concerned and given advisory assistance with reference to milk-sanitation problems: Arizona, Arkansas, Florida, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Maryland, Minnesota, Missouri, North Carolina, Ohio, Oklahoma, Oregon, Rhode Island, Tennessee, Washington, Virginia, and West Virginia.

Studies of Public Health Methods

Studies of public health methods were continued under the direction of Surg. J. W. Mountin.

A special analysis is being made of the programs pursued by different types of county health departments. In one representative county health department with a small organization composed of a health officer, a nurse, a sanitation officer, and a clerk, serving approximately 30,000 people, it was found that contact was made with about 23 percent of the individuals and more than half the families during a period of 12 months. About 19 percent of the population was contacted by the nurse, 12 percent by the health officer, and 10 percent by the sanitation officer. The program distinctly favored communicable-disease control, general health supervision, and privy sanitation. Less than 1 percent of the contacts were for other purposes. The school child stands out as the central objective in the program, since 65 percent of the contacts were among children of school age. Practically all the service to this age group was in the interest of immunization and detection or correction of physical defects. Factors which seemed to influence the selection of homes for visitation by the nurses were as follows: Economic status; number of children, particularly babies; and location of home with reference to accessibility. Space available does not permit a summary of findings in other types of health departments.

At the request of the Commissioner of Indian Affairs a study was made of health problems among the Indians. In general it may be said the Indians have all the diseases and physical disabilities found among the general population. Moreover, the adverse economic position of the Indians forces them to live at a bare subsistence level amidst environmental conditions which bring about a low state of

health and a predisposition to particular diseases. The outstanding disease problems among the Indians are tuberculosis, trachoma, and intestinal disorders of infants. Venereal diseases are known to be extremely prevalent among certain groups, but the general incidence is probably much lower than is commonly supposed. The acute infectious diseases of childhood, notably measles and whooping cough, are attended by high mortality. The medical service now provided for the Indians, with few exceptions, is at least equal to, and perhaps exceeds, that available to the general population, yet the Indian does not enjoy the same level of health. While some progress is being made through preventive and curative measures now being applied, yet it is questionable whether the health problems can be solved until the economic position of the Indians has been improved and until they can be induced to take more active interest in personal health.

Cooperation involving extensive field service was extended to the following agencies: The government of Puerto Rico in studying the system of public medical care; a special commission in Ohio in determining the requirements for health which should be incorporated into different types of county charters; the Brookings Institute as part of its study of State government of Oklahoma; Montgomery County, Pa., St. Louis County, Mo., and Tulsa City and County, Okla., in an appraisal of facilities maintained for purposes of health protection and medical care.

Special mention might be made of the Puerto Rico study, since a similar situation is seldom encountered in the United States. Among a representative sample of families, the range in total family income was roughly as follows:

Income:	*Percent of families*
Under $100	50
$100 to $249	30
$250 to $499	10
$500 and over	10

Confronted with such low incomes and conditions favorable to malaria, hookworm disease, and tuberculosis, a high prevalence of illness might be expected. The system of municipal hospitals and municipal physicians which has been in operation for some time is proving inadequate to meet the increasing demands for more service of a higher type than is now available. While the economic rehabilitation of the island is of prime importance, it is believed that much of the present illness is preventable and that a higher degree of efficiency in the existing medical service is possible of attainment through reorganization.

The trend in appropriations by local governments for public-health purposes during this critical period of our economic history has been a subject for special consideration. Generally speaking, it was found that local governments tended to sustain this branch of public service very well through 1931, thus showing an appreciation of its importance. In 1932 and 1933 drastic reductions were made, but the figures for 1934 indicate that the service is being restored to its former level, even in advance of other public functions.

Statistical Investigations

The Office of Statistical Investigations continued under the direction of Senior Statistician Selwyn D. Collins.

SICKNESS AND THE DEPRESSION

Studies of various phases of the relation of sickness to the depression have been continued throughout the year. Three papers in a series which is to constitute a final report on the subject were submitted for publication in the Public Health Reports, and the first one appeared in the issue of May 3, 1935. The following table gives the sickness rates obtained in this study for families classified according to employment in 1932, the year immediately preceding the survey.

Incidence of disabling illness in the early spring of 1933 in 11,511 canvassed white wage-earning families classified according to employment status of the wage earners during 1932, in 10 localities

Employment status of the family's wage earners	Illnesses per 1,000 persons for 3-month period (adjusted for age)			Number of persons observed
	Total	Onset within survey period	Onset prior to but sick during survey period	
Full-time workers (with or without part-time workers)	123	91	32	21,022
Part-time workers (1 or more; no full-time)	160	112	48	21,224
No employed workers	182	121	61	4,935

Considering all illnesses, the rate for persons in families with no employed workers (182 per 1,000) was 48 percent above that in families with a full-time worker (123 per 1,000).

Persons of low income, and particularly those whose economic status changed from reasonable comfort to very poor during the depression, had high sickness rates. However, the greatest difference in sickness rates appears between persons on relief and those not on relief. The following table gives the rates:

Incidence of disabling illness in the early spring of 1933 in canvassed white wage-earning families classified according to change in family income between 1929 and 1932 and relief status in 1932, in 8 large cities

Economic and relief status [1]	Illnesses per 1,000 persons for 3-month period (adjusted for age)			Number of persons observed
	Total	Onset within survey period	Onset prior to but sick during survey period	
Comfortable throughout the period 1929–32	120	90	30	4,117
Comfortable in 1929 but poor in 1932	145	103	42	1,479
Comfortable in 1929 but on relief in 1932	208	142	66	1,328

[1] In all cities except New York "poor" means an income of less than $150 per capita, and "comfortable" an income of $425 or more per capita. In New York (including Brooklyn), the corresponding figures are under $250 and $500 and over.

Considering all illnesses, the rate for persons in families which fell from relative comfort in 1929 to poor in 1932 (145 per 1,000) is 21 percent above that for families who remained in the comfortable class; those who fell from relative comfort in 1929 to relief in 1932 had a still higher sickness rate, 208 per 1,000 persons, or 73 percent

above the rate in those families which remained comfortable throughout the period (120 per 1,000). (The word "comfortable" is here used in a relative sense only; the incomes of all of the surveyed families were very low.)

Since sickness of some member of the family, particularly of the chief wage earner, is frequently the reason for the family being on relief, the high rate in the relief group suggests that selection is an important factor; that is, the relief population contains a disproportionately large number of persons who have chronic diseases or physical defects or who are susceptible to frequent attacks of acute illness.

As a further study of the health of the population on relief, an analysis of data on physical impairments and chronic diseases among the relief and the nonrelief population of a large city was undertaken in cooperation with the Federal Emergency Relief Administration, under whose auspices the information was collected. These data indicated that (*a*) a much higher proportion of persons on relief had serious physical defects or chronic diseases than those of the same occupational class who were not on relief; (*b*) in both the relief and nonrelief populations the proportion with impairments and diseases increases regularly from the lowest rate in professional, proprietary, and clerical classes to the highest among unskilled laborers; (*c*) that among the "white-collar" occupations illness and physical impairments are relatively a more frequent reason for getting on relief than among laborers, and particularly among colored laborers. Among unskilled laborers, where income is always low and adaptability to new conditions and suitability for new or changed employment is limited, reasons of a purely economic nature often put the family on relief, but among the more adaptable "white-collar" classes the family can more frequently meet new economic conditions unless handicapped by impairment or illness.

This Office also cooperated with the Federal Emergency Relief Administration in the analysis of data on physical defects and chronic diseases among relief families in a large group of cities; the data were collected as a part of an occupational census of the relief population of cities scattered throughout the country. A bulletin issued by the Federal Emergency Relief Administration gives the results (Federal Emergency Relief Administration Research Bulletin, series I, no. 6).

MORTALITY TRENDS AND THE DEPRESSION

Through a cooperative project sponsored by the California State Health Department and the State Emergency Relief Administration, a study was undertaken to determine whether mortality in the families of the unemployed and others severely affected by the depression increased, remained stationary, or decreased during the period 1929–34. This study consisted of a house-to-house canvass of some 30,000 families; the canvassing was done as a work project by "white-collar" personnel on the relief rolls. The data were coded for putting on punch cards by the same personnel, and the punching and tabulation of the cards and the analysis of the data are now in progress in this Office in Washington. Ample mortality records for the general population of the country as a whole and for individual States and cities are available, but there is no way

except by such a canvass to determine whether mortality in the families of the unemployed has followed the downward trend that has been in progress in the general population. By the use of relief personnel for this study, the cost to the Public Health Service will be very small. The results will be helpful in studying the effect of the depression, because they will measure mortality in the same group of unemployed families before and during the depression.

RESPIRATORY STUDIES

Work was continued on influenza and other respiratory diseases. Four papers were published during the fiscal year—Public Health Reports for July 13, 1934; American Journal of Hygiene, November 1934 and May 1935; and Bulletin of the International Office of Public Hygiene, October 1934. Another paper on influenza epidemics from 1920 to 1935 is to appear in the Public Health Reports. In this period of 15 years since the 1918–19 influenza pandemic there have occurred 10 epidemics of a more or less Nation-wide scope which caused an estimated aggregate mortality from influenza and pneumonia in the United States of 300,000 deaths in excess of the normal expectancy.

MORBIDITY STUDIES

The analysis of records of sickness and medical care in the general population was continued during the year. Two papers on the causes of illness and death at specific ages were published (Public Health Reports for Feb. 22 and Apr. 12, 1935) and a third is in proof.

In cooperation with the Committee on Economic Security, data were assembled on the expectancy of illness in terms of cases and of days of disability for persons of the working ages.

CURRENT PREVALENCE OF DISEASE

The 4-week reviews of the prevalence of diseases have been continued throughout the year and have been published in the Public Health Reports.

The semiannual and annual summaries of current mortality in the various States were prepared and published (Public Health Reports for Nov. 9, 1934, and Apr. 26, 1935).

MISCELLANEOUS

A study of the incidence, mortality, and fatality of smallpox in the last 2 decades in the various States and in different countries is in press.

A note on the increased death rate during the excessive drought and heat in the Middle West during the summer of 1934 was published in the Public Health Reports for August 31, 1934.

A paper on the prevalence of defective vision among adults of specific ages was published in Human Biology for May 1935.

Stream Pollution Investigations

Research studies in stream pollution, sewage treatment, and natural purification of water have been continued at the headquarters station of this activity at Cincinnati, Ohio, under the direction of Sanitary Engineer J. K. Hoskins.

Stream pollution and natural purification.—Critical study of the extensive experimental and observational data on polluted water collected in recent years has permitted the derivation of logical conclusions concerning the mechanism of biological purification in flowing streams. Rates of bacterial decrease in polluted water and the progress of nitrification in sewage mixtures have been described in articles appearing in the Public Health Reports for March 22, 1935, and October 5, 1934, respectively. These studies have indicated, moreover, the desirability of practical limits of pollution for streams and lakes, for the avoidance of nuisance conditions, and for the protection of surface sources of public water supplies, both of which subjects have been discussed in a series of published papers (Journal of the American Water Works Association, vol. 27, January and February 1935, and Public Health Reports, Aug. 24, 1934). Factors to be considered in the formulation and administration of an inclusive program for water-pollution control have been summarized as a logical supplement to the research findings (Sewage Works Journal, May 1935).

Studies in sewage treatment.—These studies, as explained in last year's report, have as their primary objective the determination of conditions which affect detrimentally the biological activity upon which purification of sewage by the activated sludge process depends. A small experimental treatment plant of this type has been maintained in operation as a source of laboratory material as well as for observing the changes in efficiency of purification effected by various procedures. One source of lowered efficiency of the process frequently encountered has been confirmed in the experimental plant, namely, the phenomenon of sludge bulking resulting from abnormal growths of fungus in the sludge floc. Extended tests have indicated that small amounts of chlorine properly applied will control such objectionable fungus growths, and this conclusion has been confirmed in at least one municipal plant where sludge bulking was corrected by this means.

The active agency in the absorption of colloidal and dissolved impurities in sewage by the activated sludge treatment process appears to be the zoogleal or slimy material composing a considerable part of the sludge body. Accordingly, attention has been focused on the formation and composition of this active principle. An organism isolated from the zooglea of activated sludge and capable of reproducing such material in pure culture has been studied at some length and its cultural and other characteristics were described in the Public Health Reports for May 17, 1935. Chemical research upon this same material has demonstrated a marked similarity of properties to those of zeolites, which justifies its designation as a biozeolite. This zeolitic theory of the nature and properties of activated sludge is being developed in a series of papers, some of which have been published (Public Health Reports, Feb. 1, 1935; Sewage Works Journal, May 1935, and Industrial and Engineering Chemistry, June 1935).

Study of stream oxidation.—During the year a series of experimental observations has been instituted dealing with the physical and biochemical changes occurring in sewage sludge deposits under conditions approaching those of natural streams. Because of the difficulties inherent in evaluating these changes under natural conditions, they have remained, to a large extent, an unknown factor in the measurement of oxidation in sewage polluted streams; hence, their determination experimentally has appeared the only practicable solu-

tion of the problem. With especially designed apparatus it has been found possible to observe for any desired period of time the progressive oxidation of a known volume of sludge, over which a stream of water is recirculated at a depth and velocity capable of wide variation, the dissolved oxygen supply of this stream being replenished continuously at a known rate through direct absorption from the atmosphere. The experimental data thus far obtained have indicated that the rate of oxidation of the sludge deposits under stream-flow conditions is somewhat lower than that of normal biochemical oxidation under strictly aerobic conditions. These results have suggested the importance of anærobic bacterial decomposition in the breaking-down and subsequent oxidation of sludge deposits, as this action is known to be measurably slower than its aerobic prototype.

Determination of the oxygen requirements of polluted streams and of the rate at which such oxygenation proceeds are of utmost practical importance in planning stream cleaning and sewage treatment measures. From available field data a comprehensive method has been evolved for the evaluation of the rate and extent of natural oxidation in polluted streams of known characteristics. A full description of this method, with illustrative examples, has been published in a series of two papers dealing with these studies (Sewage Works Journal, March and May 1935).

National Institute of Health

The National Institute of Health continued under the administration of Director W. G. McCoy and Assistant Director R. E. Dyer. During the fiscal year the new buildings provided under the Ransdell Act, approved May 26, 1930, were occupied. These gave urgently needed improved facilities, making possible the carrying on of the work of the institute under better conditions.

DIVISION OF PATHOLOGY AND BACTERIOLOGY

Typhus-Rocky Mountain spotted fever.—There was a definite increase in the number of cases of typhus fever in some of the Southern States, while spotted fever remained practically the same as for last year. Additional foci of spotted fever were located in New York State and in North Carolina, and cases which were probably spotted fever were found in northern Alabama.

In a study of the longevity of typhus virus in animals, the virus of endemic typhus was recovered from the brains of guinea pigs 2 weeks after recovery from symptoms of the disease. Efforts were made to produce protective vaccines against typhus and spotted fever, using extracts of organs of infected animals. Strains of typhus fever from wild rats trapped at typhus foci and viruses from suspected cases of spotted fever were identified. The typhus virus was maintained through 7, and spotted virus through 12 successive passages in the chick embryo.

Epidemic encephalitis (St. Louis type).—Studies indicate that immunity to the St. Louis type of encephalitis is wide-spread in the United States, as shown by a positive mouse serum-protection test in approximately 10 percent of serums from over 200 persons from 21 States who gave no history of exposure. Serums from clinically definite cases of encephalitis in the St. Louis area showed immunity in approximately 95 percent of cases. Normal persons

following definite contact with cases showed immunity in 36 percent, owing probably to subclinical infection. A similar type of immunity was demonstrated in white mice.

It has been shown that the instillation of alum into the nostrils of white mice tends to render them less suspectible to intranasal infection with this virus.

Benign lymphocytic choriomeningitis.—The workers in epidemic encephalitis have studied a virus isolated during the St. Louis outbreak, which has been identified as the etiologic agent of a disease of man heretofore designated as " acute aseptic meningitis." About 200 miscellaneous serums submitted to the serum-protection test against this virus showed the presence of potent antibodies in approximately 2 percent of them. Strains of this virus have been isolated from noninoculated monkeys, which suggests a source of possible danger in the administration of tissue vaccines from monkeys, such as are being employed in poliomyelitis.

This virus has been cultivated through three successive passages in the chick embryo.

Bacteriophage.—Two reports on bacteriophage were prepared and published in the Public Health Reports. In one, four serologically distinct races of steptococcus bacteriophage were described. In the other it was shown that the value of bacterial substance as an immunizing agent is slightly better in the form of whole cells killed by a low degree of heat than when dissolved by bacteriophage.

About 500 strains of hemolytic streptococci are being classified according to phagological and fermentation reactions. The distribution and pathogenic activity of the several species are under investigation.

Relapsing fever.—Investigations have demonstrated the survival of virulent infection for 4 years in naturally infected adult ticks of the species *Ornithodorus turicata* collected in Texas and deprived of food throughout that time.

Tularemia.—In 1934 tularemia was reported by State health officers from 41 States and the District of Columbia, a total of 881 cases being reported, as compared with 892 in 1933. The infection was recovered from naturally infected red foxes killed in Maine. *Bacterium tularense* was found to retain viability and maximum virulence for 10 years in guinea-pig spleen tissues suspended in pure glycerin at −15° C.

Poliomyelitis.—Studies were continued on the effect of formalin-killed virus combined with aluminum hydroxide. No appreciable immunity in treated monkeys has been observed. Following the work on encephalitis virus in mice, monkeys treated intranasally with sodium aluminum sulphate solution were rendered resistant to intranasal instillation of poliomyelitis virus.

Bacterial variants and mutants.—Irradiation of bacteria by radium emanations through many culture transfers induced at times, but not regularly, profound cultural and morphological changes. Methods were developed showing graphically the killing effect of beta as compared with gamma rays of radium. Continuous irradiation of the same culture for 30 days did not always produce bacterial changes. Sublethal irradiation resulted in retardation of cell division of bacteria, molds, and protozoa, and in retarded metabolism of bacteria.

Trachoma.—The living embryo and media containing frozen chick embryo extract and fresh chicken embryo extract were used in attempts to cultivate the causative agent of trachoma. *Bacterium granulosis* was not cultivated by any of these methods. The use of the living embryo is being continued in the study.

Amebic dysentery.—Studies on the epidemiology of the amebic dysentery outbreak originating in Chicago in 1933 were finished and the report was submitted for publication. There were about 1,300 cases, of which about 100 were fatal. Experiments on the viability of cysts of *E. histolytica* on the hands after natural contamination indicated that the hands rarely were infected. At the request of sanitary engineering authorities, experiments on the effectiveness of filtration of water supplies have been continued on an experimental scale approximating actual filtration processes.

Bacillary dysentery.—Studies have been initiated on dysentery with special reference to the bacillary type as it occurs among Indians of the Southwest, which, thus far, indicate that these infections are more wide-spread and more prevalent than has been recognized.

Leprosy.—Experiments were begun on the effect of various deficient diets on the incubation period of rat leprosy. Local lesions occurred in rats fed vitamin B_1 deficient diet and injected subcutaneously with material from a human leprous nodule. These experiments were reported in the Public Health Reports, and further work is in progress.

Pathology.—The histologic diagnostic service to marine hospitals and other agencies was continued, over 1,800 specimens being examined and reports submitted thereon. In addition to this diagnostic work, specimens from about 1,600 experimental animals were examined histologically and reports submitted. In this work, some 21,000 slides were stained and studied.

There follows a tabulation of specimens received during the fiscal year:

Diagnostic service:		
Human surgical material	cases	1,663
Human autopsy material	do	181
Experimental pathology in animals	do	1,592
Prepared for study by other divisions	do	123
Total tissue specimens	do	3,559
Blood and spinal fluid for Wassermann and Kahn tests		18,768
Blood for other diagnostic tests		3,115
Other specimens (not including routine)		383
Total		22,266

Biologic products.—At the close of the fiscal year 49 establishments held licenses to engage in the interstate sale of biological products. Of these firms 11 were foreign and 38 were domestic. The licenses covered 155 different preparations.

The Director of the Institute was detailed to attend the meeting of the Permanent Standards Commission, Health Organization, League of Nations, held at Copenhagen in August 1934. At this meeting standards were adopted for *Vibrion septique* antitoxin, oedematiens antitoxin, pneumococcus serum, Type I, pneumococcus serum, Type II, and staphylococcus antitoxin.

SPECIAL STUDIES ON PROPHYLACTIC AND THERAPEUTIC AGENTS COVERED BY LAW OF JULY 1, 1902 (THE BIOLOGICS LAW)

During the year, activity was especially marked in connection with human convalescent serums, with vaccines for prevention of poliomyelitis, and with smallpox vaccines made by methods other than the orthodox calf propagation.

Gas gangrene antitoxin.—The standardization of gas gangrene antitoxin (oedematiens) was undertaken in cooperation with other countries under the direction of the Permanent Standards Commission, Health Organization, League of Nations. A dried standard toxin and a dried standard antitoxin have been prepared and the potency of these was determined in terms of the international unit of antitoxin adopted at the August 1934 meeting of the Commission.

Histolyticus and *sordelli* antitoxins have been obtained and dried in preparation for standardization.

Hemolytic streptococcus.—A study was continued of the several antigenic metabolic products elaborated by hemolytic streptococci isolated from the various clinically recognized infections involving this organism.

Meningococcus meningitis.—Studies were made on the course of meningococcus infection in mice. Strains of sufficient virulence readily produced a generalized infection in these animals. Protection afforded against such infection by polyvalent therapeutic anti-meningococcus serum was investigated. Many serums protected well, while others gave no better protection than some normal horse serums.

Studies on the toxins of the meningococcus were continued and investigations on their neutralization by antitoxins have been begun.

Meningococcus cultures have been stored in neutral glycerine at −15° C. for more than 2 years with no apparent change in viability, morphology, or in serological or biochemical characteristics. Storage without glycerine has been successful for 8 months, and studies on the optimum conditions for such below-freezing storage are still in progress.

Alum precipitated antigens.—It has been shown that alum precipitated diphtheria toxoid remains antigenic in the tissues of the guinea pig for at least 7 weeks, which probably explains its unusual activity.

Studies in sensitization and immunization with alum-precipitated bacterial products have shown that sensitization with fat-free tubercle bacilli and with old tuberculin may be produced in guinea pigs by a single dose of the alum precipitate. Immunity in such sensitive animals is being tested.

Staphylococcus studies.—Studies were continued on staphylococcus products. An international standard staphylococcus antitoxin has been adopted, and based on this a United States standard antitoxin has been made and part of it has been prepared in stable, dry form in vacuum. A standard staphylococcus toxin has also been prepared and measured against the international standard antitoxin. Immunization and other experiments have been carried out and commercial staphylococcus antitoxin and toxoid samples have been assayed to determine sterility, innocuity, and potency.

Arsenical preparations.—Studies on the therapeutic efficiency of neoarsphenamine in experimental syphilis in rabbits were continued, the results obtained indicating that different brands of neoarsphenamine which have been examined are remarkably uniform in therapeutic activity.

DIVISION OF PHARMACOLOGY

The work of this division continued under the direction of Pharmacologist Director Carl Voegtlin.

Cancer research.—A systematic investigation was made of the effects of certain chemical agents upon the various phases of mitosis in *Amoeba proteus.* Based on the experimental data so obtained, a theory of cytoplasmic fission has been advanced.

In view of the importance of cell division in tumor growth, the factors controlling the activity of nuclear enzyme of malignant tumors were studied. The pH optima for enzymatic hydrolysis of nucleic acid were ascertained, and the influence of ascorbic acid, glutathione, crysteine, and oxygen lack upon nuclease activity was determined.

In continuation of the work on the pH of tumors and normal tissue, a new theory of the glass electrode was worked out.

The study of growth of the Walker 256-rat mammary carcinoma *in vivo* and in tissue culture was continued from last year. The strain, successfully carried *in vitro* a total of 370 days and then inoculated into rats, resulted in some instances in a sarcomatoid metaplasia. A study of the factors permitting the growth of such cells *in vitro* and the causes leading to metaplasia is now in progress.

The systematic attempt to influence the growth of a spontaneous mammary tumor of the mouse, referred to in last year's report, has been continued. The effects of many chemicals synthesized for this purpose were examined. An attempt has also been made to influence the growth of this tumor by diet. The results of these studies seem to indicate that the rate of tumor growth can be influenced by chemical means.

The research dealing with the histological characteristics of the Jensen rat sarcoma and Walker 256-rat carcinoma, after subcutaneous and intramuscular inoculations, has been completed and has appeared as part of a National Institute of Health Bulletin. This bulletin also contains papers dealing with the effect of the injection of various sugars on the pH of malignant tumors in living animals and on the relation of pH to protein synthesis in extracts of normal and neoplastic tissues.

Prevention of fatal bichloride of mercury poisoning.—Further work has been done on this subject. In rabbits it was possible to obtain complete protection of the kidneys from two fatal doses of bichloride by use of formaldehyde sulfoxylate as the antidote. Of 30 human cases treated in local hospitals, 27 survived and in 26 there was practically no kidney damage.

Chemotherapy of pneumococcus infection.—Upon the basis of its strong reducing action, formaldehyde sulfoxylate was employed as a chemotherapeutic agent in mouse pneumococcus septicemia. A striking curative action was found for a strain of pneumococcus I grown at the National Institute of Health. Morphologically this action is associated with marked phagocytosis of the organisms in the peritoneal cavity. So far other strains of pneumococci were not so easily influenced by the drug as the Institute strain. Hence, in collaboration with the Division of Chemistry, an attempt has been made to develop more effective substitutes and to determine the nature of the chemical properties which are requisite for the therapeutic action of sulfoxylate.

Research on experimental anemias.—Phenylhydrazine anemia has been studied in the albino rat, and the effect of certain nutritional deficiencies on the rate of hemoglobin and red-cell regeneration has been examined. The results of the investigation of vitamin B_2 deficiency on hematopoiesis were published in the Public Health Reports. In an attempt to work out a method for the bio-assay of liver extract, its effect on the reticulocyte response in experimental anemia resulting from *Bartonella muris* infection was examined. Studies on the influence of some of the essential amino acid deficiencies on hematopoiesis are in progress.

The pharmacology of the nervous system.—With the cooperation of the Division of Chemistry, the phosphoric triesters of several alcohols were prepared and their pharmacologic actions were examined. Further data were thus obtained showing that, by phosphorylating physiologically active alcoholic groups to the triester form, important change in the pharmacodynamic properties of such compounds may be brought about. In the instance of the phosphoric triester of choline, it has been possible to dissociate the curare from the muscarine and nicotine actions, which are usually associated in choline and related substances. In the course of this work a method was devised for quantitative studies on neuromuscular irritability.

DIVISION OF CHEMISTRY

The work of the Division of Chemistry continued under the direction of Prof. Claude S. Hudson.

Sugar researches.—Studies on the oxidation of sucrose were continued along the lines of the last report. Some evidence was obtained indicating that the crystalline brucine salt, prepared from the products of the oxidation of sucrose, is the tribrucine salt of the tricarboxylic acid corresponding to the sucrose molecule with the three primary alcohol groups converted into carboxyl groups. Additional evidence was obtained on the structure of the strontium salt, prepared from the products of the oxidation of a-methyl-d-mannoside, and on the p-bromophenylhydrazine derivative of the corresponding hydrolized acid.

There was also a continuation of the study of the action of various acidic hydrolyzing agents on methyl glycosides and on the reduction of a-galaheptose to a-galaheptitol. The acetyl and formal derivatives of this compound have been isolated for the first time, and considerable study was made on the effect of borax upon its rotation.

A continuation of studies on the four-carbon sugar, threose, included quantitative studies of the hydrolysis of d–threose diacetamide, molecule weight determinations, which showed d–threose acetate to be monomeric, and work with the acetates of threose, which indicated that these acetates have a cyclic structure.

Investigations were conducted on neolactose and new results obtained, which confirm the conclusion of Kunz and Hudson that neolactose is d–galactosido–d–altrose.

The first practical method for recrystallizing xylonic amide was devised, and a method was developed for separating sodium glucoheptonate from a–glucoheptose. An improved method has been developed for the preparation of d–mannoheptulose from the pulp of the avocado. The contaminating impurity in d–arabinose from cal-

cium gluconate has been identified and means for its removal pointed out.

Enzyme researches.—The researches on invertase were continued. As a result of the work already reported, a relatively convenient method has been developed for obtaining concentrated solutions of this enzyme. These solutions were utilized in a study of the exact chemical configuration of the substrate on which invertase acted. The chemical constitution of the pure crystalline gamma-methyl-fructoside, previously reported, has been confirmed and its relationship to sucrose established. A study of the behavior of this fructoside with various chemical reagents has shown that it can be used for the synthesis of other derivatives of gamma fructose, one of which, a tetraacetyl gamma-benzylfructoside, has been obtained in the crystalline state.

DIVISION OF ZOOLOGY

Survey of ectoparasites.—In connection with typhus control work, over 300,000 ectoparasites, including fleas, lice, and mites, of rats and other mammals were identified.

Amebiasis.—An investigation of amebic dysentery in Georgia, extending over a period of several months, was carried on.

Examination of parasites for diagnosis.—This part of the work of the Division continued throughout the year, and more than 250 specimens were examined for various Government hospitals, State health departments, universities, and for practicing physicians.

MISCELLANEOUS

During the fiscal year 7 public health bulletins and 2 National Institute of Health bulletins were issued and 165 scientific articles for the Public Health Reports or outside publication were submitted to this Division for review and recommendation as to publication.

DIVISION OF DOMESTIC (INTERSTATE) QUARANTINE

Asst. Surg. Gen. C. E. Waller in charge

Prevention of Interstate Spread of Disease

Plague-Suppressive Measures in the Pacific Coast States

Plague-suppressive measures in California were continued, as in previous years, in cooperation with State and local authorities. No human plague was reported in California during the year, but one case with onset of illness in June 1934 died in September 1934.

Rodent plague in ground squirrels was reported in San Luis Obispo, Modoc, and Lassen Counties, in wood rats in San Luis Obispo and Modoc Counties, and in one field mouse in Modoc County.

In addition to investigations in the above-mentioned counties, the State Department of Public Health has made field surveys in Kern, King, Monterey, San Benito, San Bernardino, Santa Clara, Santa Cruz, and Tulare Counties, and no plague was found. In Kern and Tulare Counties, where an extensive focus of rodent plague was discovered in 1934, rodent-control measures carried out by the State and local authorities reduced the number of rodents to such an extent that plague was not found after July 1, 1934. A second survey was made in the months of March and April 1935, with negative results.

Measures Taken Against Ground Squirrels

Public Health Service activities in California heretofore have been confined to the work of maintaining a squirrel-free zone around the cities on San Francisco Bay, in cooperation with local authorities. These activities consist of inspection of areas for evidence of squirrel infestation, the application of poisoned grain, and the treatment of squirrel burrows with carbon bisulphide when conditions are favorable for the use of this agent. The following tabulation shows the extent of these operations:

Number:	
Inspections	1,759
Reinspections	3,819
Acres inspected	282,875
Acres reinspected	768,183
Acres treated with waste balls	34,661
Acres treated with poisoned grain	152,376
Burrows treated	108,642
Materials used:	
Carbon bisulphide (gallons)	1,691½
Waste balls	108,642
Poisoned grain (pounds):	
Strychnine	12,039
Thallium	19,911
Phosphorus	8,845
Poison mixed for landowners under supervision of Public Health Service (pounds)	2,070

In April 1935 a mobile laboratory was put in the field by the Public Health Service to search for possible new foci of rodent plague infection in the Pacific Coast and Northwestern States. This mobile unit began activities in Modoc County, Calif., where work was done in cooperation with the State department of public health.

MEASURES TAKEN AGAINST RATS

This phase of the activities is confined largely to the trapping of rats in San Francisco and vicinity and the examination of those caught for evidence of plague. All rat complaints in the city of San Francisco are handled by the plague station in San Francisco in cooperation with the city health department. The city health department has rendered valuable service in the abatement of rat nuisances. During the year 1,537 rat complaints were investigated in San Francisco.

From February 21 to June 22, 1935, trapping operations were conducted on hog ranches in San Mateo County near the San Francisco County border to secure information as to possible plague infection of the rats on these ranches from ground squirrels, and at the same time to give assistance to local authorities in an investigation of trichinosis in the vicinity of San Francisco.

RODENT PLAGUE IN OREGON

At the beginning of the fiscal year information had been received confirming the occurrence of a human death from plague in Lake County, Oreg., in a sheep herder who was taken sick about 60 miles northeast of Lakeview, Oreg. As the ground squirrels of this region (*Citellus oregonus*) go into hibernation in the latter part of July, further investigations were not practicable until the spring of 1935.

About May 1, 1935, the new mobile field laboratory began investigations in Lake County, Oreg. During May two foci of rodent plague, one about 2 miles east, the other 25 miles northeast, of Lakeview were found. A survey of the wild, mountainous country where last year's human case was taken sick, was made in June, with negative results. Numerous reports that the marmots (*Marmota flaviventer*) of that region were dying from an unknown cause were investigated. Several specimens from marmots were sent to the laboratory, but thus far no plague has been found in marmots.

In June 1935 an officer of the Public Health Service accompanied the State health officer of Oregon on a trip to Wallowa County, Oreg., to investigate a report of an unknown fatal disease in ground squirrels of that county. One ground squirrel found dead about 5 miles northeast of Wallowa was found to have plague. At the close of the fiscal year arrangements had been completed to have the mobile field laboratory begin work in Wallowa County on July 1, 1935. This focus of plague in the northeastern county of Oregon, about 50 miles distant from the State lines of Washington and Idaho, suggests the possibility that plague infection may be found in those States.

While investigations were being made in Lake County, Oreg., the work extended into the adjoining portions of Nevada, but at the end of the fiscal year no infection had been found in Nevada.

MOBILE FIELD LABORATORY

A mobile field laboratory, mounted on a 1½-ton panel truck, was equipped in March and April and placed in the field on April 16, 1935. This laboratory is equipped for hunting and trapping rodents, and provides facilities for the dissection of the rodents in the field, the taking of specimens from those found suspicious, and the forwarding of such specimens to the San Francisco laboratory in insu-

lated refrigerated shipping cases. With this procedure, specimens are received at the laboratory in excellent condition. The following table shows the operations of the field laboratory from April 16 to June 30, 1935:

County	Ground squirrels	Marmots	Approximate area surveyed
			Sq. miles
Modoc County, Calif.	747		35
Lake County, Oreg.	1,074	153	296
Washoe County, Nev.	83	42	225
Total	1,904	195	556

PUBLIC HEALTH SERVICE LABORATORY, SAN FRANCISCO, CALIF.

The activities of the laboratory at San Francisco continued along the same lines as in previous years, the work increasing to some extent. In April 1935 a new building to house laboratory animals and provide a separate building for the dissection of rodents was completed.

The number of rats examined from San Francisco, Oakland, Richmond, San Mateo County, and from ships after fumigation is shown in the accompanying table. No plague infection was found in those rats. In addition to the rodent examinations, the laboratory continued the examination of water samples from the supplies of interstate carriers and from national parks and serological and bacteriological work (including animal inoculation tests) for various Public Health Service stations and other Federal activities.

The following table shows the number of specimens examined:

	Received	Examined
Examination of rodents for plague:		
Rats from San Francisco	27,750	25,537
Rats from Oakland, Alameda County	2,487	2,390
Rats from Richmond, Contra Costa County	458	458
Rats from hog ranches in San Mateo County	2,807	2,807
Rats from fumigated ships	95	95
Serological examinations:		
Wassermann reactions:		
Blood		7,867
Spinal fluid		503
Hydrocele fluid		1
Pleural fluid		1
Ascitic fluid		1
Knee fluid		1
Kahn tests:		
Blood		7,871
Spinal fluid		499
Hydrocele fluid		1
Pleural fluid		1
Ascitic fluid		1
Knee fluid		1
Widal reactions		2
Agglutination tests for tularemia		3
Agglutination tests, heterophilic		1
Bacteriological examinations, culture and microscopic:		
Water		549
Cultures for diphtheria		109
Culture for tularense		1
Leprosy		9
Bacteriological examinations, with animal inoculations:		
Tuberculosis		83
B. tularense		1
Virulence test for diphtheria		1
B. pestis		20
Relapsing fever		1
Lymphogranuloma inguinale		4

RAT LEPROSY

During the year 60 rats from San Francisco and 1 rat from Oakland were found to show evidence of rat leprosy.

VACCINATION OF CANNERY CREWS

In addition to the usual work of the San Francisco plague station, supervision of the vaccination of cannery crews going to Alaska was furnished by the station personnel. The number was much smaller than usual, on account of curtailment of cannery operations for the year: 684 men were inspected and 404 were vaccinated against smallpox.

PLAGUE-CONTROL MEASURES IN THE TERRITORY OF HAWAII

Plague-control measures on the island of Maui, Territory of Hawaii, were continued in cooperation with the territorial board of health. No human case was reported during the year, but 6 plague-infected rats were found, all in the Makawao district. This is the same general area from which plague rats have been taken in recent years and is located from 8 to 10 miles from the port of Kahului. The first three plague rats were found in October 1934 at pigpens adjacent to a gulch and located within an area extending a distance of three-quarters of a mile along the gulch. The other three were found in March and April 1935 in another gulch and in an area extending about one-half mile along the gulch.

FIELD EXPERIMENTS

Field experiments were continued through the use of both arsenic and thallium sulphate preparations. The procedure consisted in placing poison in the regular trapping districts about once a month in order to note whether there resulted any decrease in the rate of rat catch due to placing the poison. The results of this work confirmed the figures obtained during the preceding year in that there was no noticeable decrease in the rate of rat catch which could be attributed to the poison, either immediately after or at any time after the placing of the poison. This work was carried out in 14 of the trapping districts where there were numerous rat harbors and where there was a plentiful supply of natural food during all seasons of the year. In a small control district there was a marked drop in the rate of rat catch apparently attributable to trapping only.

RAT TRAPPING AND HARBORAGE ELIMINATION

On July 21, 1934, the trapping work was almost doubled, through the use of local funds for hiring additional trappers. The force was increased to 15 trappers with 200 traps each. In October it was decided to attempt the elimination of rat harborage and breeding places in the open country in an effort to effect a more rapid reduction in the rat population than would be possible by trapping alone. Inspection of the trappers' reports showed that the majority of the

rats were being caught in gulches, or adjacent to them, and investigations disclosed that, after such areas were cleared, rat burrows could easily be located. It was believed that, if the heavily rat-infested gulches and other rat centers could be cleared of rat harborage, the rat population might be reduced to a point much lower than would be possible by trapping alone. The work of clearing heavily rat-infested areas was started in October through the use of FERA labor and was gradually expanded. It consisted in cutting out and burning brush of wild berries, seeds, and plants, followed up by treating the burrows thus exposed. It was first attempted to force the rats out of the burrows and bring them to the laboratory. However, the only practicable method of driving them out was that of filling the burrow rapidly with water; and since this was impracticable on a large scale, it was decided to kill the rats in the burrows. After various gases were tried out for this purpose it was found that the simplest and most economical method was the placing of a few drops of carbon bisulphide from an ordinary oil can in each opening and igniting the gas, which resulted in an explosion and the creation of fumes. This was followed by plugging the holes with earth and tamping. This procedure was found to be effective in killing rats of all three species encountered.

A number of burrows were dug open to obtain information concerning measurements. It was found that the length varied from 5 to 18 feet; the diameter of the hole from 1½ to 2 inches; and the depth below ground level from 6 inches to 3½ feet. Burrows encountered had from 1 to 7 openings and often had laterals at different levels. There were from 1 to 4 nests for each burrow, usually located at dead ends and at elevations above the main tunnel.

POISONING

It was found that poison in the form of thallium-sulphate-treated wheat wrapped in waxed paper in torpedoes was fairly effective if placed immediately after the clearing of an area and the exposing of burrows. At such a time the rat's natural food supply was cut down and the harborages had been disturbed. Under such conditions it was believed advisable to use all means at hand to kill as many rats as possible in order to prevent any migration. The percentage of the native field rat, *R. hawaiiensis*, of the total number of rats brought into the laboratory rose from 60 percent at the beginning of the fiscal year to approximately 80 percent at the end of the year. According to results of cage experiments, this changed condition in the field should make the application of the thallium sulphate preparation a more valuable adjunct in the work.

SANITARY INSPECTION

Sanitary inspections of buildings and premises were continued by two sanitary inspectors. A noncompliance notice was prepared; and where changes or improvements involving the expenditure of large sums of money were necessary, owners of the property were notified in writing, through the use of this form.

OTHER MEASURES

In and around the Port of Kahului the rat population in the kiawe trees was kept down by shooting. Since these trees are found only at elevations near sea level, the problem does not exist in the plague zone proper.

There has been excellent cooperation on the part of managers of sugar and pineapple plantations in the area worked. Much of the progress made was due to assistance from these plantations in plowing under rat-infested fields and in furnishing men and conveyances for the work.

SUMMARY OF RESULTS

Classification of rodents trapped and killed:	
R. hawaiiensis	46,830
R. alexandrinus	17,830
R. rattus	6,414
R. norvegicus	2
M. musculus	56,865
Mongoose	424
Number of rats trapped in Port of Kahului	2,909
Number of rats trapped, total	68,691
Number of rats killed by shooting, etc	1,535
Number of rats found dead	110
Number of rat trap days, total	1,039,328
Number of rats per 100 traps per day (all districts)	6.6
Number of rats per 100 traps per day (Kahului)	3.9
Number of packages of poison placed	1,703,858
Number of man-hours in rat harbor elimination	45,944
Number of burrows treated with carbon bisulphide	7,873
Number of inspections of buildings and premises	1,008
Number of reinspections of buildings and premises	541
Number of noncompliance notices issued (major changes)	20
Number of rats received at laboratory	70,336
Number of total rodents received at laboratory	127,523
Number of rats examined macroscopically	70,115
Number of rats examined microscopically	37
Number of mass inoculations made	576
Number of single inoculations made	17
Number of cases of human plague	0
Number of cases of rodent plague	6

Date of last case of human plague: September 19, 1932.
Date of last case of rodent plague: April 23, 1935.

CAGE EXPERIMENTS

Cage experiments to determine the effectiveness of poison were continued with the use of both arsenic and thallium sulphate preparations. At the end of the year a total of 30 experiments had been completed from which the following conclusions are drawn: (1) One or more rats usually eat the poison the first night and occasionally later and become sick or die. (2) After one or more rats have become sick or have died from eating poison, the remaining rats in the cage almost invariably refuse to eat it. (3) Rats die more quickly from the effects of arsenic than from thallium sulphate in the proportions commonly used, but become aware of the presence of arsenic more quickly and a smaller percentage of the total number of rats eat arsenic. (4) Rats of the species *R. alexandrinus* and *R. rattus* consumed the thallium sulphate preparation somewhat more

readily than they consumed arsenic. (5) Rats of the species *R. hawaiiensis* consumed the thallium sulphate preparation much more readily than they consumed arsenic.

Trachoma Prevention

Trachoma-control activities were continued in Missouri, Kentucky, and Tennessee, in cooperation with the State health authorities, the latter bearing approximately one-half of the cost of the work. During the latter part of the fiscal year, field work was greatly hampered because of the abnormal rainfall throughout the regions in which trachoma work was being done.

Missouri.—Fewer field clinics were held during the year and slightly fewer new cases of trachoma were discovered. There was an increase, however, in admissions to the hospital at Rolla, resulting in a greater number of days of hospital relief. Among the new cases seen, there was an increase over last year in the number of persons industrially blind in both eyes. The hospital at Rolla continued its cooperation with two different groups doing research in trachoma. The percentage of early cases found continued about the same as during the past several years.

Kentucky.—This trachoma-prevention unit, which cooperates with various research organizations, continues to serve a useful purpose. The hospital at Richmond underwent considerable repair. There were fewer new cases of trachoma discovered during the year and fewer admissions to the hospital. This was due, no doubt, to the heavy rainfall during the spring and summer months. There was a decided increase in new hospital cases that needed the grattage operation.

Tennessee.—The work of the field unit at Gainesboro was completed. From this unit 13 mountainous counties were served. During the 3 years of its existence 782 active cases of trachoma were contacted and most of the severe cases were arrested through treatment.

Much time has been spent during the past 4 months in survey work in middle Tennessee. It is the opinion of the trachoma field clinician in Tennessee that trachoma work should continue in that State for a few years longer. Trachoma is hardly endemic in any area of Tennessee now, but there are, no doubt, many scattered cases throughout the State. A new and larger unit probably will be established in middle Tennessee by the State authorities.

Dispensary and hospital relief, operations, etc.

Activity	Richmond, Ky.	Rolla, Mo.	Gainesboro, Tenn.	Total
DISPENSARY RELIEF				
Number examined	605	2,144	1,308	4,057
Old cases of trachoma	260	954	701	1,915
New cases of trachoma	165	253	50	468
Total attendance	605	2,144	1,308	4,057
Average daily attendance	1.65	5.87	3.58	11.10
COMBINED DISPENSARY AND FIELD CLINIC DATA				
Total number of new individual trachoma cases discovered	254	516	211	981
Pannus in new cases	225	438	178	841
Entropion in new cases	48	78	46	172
Corneal opacities in new cases	137	140	50	327
Vision 20/200 or worse, both eyes	77	77	145	299
Vision 20/200 or worse, 1 eye	83	56	70	209
Ulcers arising in all cases, old and new	27	47	23	97
HOSPITAL RELIEF				
Hospital capacity	34	32	6	72
Cases admitted during the year (total)	323	310	71	704
Number cases first admission	215	195	46	456
Days relief furnished	9,206	8,647	1,392	19,245
Rations furnished	11,430	10,513	1,398	23,330
Cost of rations	$2,969.36	$2,231.78	$990.87	$6,192.01
Average cost of rations furnished	26.06¢	21.22¢	71.43¢	26.54¢
Per diem cost	$1.72	$1.94	$2.83	
Average stay in hospital, days	28.50	27.89	19.60	
FIELD WORK				
Field clinics:				
Number of clinics held	7	16	173	196
Number persons examined	812	1,441	2,333	4,586
Trachoma cases seen, old trachoma	127	175	1,045	1,347
New trachoma cases seen	89	263	161	513
Suspicious cases seen	1	93	555	649
Treatments given at clinics	0	302	1,631	1,933
Field nurse activities:				
Public health talks given	0	15	[1] 42	57
People (estimated) in audiences	0	416	[1] 1,293	1,709
Homes visited	1,196	1,080	[1] 1,266	3,542
People examined in homes	2,872	2,137	[1] 3,054	8,063
Suspicious cases in homes	167	397	[1] 489	1,053
Number pupils examined in schools	517	1,908	[1] 1,813	4,238
Suspicious cases in schools	14	97	[1] 66	177
Number treatment clinics, nurse only	0	0	7	7
Number treatments by nurse	0	1	64	65
OPERATIONS				
General anesthesia	1	0	0	1
Local anesthesia	211	214	49	474
Grattage	137	127	1	265
Entropion	45	33	34	112
Canthoplasty	21	8	22	51
Cautery puncture	8	10	3	21
Electric epilation	7	28	11	106
Vataconin injections	42			42
Enucleation	1	1		2
Ectropion	1			1
Chalazion curetted	2			2
Milk injections	51	2	2	55
Pterygium		6		6
Removal of folliculoma, corneal		2		2
Ulcer cauterized		2		2

[1] Represents work of nurses and field clinician.

PSITTACOSIS

It has been gratifying to note that, as a result of rigid enforcement by the State Health Department of California of the State requirements in connection with the certification of interstate ship-

ments of parrakeets and other birds of the psittacine family, no human case of psittacosis traceable to an interstate shipment was reported to the Public Health Service during the year ending June 30, 1935.

Officers of the Public Health Service continued to render advisory assistance to the State health authorities of California in planning measures for the eradication of psittacosis in aviaries located in that State. The disease has not become a problem in connection with the bird-breeding industry elsewhere.

Typhus-Fever Control

Following the completion of the typhus-fever study carried on in Georgia, Alabama, and Texas as a Civil Works Administration project, the Public Health Service entered into a cooperative program with the Alabama State Health Department for an experimental project for the eradication of typhus fever, having as its objective the demonstration of rat-proofing of buildings as a rodent-control measure. A suitable staff having been chosen by the State health department for the local promotional activities to be undertaken, an officer of the Public Health Service thoroughly experienced in rat-proofing work was detailed to demonstrate appropriate methods to the State health department personnel. Emphasis was placed particularly upon the rat-proofing of buildings where grain and other foodstuffs are stored, since it is believed that the most certain and effective rat-eradication procedure consists in preventing access of the rodents to a food supply. State employees engaged in the work so far have experienced little difficulty in obtaining the cooperation of food-handling establishments.

Supervision of Water Supplies Used by Common Carriers

The inspection and certification of water supplies used for drinking and culinary purposes on interstate carriers, in cooperation with the State health departments, was continued. The carrier companies listed 2,269 sources from which they desired to take their water supplies. Of these, 1,827 were public supplies. Ninety-five percent were inspected and certified. It was found necessary to prohibit the use of 58 of the supplies listed.

Assistance was rendered to the States in the preparation of certificates of inspection, and 86 supplies were inspected in the States having no engineering division in the State health department. A comparison of the certification work with that of previous years is shown in table 1:

Table 1.—*Percentage of completed certifications of water supplies used on railroads, vessels, and airplanes for each year from 1930 to 1934, inclusive*

Carrier	Percent of completed certifications in—				
	1930	1931	1932	1933	1934
Railroad	87.5	92.8	95.1	94	95
Vessel	88.0	95.9	97.2	97	93
Airplane	.....	85.8	97.4	93	85

STATUS OF WORKS BY STATES

The accompanying table summarizes and shows the status of the work by States during the calendar year 1934:

TABLE 2.—*Source and certification status of water supplies used by interstate carriers during the calendar year 1934 by States*

State	Source classification				Certification status				Percent of sources acted upon	Certificates issued
	Public [1]	Private [2]	Company	Total	Satisfactory	Provisional	Prohibited	Action pending		
Alabama	36	0	0	36	36	0	0	0	100	76
Arizona	20	6	9	35	12	22	1	0	100	38
Arkansas	38	1	5	44	18	12	0	14	68	38
California	55	12	22	89	64	9	0	16	82	267
Colorado	26	1	6	33	29	4	0	0	100	51
Connecticut	16	0	0	16	14	2	0	0	100	46
Delaware	9	0	0	9	9	0	0	0	100	17
District of Columbia	1	0	1	2	2	0	0	0	100	6
Florida	35	10	9	54	42	12	0	0	100	119
Georgia	50	0	5	55	41	12	2	0	100	106
Idaho	15	1	6	22	20	1	1	0	100	22
Illinois	66	4	9	79	52	21	6	0	100	151
Indiana	46	5	4	55	28	27	0	0	100	96
Iowa	52	1	4	57	23	32	2	0	100	100
Kansas	73	0	5	78	68	7	3	0	100	99
Kentucky	35	1	6	42	25	14	0	3	93	58
Louisiana	26	4	6	36	36	0	0	0	100	104
Maine	33	0	6	39	30	9	0	0	100	79
Maryland	20	3	3	26	26	0	0	0	100	85
Massachusetts	51	0	0	51	50	1	0	0	100	146
Michigan	54	3	9	66	66	0	0	0	100	116
Minnesota	47	2	18	67	42	14	0	11	83.5	80
Mississippi	32	3	5	40	39	1	0	0	100	53
Missouri	48	0	6	54	42	10	1	1	98	97
Montana	19	0	8	27	25	2	0	0	100	30
Nebraska	39	0	7	46	9	24	11	2	96	61
Nevada	12	0	9	21	20	1	0	0	100	25
New Hampshire	16	0	0	16	16	0	0	0	100	21
New Jersey	40	3	3	46	45	0	1	0	100	100
New Mexico	12	1	12	25	24	1	0	0	100	30
New York	90	4	12	106	94	10	1	1	99	252
North Carolina	42	3	0	45	32	5	4	4	91	68
North Dakota	13	5	14	32	10	8	1	13	59	20
Ohio	66	1	9	76	56	6	8	6	91.5	152
Oklahoma	38	1	3	42	23	7	1	11	74	45
Oregon	28	0	1	29	27	1	1	0	100	91
Pennsylvania	121	2	12	135	111	0	0	24	82	136
Rhode Island	4	1	0	5	5	0	0	0	100	40
South Carolina	24	1	1	26	23	0	0	3	96	68
South Dakota	21	0	8	29	6	16	0	7	76	32
Tennessee	27	2	5	34	31	1	2	0	100	51
Texas	101	25	39	165	91	73	1	0	100	296
Utah	13	0	4	17	12	4	1	0	100	29
Vermont	10	0	1	11	10	1	0	0	100	16
Virginia	50	3	6	59	51	4	0	4	93	167
Washington	44	1	3	48	38	8	2	0	100	185
West Virginia	48	3	10	61	45	9	7	0	100	75
Wisconsin	53	7	8	68	59	7	1	1	98	94
Wyoming	12	0	3	15	12	3	0	0	100	23
Total	1,827	120	322	2,269	1,689	401	58	121	95	4,157

[1] The column headed "Public" includes supplies owned by municipalities as well as those used by municipalities but owned by private companies.
[2] A "Private" supply refers to a small well or spring used only by the carrier and the person owning it.

SUPERVISION OF WATER SUPPLIES ON VESSELS

Operating companies reported 750 vessels in active status. Of these, 52.6 percent were inspected and certified, while 23 percent were issued temporary certificates pending inspection.

One thousand one hundred and sixty-three laboratory samples of water taken from drinking-water supplies on interstate vessels were examined by health departments of cities on the Great Lakes and the

Mississippi and Ohio Rivers. Of the samples collected, approximately 86 percent conformed to the Drinking Water Standards of the Treasury Department.

Table 3 gives the status of the inspection work carried on during the year:

TABLE 3.—*Number of vessels on active status and type of certification of drinking water, in each of the interstate sanitary districts during the calendar year 1934*

District	Vessels on active status	Percentage of total vessels in district	Type of drinking water certification [1]				Percentage of district vessels certified	Percentage of total vessels certified
			Permanent	Temporary	Not approved	Total		
1	710	40.6	44	315	0	359	50.6	20.5
2	97	5.5	78	5	0	83	85.6	4.7
3	402	23.0	353	49	0	402	100.0	23.0
4	146	8.3	105	14	0	123	84.2	7.0
5 and 6	395	22.6	316	21	2	339	85.8	19.4
Total	1,750		896	404	6	1,306		74.6

[1] Only the latest certificate issued on a vessel was counted in case that vessel was both temporarily and permanently certified during the year.

Twenty-four cases of typhoid fever were reported among crews and passengers on vessels during the year. Very few cases occurred on vessels coming under the Interstate Quarantine Regulations, and in no case was the water supply implicated. For the second consecutive year no case of typhoid occurred on commercial vessels amenable to the Interstate Quarantine Regulations operating on the Great Lakes.

RAILWAY SANITATION

One hundred and fifty-four inspections of coachyards, terminals, and watering points and 250 inspections of dining cars and commissaries were made during the year. Plans were perfected for a more careful check on sources of milk supply and shellfish used on dining cars. Excellent cooperation was obtained from the railroad officials in this work.

SHELLFISH SANITATION

As in the past, assistance was rendered to the several shellfish-producing States in connection with their sanitary-control work. A major study of a shellfish-growing area in which the Public Health Service cooperated was carried on by the State of New Jersey in Raritan Bay and adjacent waters.

Information obtained in the study of the pollution of the Hampton Roads (Va.) area furnished valuable information for the Virginia State Department of Health relative to the sanitary conditions of shellfish-growing areas. Following the completion of the survey, the use of one large area was restricted.

The publication and distribution of the list of shellfish dealers certified by the producing States has continued. The publication of this list of certified dealers is of great importance in maintaining proper sanitary control within the States, since the maintenance of markets by shippers is largely dependent upon the appearance of their names on this list. During the year, 1,949 certificates issued by approved producing States were listed. Sixteen growing areas and 690

shucking and packing plants were inspected in connection with surveys to determine the efficiency of State control.

Reciprocity with Canada

The inspection and certification of drinking and culinary water supplies used by interstate carriers, supervision of drinking-water supply systems on vessels operating in the Great Lakes and border waters, the certification of international shellfish shippers and inspection of dining cars operating internationally, with particular reference to milk supplies, were continued through reciprocity with the Department of Pensions and National Health of Canada. Sixty-five United States water supplies used by Canadian carriers were inspected and certified. The Canadian authorities were supplied with 10 reports on United States supplies used by United States carriers crossing the international line. Reports were also given the Canadian authorities on sources of milk supplies for dining cars operating internationally.

Copies of all certificates issued by shellfish shippers by producing States, approved by the Public Health Service, were supplied to Canadian authorities, and they in turn furnished 56 certificates on Canadian shippers desiring to ship to the United States.

Cooperative Work with States Relative to Stream Sanitation

A considerable portion of the time of the Office of Stream Sanitation was devoted to the completion of field work connected with the study of the pollution of the lower part of Chesapeake Bay and the preparation of a report on this study. This work was financed through a grant of $25,000 from the Public Works Administration, made at the request of the Chesapeake Bay Authority. The State Department of Health of Virginia cooperated in the field work.

Cooperative assistance was also given to the State health departments of Minnesota and Tennessee in connection with stream-pollution problems.

Statistical Compilations

In table 4 is shown the time expended by the field personnel of the engineering section and the type of work performed for various Federal agencies during the fiscal year 1935.

Table 4.—*Distribution of time, in days, and type of work performed by the field personnel under the engineering section (exclusive of engineering personnel employed on Public Works Administration projects) during the fiscal year 1935*

	Days
Interstate quarantine:	
Office	1,401
Field:	
Water	696
Shellfish	256
National Park Service:	
Office	498
Field	247
Office of Indian Affairs:	
Office	300
Field	220
Chesapeake Bay study:	
Office	353
Field	54
Tennessee Valley Authority:	
Field	253
Other agencies:	
Office	120
Field	142
Technical meetings, Conferences, Committee meetings	74
Leave	255
Total days	4,869

Table 5 summarizes the activities involving supervision of water supplies, railroad sanitation, shellfish sanitation, and miscellaneous cooperative services with governmental agencies.

TABLE 5.—*Summary of activities involving supervision of water supplies of vessels, railroad sanitation, shellfish sanitation, and miscellaneous cooperation with governmental agencies during the fiscal year 1935*

A. VESSEL WATER-SUPPLY SUPERVISION

	Number
First inspections:	
Passenger	76
Freight	147
Water boats	8
Reinspections:	
Passenger	230
Freight	388
Water boats	17
Certificates issued:	
Regular, favorable	906
Regular, not approved	7
Temporary, favorable	690
Plans for vessel water systems examined:	
Approval granted	3
Approval withheld	3
Major conferences:	
With shipping officials	52
With others	10
Water examinations made:	
U. S. Public Health Service laboratories	1
Other laboratories	1,162
Typhoid-fever cases reported:	
U. S. Public Health Service hospitals	24
U. S. Public Health Service quarantine stations	0
Health departments	0

B. RAILROAD SANITATION SUPERVISION

	Number
Inspections:	
Sources of water supply	86
Coachyards	58
Terminals	33
Watering points	63
Dining cars	227
Commissaries	23
Certificates:	
Data reports reviewed	1,743
Certificates prepared	3,690
Water examinations:	
U. S. Public Health Service laboratories	79
Other laboratories	651
Major conferences:	
With railroad officials	40
With others	54

C. SHELLFISH SANITATION SUPERVISION

	Number
Inspections:	
Areas	16
Plants	690
State Certificates:	
Approved	1,949
Not approved	11
Approval withdrawn	0
Canceled	196
Laboratory examinations:	
U. S. Public Health Service laboratories	0
Other laboratories	1,224
Conferences	83

D. MISCELLANEOUS COOPERATION WITH GOVERNMENTAL AGENCIES

	Number
Public Health Service (other divisions):	
Surveys	2
Conferences	17
National Park Service:	
Surveys	89
Conferences	85
Water examinations	537
Office of Indian Affairs:	
Surveys	126
Office of Indian Affairs—Contd.	
Conferences	45
Water examinations	76
Bureau of Prisons:	
Surveys	4
Conferences	5
Others:	
Surveys	66
Conferences	8

Rural Health Work

At the end of the fiscal year 1933, as a result of reduction of the appropriation for Studies and Demonstrations in Rural Sanitation from $300,000 to $25,000, all Federal aid to State and local health organizations had to be withdrawn. The Rockefeller Foundation likewise reduced its contribution to local health units and prepared to retire as soon as possible from this field of activity. At the same time, on account of the failure of local sources of revenue, the appropriating bodies in many of the counties were obliged to make drastic reductions in the allocations to their health departments, with the result that many of the local organizations had to be abandoned and a considerable proportion of the remainder were rendered relatively ineffective.

In view of the threatened break-down of these local health services considered valuable as an aid in the relief of distress among the unemployed in the rural areas, the Federal Emergency Relief Administration agreed to allot to the Public Health Service the sum of $1,000,000 for rural health work, on the ground that the added health services to the poor made possible through the grant would more than pay for the cost by preventing illness that might result in a much larger outlay for medical relief at the expense of the Federal Government. This grant of $1,000,000 from relief funds to the Public Health Service for rural health work was approved by the General Counsel of the Treasury Department, the Office of the Attorney General, and the Comptroller General.

It was believed that, since the fund was not large enough to go very far toward providing health service for the whole rural area of the country, it could be used to best advantage chiefly for restoring to efficiency the existing health units, where trained medical health officers already were available for supervising the work.

The $1,000,000 was allotted to the Public Health Service in October 1934, and cooperation was renewed in a number of counties effective November 1. Complete organization was accomplished about January 1, 1935.

Invitations were extended to all of the State health departments to participate on a matching basis. Allocations were made to 31 States and the Territory of Puerto Rico, covering 28 State health department projects for promotion and supervision of local health units and 356 county or district projects.

Additional requests were received after the fund had been completely allocated for many counties that could not be given assistance. Of the previously existing units, 274 were not reached, preference having been given to the organizations where the local health officers could readily meet accepted standards for training. In view of the comparatively small sum available, no attempt whatever was made to extend aid to cities, many of which need aid as badly as the rural areas.

At the close of the calendar year 1933 there were 530 county health units in operation. With the aid of the special fund referred to above, by means of which 400 projects were set up in 34 States, there was a net increase of 10 units, making 540 in operation at the end of the year 1934. Incidentally 1,315 individuals were accorded em-

ployment in various capacities. The distribution of these health organizations by States is shown in the following table:

State	Number of units	State	Number of units	State	Number of units
Alabama	50	Louisiana	32	Ohio	38
Arizona	4	Maine	5	Oklahoma	1
Arkansas	19	Maryland	23	Oregon	7
California	15	Massachusetts	3	South Carolina	23
Connecticut	2	Michigan	32	Tennessee	39
Delaware	3	Minnesota	1	Texas	8
Florida	2	Mississippi	25	Utah	2
Georgia	30	Missouri	8	Virginia	17
Illinois	1	Montana	4	Washington	8
Iowa	1	New Mexico	6	West Virginia	13
Kansas	3	New York	5		
Kentucky	70	North Carolina	41	Total	540

Cooperation on Emergency Relief Administration Work-Relief Projects

Continuing the cooperative activities carried on with the Civil Works Administration and the State health departments during the preceding year, the Public Health Service gave its assistance in the conduct of two projects which afforded employment of Emergency Relief Administration beneficiaries and at the same time aided in safeguarding the health of the people in certain communities.

One of these projects dealt with an intensive malaria-control drainage program in 16 States where malaria has prevailed most extensively. Another was the construction of sanitary privies in small towns and villages or in the unsewered districts of large cities.

In order that these projects might have proper technical supervision the Public Health Service was charged with their guidance, special allotments being made for the employment of additional personnel as well as necessary traveling and incidental expenses.

All activities undertaken under allotments from the Federal Emergency Relief Administration were conducted in cooperation with State departments of health, the health officers being made agents of the Public Health Service for the time being.

Arrangements for the inauguration of similar projects under the Works Progress Administration program were being worked out at the close of the year.

Works Progress Administration project applications for sealing abandoned mines for the purpose of reducing acid discharges to the streams as a protection to public water supplies were submitted for eight States.

Malaria Control

Although the death rate from malaria is not high in comparison with the rates from other diseases, in a number of States it exceeds the death rates from typhoid fever. Moreover, the high morbidity rate makes malaria a major public-health problem, particularly in the Southern States. Therefore the control measures were concentrated, especially where the effects of the infection were particularly noticeable among the people on farms and plantations and in industries.

The plan followed was essentially the same as that in operation under the Civil Works Administration last year. However, with a greatly reduced supervisory field force, accurate reports of achievements were more difficult to obtain. Therefore, the number of miles of average outlet ditches cut in malarious regions can only be estimated. It is also necessary to estimate the number of men employed. Although the work was better planned, the accomplishment per man-hour of labor was not as great as under the Civil Works program, for labor was paid at a much lower rate and individual laborers did not work continuously.

In the 16 States comprising the malarious regions of the United States the average daily number of men employed during the past year was approximately 40,000. It is estimated that about 8,000 miles of average-sized outlet ditches were dug, the total to date under the malaria control of the Public Health Service, in cooperation with the relief agencies, being 16,000 miles.

Under this program a blood index, comprising approximately 150,000 specimens, was taken. The examination of these blood films has been completed, and a brief analysis of the findings will be found under the report of the Division of Scientific Research. While this index was taken before the malaria season started, it was found that the average endemic infection rate was approximately 5 percent.

COMMUNITY SANITATION PROJECT

This project had to do with the construction of sanitary privies. Experience gained during the preceding year with the community sanitation project showed this to be a profitable means of employing semiskilled and ordinary labor and, at the same time, performing a service of value to the whole population of rural and semi-rural communities.

The work was carried on in 30 States, the number of persons employed during the peak of operations being 2,835. Following plans that were previously found to be practicable, each State program was set up under and administered through the State department of health. The supervisory personnel consisted of a State director in general charge of the entire field program, district supervisors having responsibility for the work in a group of counties, and a county supervisor for each county. This group promoted the local adoption of the program, interested individual house owners in the project, and trained as well as supervised the labor engaged in construction. Wherever materials were furnished by property owners or by public agencies, the necessary labor was assigned for construction purposes. For the most part, the work was confined to unsewered towns and villages or the unsewered areas of larger communities. The records show that 254,359 sanitary privies and 4,618 septic tanks were built during the year under this program.

It is believed that the communities in which the sanitation project has been operative should eventually benefit to a marked extent in the reduction in the prevalence of excreta-borne diseases and in the introduction of a higher standard of sanitation which will extend and improve public-health facilities generally.

Cooperation with Other Federal Agencies

ASSISTANCE TO FEDERAL EMERGENCY RELIEF ADMINISTRATION IN MEDICAL RELIEF ACTIVITIES

Beginning October 1, 1934, a representative of the Public Health Service was detailed to assist the Federal Emergency Relief Administration with the field supervision of the medical relief measures of this agency and to act as consultant to the several divisions of the Administration on matters pertaining to health. Later an additional officer was provided and technical advice of various specialists from the Public Health Service was made available.

An outbreak of meningitis in transient camps made it necessary to recommend specific measures which were apparently helpful in preventing further serious outbreaks of this disease. Various other services were rendered by the Public Health Service to the Federal Emergency Relief Administration in connection with medical care. Among these may be mentioned advice and supervisory assistance in hygienic, sanitary, and nutritional matters, coordination of Emergency Relief Administration nursing programs, and elimination of health hazards among employees engaged in potentially dangerous occupations.

COOPERATIVE PUBLIC HEALTH ENGINEERING ACTIVITIES

Cooperative public-health engineering work with other divisions of the Public Health Service and with Federal agencies has occupied approximately 45 percent of the time of the field engineers, equalling 1934 engineer days. Of this time, 1,265 days, or 26 percent, was devoted to work for the National Park Service and the Office of Indian Affairs.

National Resources Board.—At the request of the Water Resources Section of the National Resources Board approximately 3 months' time was devoted to the collection of data relative to pollution of water and the preparation of a report on this subject. At the request of the National Resources Board, applications for projects having to do with studies of stream pollution were prepared and submitted to the proper authorities for consideration as Works Progress Administration projects under the Emergency Relief Appropriation Act of 1935. An engineer officer of the Public Health Service was designated as a member of a special advisory committee on water pollution to the Water Resources Section.

Tennessee Valley Authority.—During the year the Office of Stream Sanitation cooperated with the Tennessee Valley Authority relative to stream pollution problems.

National Park Service, Interior Department.—Cooperative work with the National Park Service required much of the time of the engineers. In the eastern division of the Park Service there are 54 reservations of all kinds, located in 16 States and the District of Columbia. Surveys and investigations were made in 21 areas, in 18 of which studies were made of, and recommendations and plans prepared for, water supply and sewage treatment. In the National Capital parks, swimming pools were inspected at routine intervals and samples of water collected and examined. The tourist camp in Potomac Park was inspected periodically. The cooperative work

also included the investigation of water supplies under the jurisdiction of the Park Service, inspection of restaurants and cafeterias, and a study of the pollution of Roaches Run. The work also included an inspection of several Federal buildings in the District of Columbia.

In the western division, surveys and investigations were made in 17 of the 19 national parks and 13 of the 47 national monuments. Plans for 16 sewage-disposal plants, 4 water-treatment plants, and 2 garbage incinerators were prepared, and 144 plans for projects involving sanitary facilities were reviewed. The district engineer acted as chairman of the building code committee, which prepared a revised code during the fiscal year, and as a member of a committee to make recommendations for types of cabins to be built in the national parks.

At the request of the regional director, Emergency Conservation Work, State Parks Division, the district engineer made a survey of 7 State parks under development in Texas.

Office of Indian Affairs, Interior Department.—During the year 126 surveys of the Indian reservations and schools and 76 examinations of water supplies were made and 45 conferences with officials relative to sanitation and sanitary projects were held. Plans and specifications for 66 sewer systems and sewage-treatment plants and 5 water-supply systems were prepared during the year. Several projects inaugurated the preceding year under public works allotments were completed.

Bureau of Prisons, Department of Justice.—Inspections were made and advice was given relative to sanitation, water supplies, and sewage treatment of the Detention Farm at La Tuna, Tex., and the Penitentiary at McNeil Island, Wash.

Bureau of Agricultural Engineering, Department of Agriculture.—The designs for the sewage treatment plant at Beltsville, Md., were completed early in the year.

Procurement Division, Treasury Department.—Investigations at sites for water supplies and sewage disposal were made at 4 border customs inspection stations. Advice relative to sanitation and improvement in sewage-disposal plants was given following inspections at 4 border inspection stations.

Advice was given regarding the private water supply of one post-office building.

Forest Service, Department of Agriculture.—Advice was given to regional offices of the Forest Service relative to sanitation and particularly on protection of water supplies for small groups of workers and camps.

Lighthouse Service, Department of Commerce.—An inspection was made of water-supply facilities at 18 light stations in the eleventh lighthouse district, including a tour of inspection with the senior engineer of the district. Arrangements have been made effecting the cooperation with 3 State and 2 city health departments in making chemical analyses and bacteriological examinations of water supplies.

Public Health Service.—A survey of milk-pasteurization plants in New Orleans was made at the request of the Hospital Division. Some assistance was given to Medical Director L. L. Lumsden, at New Orleans, in the preparation of maps, charts, and graphs for use in connection with a tuberculosis survey.

United States Army.—Advice was given, when requested, relative to sanitary problems at Civilian Conservation Corps camps. At the request of the Lake Survey Office, a complete survey was made of the U. S. S. *Peary*.

Coast Guard, Treasury Department.—Sanitary inspections were made of the Coast Guard stations in the seventh district, and recommendations were prepared concerning water-supply improvements at the Coast Guard Depot, Curtis Bay, Md.

Tennessee Valley Authority.—An engineer officer, assigned at the request of the Tennessee Valley Authority to organize a public-health engineering program included in Tennessee Valley Authority activities in the Muscle Shoals (Ala.) area, was on this duty the greater part of the year.

District of Columbia.—At the request of the sewer department a study was made of the biochemical oxygen demand of sewage discharged into the Potomac River.

About June 1 the Public Health Service assumed supervision of mosquito-control work in the District after a lapse of 2 years.

Surveys of Local Health Organizations

In response to requests from State and local health authorities, the Public Health Service made surveys of local health organizations in St. Louis County, Mo., Phoenix, Ariz., and San Antonio, Tex. Appropriate reports, with recommendations as to suggested improvements, were filed with the State and local authorities.

Conference of the Surgeon General With the State and Territorial Health Officers

The Annual Conference of the State and Territorial Health Officers with the Surgeon General of the Public Health Service was held June 17, 18, and 19. In anticipation of the enactment of the social-security bill before the end of the calendar year, the entire time was given to discussion of the proposed program to be carried out under the provisions of the bill. Recommendations were presented to the Surgeon General with respect to the proposed allotment of funds to the States and the regulations governing submission of plans and payments from allotments.

The following States were represented:

Alabama	Indiana	Montana	South Carolina
Arkansas	Iowa	New Hampshire	Tennessee
California	Kansas	New Jersey	Texas
Colorado	Kentucky	New Mexico	Utah
Connecticut	Louisiana	New York	Vermont
Delaware	Maine	North Carolina	Virginia
District of Columbia	Maryland	North Dakota	Washington
Florida	Massachusetts	Ohio	West Virginia
Georgia	Michigan	Oklahoma	Wisconsin
Idaho	Minnesota	Oregon	Wyoming
Illinois	Mississippi	Pennsylvania	
	Missouri	Rhode Island	

DIVISION OF FOREIGN AND INSULAR QUARANTINE AND IMMIGRATION

Asst. Surg. Gen. F. A. CARMELIA in charge

During the fiscal year 1935 the various quarantinable diseases continued to prevail in many parts of the world. While cholera was confined to Asia and the adjacent islands, its incidence in India was higher than it was during the preceding fiscal year. Three cases of cholera were reported near Manila, Philippine Islands, in June 1935, and a number of cases were discovered on vessels. Plague was prevalent in many localities. Reservoirs of plague infection among rodents were reported as being present in California, Oregon, Hawaii, the Union of South Africa, and in a number of ports. Two cases of human plague occurred on the Island of Hawaii, Hawaii Territory—one in October 1934 and one in March 1935. Yellow fever appeared in Colombia and in Brazil in the States of Amazonas, Bahia, Ceara, Goyaz, Maranhao, Mato Grosso, Minas Geraes, Para, and Sao Paulo. In Africa, yellow fever was present in the Anglo-Egyptian Sudan, Middle Congo, Dahomey, Gambia, Gold Coast, French Guinea, Ivory Coast, Niger Territory, Nigeria, Sierra Leone, and French Togoland. Typhus fever continued to exist in many countries. The virulent type of this disease is rare in the United States, but it causes many deaths in Mexico and in Chile and some other South American countries. Smallpox was wide-spread during the year. In England the incidence of smallpox decreased, and few cases were reported in most European countries. The disease caused 59,000 deaths in British India during the calendar year 1934, however, and cases were reported in ports in all of the grand divisions of the world except Australia.

There was some increase in the number of vessels arriving at ports in the United States during the past year as compared with the number which arrived during the preceding year. A total of 15,094 maritime vessels, carrying 1,878,617 persons, was accorded inspection at United States ports by medical officers of the Public Health Service prior to entry in order to assure freedom from any of the quarantinable diseases. Because of the continued cooperation of shipping interests in rendering ships ratproof, however, and owing to the increased uniformity and better coordination of quarantine procedures applied to international commerce as a result of increasingly universal application of the International Sanitary Convention of Paris, 1926, the number of necessary fumigations on arriving ships continued to decrease. Only 1,147 of the arriving ships were required to undergo fumigation. Examinations for plague infection were made of 4,207 of the 5,951 rats retrieved following fumigation. During the year, 2,388 vessels from foreign countries presented international standard certificates of deratization of which only 128 were not accepted, and 2,262 vessels presented foreign certifi-

cates of deratization exemption, of which only 131 were refused. Quarantine officers at United States ports issued international standard certificates of deratization exemption to 1,886 vessels.

In view of the nonavailability of medical officers of the Public Health Service for duty at all airports in the United States which have been officially designated as airports of entry, only 2,636 airplanes, carrying 30,249 persons, of whom 1,991 were aliens, of a total of 4,081 arriving planes, carrying 34,135 persons, were accorded the quarantine and immigration inspections required by law.

The new airport of the Pacific Alaska Airways, Inc., at Juneau, Alaska, was designated as an airport of entry for the landing of aircraft coming from foreign countries, as was also the Weeks Municipal Airfield at Fairbanks, Alaska. Temporary permission was granted two air lines affiliated with the Pan American Airways to land their aircraft at the Grand Central Air Terminal at Glendale, Calif., during the year 1935, in connection with air transportation service between Mexico City and Los Angeles. The Public Health Service, however, was unable to concur in the recommendation made for the designation of the airport at Fairbanks, Alaska, because no medical officer of the Service was on duty at Fairbanks and available funds would not permit the appointment of a medical officer to conduct the required quarantine inspection of arriving planes and the medical examination of crews and passengers for immigration purposes.

There occurred no instance of the introduction of any of the quarantinable diseases into the United States during the fiscal year. One case of smallpox and one suspect discovered among the steerage passengers of a vessel which arrived at San Francisco were removed, with all contact passengers, to the quarantine station and properly treated. No detentions of vessels were made because of the presence on board of quarantinable diseases. During the year 65,073 persons were vaccinated against smallpox, and 69 persons were vaccinated against cholera.

It was necessary for the Department to assess, during the year, fines aggregating only $215 for violations of the quarantine laws of the United States by masters of vessels coming from foreign ports.

The systematic studies which have been carried on by the Public Health Service for some time past in an effort to improve the efficiency of ship fumigations were continued throughout the year. Experiments were also conducted to develop a fumigation method for the destruction of mosquitoes on airplanes. From these latter studies, which are still in progress, it appears at present that fumigation with pyrethrum extract while airplanes are in flight is feasible and reasonably effective.

During the year there was completed the rehabilitation of the Charleston (S. C.) quarantine station; the rehabilitation of the Pensacola (Fla.) quarantine station; the construction of one single attendant's quarters and mess building at the San Francisco (Calif.) quarantine station; the construction of one new senior medical officer's quarters at the San Diego (Calif.) quarantine station; the construction of the nucleus of a new quarantine station at Los Angeles, Calif.; and the construction of a new quarantine station at Port Townsend, Wash.

Construction of floating equipment during the year included a 100-foot, wrought-iron, Diesel electric vessel designated the *W. H. Welch* for the New York quarantine station; two 70-foot, wrought-iron, Diesel-propelled vessels, the *R. D. Murray* and *P. H. Bailhache*, for the Fort Monroe (Va.) and Port Townsend (Wash.) quarantine stations, respectively; 8 wooden, Diesel-propelled 40-foot launches, designated as *Q–1*, *Q–2*, *Q–8*, *Q–12*, *Q–21*, *Q–22*, *Q–23*, and *Q–24*, and 1 wrought-iron, Diesel-propelled, 40-foot launch, the *Q–27*, and the reconstruction and repowering of the Diesel launches *Donald Currie* at Astoria, Oreg., and *H. A. Stansfield* at Honolulu, Hawaii.

On April 1, 1935, the Reedy Island quarantine station was opened as a boarding and inspection station for all vessels desiring to undergo quarantine inspection there between the hours of sunrise and sunset. The principal reason for opening this station, however, was to facilitate the inspection of vessels bound for ports south of Marcus Hook, Pa., which formerly were required to go beyond their destination to the Marcus Hook quarantine station for quarantine inspection and any necessary treatment.

The International Sanitary Convention for Aerial Navigation was opened for signature at The Hague on April 12, 1933, and was signed on behalf of the United States on April 6, 1934. In conformity with articles 63, 64, and 65, the convention becomes effective between adhering countries on August 1, 1935, 120 days following the deposit with the Government of the Netherlands of the first 10 notifications of ratification, namely, those of Australia, Egypt, the United Kingdom of Great Britain and Northern Ireland, Morocco, Monaco, the Netherlands, Rumania, Syria and Lebanon, and Tunis. The convention was ratified by the United States on June 13, 1935, and becomes effective for the United States on November 22, 1935. The convention has also been ratified by Germany and adhered to by Bolivia, Brazil, Chile, Iraq, and Sudan. The Ninth Pan American Sanitary Conference of Directors of Health, meeting in Buenos Aires in November 1934 adopted a formal resolution recommending the adherence to and ratification of this convention by Pan American governments. The United States especially has a vital, direct interest in this convention, owing to aerial intercourse between extensive areas in South America, particularly in Brazil, which are endemic foci of yellow fever infection, and the highly infectible area and largely nonimmune population in our Southern States and Puerto Rico and the Virgin Islands. The Panama Canal Zone is particularly exposed to yellow fever in nearby Colombia. Should the infection spread to other nearby countries, especially in the Caribbean or in Central America, the menace would be considerably increased. Similarly on the Pacific coast the impending establishment of aerial transport across the Pacific, linking up with airlines already established in the Orient from Shanghai and interior of China via Manila to the East Indies and Straits Settlements, exposes our Pacific coast as well as Hawaii and the Philippine Islands to infection, particularly with cholera and smallpox, from endemic and epidemic foci of quarantinable diseases in the Orient. Furthermore, should India and the Orient become infected with yellow fever from infected areas in Africa, either directly or through infection of intermediate countries, a very real menace of infection of our highly infectible Pacific pos-

sessions with yellow fever would exist. This convention, in addition to its international sanitary importance, also presents other important aspects in that it protects aerial transportation from the imposition by foreign countries of unnecessary quarantine restriction with its incidental delays and expense which otherwise might continue on occasion to retard and harass the commercial development of aerial intercourse.

The Quarantine Commission of the International Office of Public Health has reported the conclusion of international regional arrangements relating to the exemption from consular visa and the abolition of bills of health, the texts of which were finally prepared following the deliberations of the Permanent Committee of the Office in May 1934. These agreements were signed at Paris on December 22, 1934. The Commission states that it sees in this action an expression of the intentions of the various governments to bring their sanitary regulations, as far as is compatible with the conditions peculiar to each country, into conformity with the development of international communication. It is anticipated by the Commission that the delegates of countries which are not yet participants in these new agreements will endeavor to obtain the adhesion of their governments. The Public Health Service, however, is definitely opposed to the abolition of bills of health, because the American bill of health is designed not only to set forth important details respecting the sanitary conditions prevailing in the port of issuance and contiguous territory but, more importantly, includes data respecting the sanitary status of passengers or cargo taken thereat, data of correlative sanitary importance regarding the disposition and conduct of the vessel while in that port, and other similar pertinent data desiried for the information of the quarantine officer at the United States port of arrival. The quarantine treatment accorded vessels arriving at United States ports from foreign ports is based in no small degree upon the evaluation of the sanitary significance of the data thus presented. The interchange of sanitary information regarding the prevalence of disease in ports through the International Office of Public Health at Paris under the provisions of the International Sanitary Convention supplies but a small part of the information desired and now supplied to our quarantine officers through the medium of American bills of health. The information contained in bills of health issued or required by certain European nations is in most instances confined practically to a notation respecting the mere presence or absence of quarantinable disease in the port of issuance. It is appreciated that the interchange of sanitary information provided for under the terms of the International Sanitary Convention of Paris (revised 1926) might warrant the abolition of bills of health of such character, but the information contained in those bills of health cannot be compared with that contained in the American bill of health.

The Treasury Department and the Department of State for some time past have been urging the Panama Canal Zone Government to adopt quarantine and bill-of-health requirements exactly in conformity with such requirements as uniformly apply in all other United States ports. Until such requirements are adopted, the lack of uniformity, particularly as regards the requirements for bills of health

in foreign ports in the Caribbean area, may be expected to continue to be confusing.

At the suggestion of the Public Health Service, the consular regulations of the United States of America were amended so as to instruct American consular officers in foreign ports to authenticate at ports of issuance (or at nearby ports when American consular officers are not available at ports of issuance), without reference as to whether the vessel is destined to proceed at that time to a United States port, both foreign certificates of deratization and of deratization exemption issued under the provisions of article 28 of the International Sanitary Convention of Paris, 1926, in accordance with the provisions of the quarantine regulations of the United States requiring the authentication by American consular officers of either form of certificate when issued in foreign ports.

The Public Health Service has recommended favorable consideration on the part of the United States of a proposal submitted by the International Office of Public Health at Paris to add a fourth paragraph to section 6 of article 25 of the International Sanitary Convention signed at Paris on June 21, 1926, so as to permit the fumigation of a vessel under certain special circumstances before or during the unloading of its cargo and also to permit a repetition of such fumigation if necessary to complete deratization of the vessel. The Quarantine Commission of the International Office of Public Health has expressed great satisfaction at the manner in which this proposal has been received by a large number of countries.

At the request of the quarantine service of Habana, Cuba, the routine supervision by a medical officer of the Public Health Service of maritime fumigations performed by officers of the port quarantine service for deratization purposes on vessels at Habana destined to proceed to United States ports was discontinued. This action was taken, however, with the understanding that it would not prejudice the right of representatives of either service at any time in the future to observe such fumigations under the provisions of the informal agreement of 1931 between the quarantine service of Cuba and the United States Public Health Service regarding the reciprocal recognition of certificates of deratization issued by duly accredited quarantine officers of either service.

On October 1, 1934, the port of El Paso, Tex., was declared open for entry 24 hours daily. This arrangement was effected without the concurrence of the Public Health Service, which is able to maintain at El Paso, with existing appropriations, a force of employees sufficient to take care of daylight duty only, and the extension of the hours of entry beyond sunset makes it impossible for this Service to carry out the duties placed upon it by law requiring all arrivals from foreign territory to undergo quarantine inspection and such other quarantine procedures as may be found necessary.

Owing to lack of funds for the appointment of additional personnel, the Public Health Service was unable to concur in a recommendation for an extension of the hours during which the port of Ysleta, Tex., will be maintained open for entry on Sunday mornings and certain holidays.

Foreign Quarantine Division Circular No. 49, regarding the deratization requirements of the Service, was amended on March 5, 1935, to

provide that until further notice vessels coming from all River Plata ports, South America, except Montevideo, shall be regarded as potentially dangerous from the standpoint of transmitting plague infection and shall be required to undergo fumigation upon arrival at United States ports unless an acceptable certificate of deratization or deratization exemption dated subsequent to call at River Plata ports is presented. This requirement is exercised under the third reservation made by the Senate of the United States in connection with the ratification by it of the International Sanitary Convention of Paris (revised 1926).

Foreign Quarantine Division Circular No. 32, relating to the quarantine treatment of United States naval vessels at United States ports, was amended on August 23, 1934, to authorize medical officers in charge of quarantine stations to extend to vessels of the United States Coast Guard which carry a medical officer of the Public Health Service the same privileged quarantine treatment as is at present accorded vessels of the United States Navy.

Medical inspection of aliens.—During the fiscal year, 730,777 alien immigrants were examined and 696,562 alien seamen were inspected at United States ports of entry by medical officers of the United States Public Health Service for mental or physical defects or diseases in accordance with the provisions of the immigration laws, the examination of 258,939 alien seamen for immigration purposes having been performed at quarantine stations in conjunction with quarantine inspections. Twelve hundred and eighty-eight alien immigrants and 628 alien seamen were certified to be afflicted with one or more of the defects or diseases requiring exclusion, and 13,281 alien immigrants and 622 alien seamen were certified to be afflicted with a defect or disease which was likely to affect their ability to earn a living.

There were 35,978 applicants for immigration visas examined by medical officers in American consulates in foreign countries. Of this number 704 were reported by the medical officers to the American consuls as being afflicted with one or more of the defects or diseases requiring exclusion, and 6,188 were reported as afflicted with a disease or condition which was likely to affect their ability to earn a living. Only two of the aliens who had been given a preliminary medical examination in American consulates in foreign countries and to whom visas had been issued were certified upon arrival at a United States port as being afflicted with a defect or disease requiring deportation.

At the request of the Commissioner General of Immigration and Naturalization, medical officers of the Public Health Service were authorized, upon competent request of immigration officials, to make thorough physical examinations, in accordance with the standards set forth by the United States Civil Service Commission, of any nominees tentatively selected by immigration officials for appointment to the position of immigration patrol inspector, as authorized in Bureau Circular No. 34 for Civil Service applicants. The duties of immigration patrol inspector are very strenuous, and it is necessary for such inspectors to be in excellent physical condition in order properly to perform their duties.

Because of the high mortality rate from malaria now existing in the southern part of Texas, and in an effort to restrict the introduc-

tion of malaria into the United States from Mexican territory, medical officers of the Public Health Service on duty at Texas-Mexican border stations were directed, in cooperation with the State health officer of Texas, to give careful consideration to the possibility of malaria being present in any arriving person who is medically examined and, whenever malaria is suspected, to make a microscopic examination of the blood sufficient to establish the diagnosis of malaria in persons so afflicted. The medical officers were further instructed to certify properly to the immigration authorities all aliens thus found to have malaria, and to notify the Texas State Health Department of the name and destination of every case of malaria released for entry into the United States.

During the latter part of the year, the Public Health Service issued a pamphlet entitled, "Information Regarding Quarantine and Immigration for Ship Surgeons." This pamphlet outlines the basic objectives of the medical inspection of arriving aliens and is being distributed to ship surgeons in an effort to secure a higher degree of cooperation between them and the boarding officers of the Service.

Transactions at Maritime Quarantine Stations

Table 1.—*Summary of transactions at maritime stations for the fiscal year 1935*

Station	Vessels inspected	Vessels granted free pratique	Vessels fumigated		Passengers inspected	Crew inspected	Bills of health and port sanitary statements issued	Amount of bills rendered for quarantine services
			Cyanide	Sulphur				
Aberdeen, Wash	17	15	0	3	0	636	399	$190.00
Angel Island, Calif. (San Francisco)	425	279	37	0	25,490	36,762	0	10,554.47
Astoria, Oreg	43	38	7	0	24	1,704	689	597.10
Baltimore, Md	470	419	56	0	117	15,235	0	9,579.66
Beaufort, S. C	0	0	0	0	0	0	0	0
Boca Grande, Fla	9	9	0	0	6	306	0	190.00
Boston, Mass	838	689	76	0	29,312	56,608	0	18,038.47
Brunswick, Ga	5	5	0	0	0	191	0	45.00
Carrabelle, Fla	2	2	0	0	0	24	0	0
Charleston, S. C	144	141	8	0	187	5,243	0	1,605.92
Corpus Christi, Tex.[1]	28	28	0	0	22	861	560	270.00
Eastport, Maine	1	1	0	0	0	22	2	5.00
Eureka, Calif	3	3	0	0	0	122	22	30.00
Fall River, Mass	6	6	0	0	0	307	54	85.00
Fernandina, Fla. (Cumberland Sound)	2	2	0	0	2	12	25	10.00
Fort Monroe, Va	348	332	5	22	8,827	33,077	0	5,309.81
Freeport, Tex	7	7	0	0	1	212	0	70.00
Galveston, Tex	547	527	23	0	538	17,475	0	8,194.28
Georgetown, S. C	0	0	0	0	0	0	1	0
Gulfport, Miss	13	13	0	0	2	383	80	125.00
Jacksonville, Fla. (St. Johns River)	151	139	13	0	70	3,138	661	1,993.56
Key West, Fla	157	149	0	4	11,748	9,128	31	2,201.80
Lewes, Del. (Delaware Breakwater)	0	0	0	0	0	0	0	0
Marcus Hook, Pa	636	572	48	0	508	20,134	4,158	10,395.49
Marshfield, Oreg. (Coos Bay)	21	21	0	1	0	864	55	227.50
Miami, Fla	747	747	37	0	18,098	17,998	594	5,833.00
Mobile, Ala	156	129	3	1	88	5,132	0	1,983.00
New Bedford, Mass	3	3	0	0	5	20	15	15.00
New London, Conn	22	22	0	0	48	606	27	130.00
New Orleans, La	1,099	1,032	32	0	10,304	42,030	4,208	16,252.00
Newport, R. I	9	9	0	0	28	562	18	45.00
New York, N. Y.[2]	3,372	2,997	204	0	395,256	499,651	18,903	68,868.77
Ogdensburg, N. Y	0	0	0	0	0	0	0	0
Panama City, Fla	26	26	1	0	140	913	79	410.22
Pensacola, Fla	50	39	1	0	20	1,461	881	749.97
Plymouth, Mass	5	5	0	0	20	137	0	65.00
Port Everglades, Fla	18	18	0	0	2,826	3,381	0	267.00

[1] Includes Port Aransas, Tex.
[2] Includes Perth Amboy, N. J.

Station	Vessels inspected	Vessels granted free pratique	Vessels fumigated		Passengers inspected	Crew inspected	Bills of health and port sanitary statements issued	Amount of bills rendered for quarantine services
			Cyanide	Sulphur				
Portland, Maine	111	98	0	0	54	3,251	61	1,165.00
Portland, Oreg	14	14	15	0	28	619	2,432	1,924.98
Port San Luis, Calif. (San Luis Obispo)	53	53	0	0	0	1,889	0	1,085.00
Port Townsend, Wash.[1]	57	30	30	0	0	1,113	2,682	3,904.88
Providence, R. I	40	37	0	0	3	1,293	58	535.00
Sabine, Tex	321	251	11	0	73	10,848	0	3,259.12
San Diego, Calif. (Point Loma)	633	627	2	0	14,341	82,433	580	3,747.92
San Pedro, Calif	1,397	1,141	56	0	25,396	95,002	8,018	23,891.94
Savannah, Ga	83	82	14	0	64	2,412	0	1,523.51
Searsport, Maine	14	14	0	0	0	357	14	135.00
South Bend, Wash	28	28	0	1	1	1,125	64	290.00
Southport, N. C. (Cape Fear)	27	26	0	1	6	814	0	339.84
Tampa, Fla	254	213	22	0	534	5,586	588	2,496.83
Vineyard Haven, Mass	2	2	0	0	0	20	0	10.00
West Palm Beach, Fla	68	68	0	0	68	264	0	340.00
Total	12,482	11,108	701	33	544,255	981,361	45,959	208,986.04
Alaska:								
Ketchikan	0	0	0	0	0	0	0	0
Wrangell	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Hawaii:								
Ahukini	1	1	0	0	0	35	39	10.00
Hilo	9	9	0	0	209	781	205	71.00
Honolulu	186	185	18	0	38,465	46,905	827	3,953.92
Kahului	2	2	0	0	0	68	156	25.00
Port Allen	1	1	0	0	0	35	87	10.00
Lahaina	1	1	0	0	1	36	55	15.00
Mahukona	2	2	0	0	1	69	27	20.00
Total	202	201	18	0	38,676	47,929	1,396	4,104.92
Philippines:								
Cavite	4	4	0	0	8	876	1	0
Cebu	105	0	2	96	1,393	5,578	434	0
Davao	82	3	0	0	902	5,502	149	0
Iloilo	78	0	0	91	533	4,019	197	0
Jolo	23	0	0	0	385	817	41	0
Legaspi	32	1	0	0	8	1,393	90	0
Manila	1,037	196	43	112	72,752	100,291	1,318	0
Olongapo	0	0	0	0	0	0	0	0
Zamboanga	50	0	0	16	894	3,645	111	0
Total	1,411	204	45	315	76,875	122,121	2,341	0
Puerto Rico:								
Aguadilla	4	4	0	0	22	124	64	40.00
Arecibo	1	1	0	0	22	69	60	15.00
Arroyo	5	5	0	0	0	34	90	25.00
Central Aguirre	0	0	0	0	0	0	59	0
Fajardo	10	9	0	0	1	75	344	70.00
Guanica	44	44	0	1	298	771	69	307.50
Humacao	9	5	0	0	0	88	75	50.00
Mayaguez	43	43	0	0	204	1,703	202	310.00
Ponce	51	44	0	0	64	1,121	335	390.00
San Juan	466	415	13	0	9,618	27,933	713	6,227.12
Total	633	570	13	1	10,229	31,918	2,011	7,434.62
Virgin Islands:								
Christiansted	5	5	0	0	13	62	276	40.00
Frederiksted	52	52	0	0	3,227	3,891	94	808.00
St. Thomas	309	269	2	19	4,129	13,931	378	3,735.36
Total	366	326	2	19	7,369	17,884	748	4,583.36
Total, all stations	15,094	12,409	779	368	677,404	1,201,213	52,455	$225,108.94

[1] Includes all ports on Puget Sound.

TABLE 2.—*Statement of quarantine services rendered at maritime quarantine stations during the fiscal year 1935*

Station	Inspection services	Detention services	Special services	Fumigation services	Total charges
Aberdeen, Wash	$175.00	0	$10.00	$5.00	$190.00
Angel Island, Calif. (San Francisco)	5,659.00	$504.00	1,484.50	2,906.97	10,554.47
Astoria, Oreg	420.00	0	0	177.10	597.10
Baltimore, Md	4,855.00	0	1,030.00	3,694.66	9,579.66
Beaufort, S. C	0	0	0	0	0
Boca Grande, Fla	190.00	0	0	0	190.00
Boston, Mass	10,510.00	0	520.00	7,008.47	18,038.47
Brunswick, Ga	45.00	0	0	0	45.00
Carrabelle, Fla	0	0	0	0	0
Charleston, S. C	1,395.00	0	60.00	150.92	1,605.92
Corpus Christi, Tex.[1]	270.00	0	0	0	270.00
Eastport, Maine	5.00	0	0	0	5.00
Eureka, Calif	30.00	0	0	0	30.00
Fall River, Mass	55.00	0	30.00	0	85.00
Fernandina, Fla. (Cumberland Sound)	10.00	0	0	0	10.00
Fort Monroe, Va	3,926.00	0	275.00	1,108.81	5,309.81
Freeport, Tex	70.00	0	0	0	70.00
Galveston, Tex	5,708.45	0	1,315.00	1,170.83	8,194.28
Georgetown, S. C	0	0	0	0	0
Gulfport, Miss	125.00	0	0	0	125.00
Jacksonville, Fla. (St. Johns River)	1,250.00	0	120.00	623.56	1,993.56
Key West, Fla	2,141.00	0	30.00	30.80	2,201.80
Lewes, Del. (Delaware Breakwater)	0	0	0	0	0
Marcus Hook, Pa	6,815.00	0	780.00	2,800.49	10,395.49
Marshfield, Oreg. (Coos Bay)	200.00	0	20.00	7.50	227.50
Miami, Fla	5,648.00	0	0	185.00	5,833.00
Mobile, Ala	1,630.00	3.00	350.00	0	1,983.00
New Bedford, Mass	15.00	0	0	0	15.00
New London, Conn	130.00	0	0	0	130.00
New Orleans, La	12,263.00	0	1,690.00	2,299.00	16,252.00
Newport, R. I	45.00	0	0	0	45.00
New York, N. Y.[2]	45,375.00	0	7,155.00	16,338.77	68,868.77
Ogdensburg, N. Y	0	0	0	0	0
Panama City, Fla	285.00	0	120.00	5.22	410.22
Pensacola, Fla	520.00	0	150.00	79.97	749.97
Plymouth, Mass	65.00	0	0	0	65.00
Port Everglades, Fla	267.00	0	0	0	267.00
Portland, Maine	1,125.00	0	40.00	0	1,165.00
Portland, Oreg	140.00	0	320.00	1,464.98	1,924.98
Port San Luis, Calif (San Luis Obispo)	965.00	0	120.00	0	1,085.00
Port Townsend, Wash.[3]	685.00	0	415.00	2,804.88	3,904.88
Providence, R. I	465.00	0	70.00	0	535.00
Sabine, Tex	2,525.00	0	475.00	259.12	3,259.12
San Diego, Calif (Point Loma)	3,145.00	4.00	510.00	88.92	3,747.92
San Pedro, Calif	17,633.00	0	2,120.00	4,138.94	23,891.94
Savannah, Ga	815.00	0	60.00	648.51	1,523.51
Searsport, Maine	135.00	0	0	0	135.00
South Bend, Wash	285.00	0	5.00	0	290.00
Southport, N. C. (Cape Fear)	270.00	0	0	69.84	339.84
Tampa, Fla	1,771.73	0	300.00	425.10	2,496.83
Vineyard Haven, Mass	10.00	0	0	0	10.00
West Palm Beach, Fla	340.00	0	0	0	340.00
Total	140,407.18	511.00	19,574.50	48,493.36	208,986.04
Alaska:					
Ketchikan	0	0	0	0	0
Wrangell	0	0	0	0	0
Total	0	0	0	0	0
Hawaii:					
Ahukini	10.00	0	0	0	10.00
Hilo	71.00	0	0	0	71.00
Honolulu	3,921.00	0	10.00	22.92	3,953.92
Kahului	25.00	0	0	0	25.00
Port Allen	10.00	0	0	0	10.00
Lahaina	15.00	0	0	0	15.00
Mahukona	20.00	0	0	0	20.00
Total	4,072.00	0	10.00	22.92	4,104.92

[1] Includes Port Aransas, Tex.
[2] Includes Perth Amboy, N. J.
[3] Includes all ports on Puget Sound.

TABLE 2.—*Statement of quarantine services rendered at maritime quarantine stations during the fiscal year 1935*—Continued

Station	Inspection services	Detention services	Special services	Fumigation services	Total charges
Puerto Rico:					
Aguadilla	$40.00	0	0	0	$40.00
Arecibo	15.00	0	0	0	15.00
Arroyo	25.00	0	0	0	25.00
Central Aguirre	0	0	0	0	0
Fajardo	60.00	0	$10.00	0	70.00
Guanica	290.00	0	10.00	$7.50	307.50
Humacao	50.00	0	0	0	50.00
Mayaguez	310.00	0	0	0	310.00
Ponce	330.00	0	60.00	0	390 00
San Juan	5,585.00	0	250.00	392.12	6,227.12
Total	6,705.00	0	330.00	399.62	7,434.62
Virgin Islands:					
Christiansted	40.00	0	0	0	40.00
Frederiksted	808.00	0	0	0	808.00
St. Thomas	3,637.00	0	0	98.36	3,735.36
Total	4,485.00	0	0	98.36	4,583.36
Total, all stations	155,669.18	511.00	19,914.50	49,014.26	225,108.94

MEXICAN BORDER STATIONS

TABLE 3.—*Summary of quarantine transactions on the Mexican border for the fiscal year 1935*

Station	Number of persons from interior Mexico inspected	Number of local persons inspected	Total number of persons inspected	Total number of persons disinfested	Total number of persons passed without treatment	Total number of persons vaccinated	Total number of sick refused admission	Total pieces of baggage disinfected
Brownsville, Tex	1,499	954,178	955,677	0	955,444	233	0	0
Calexico, Calif	0	16,417	16,417	0	15,401	956	60	0
Columbus, N. Mex	163	1,035	1,198	0	977	221	0	0
Del Rio, Tex	232	87,965	88,197	337	87,447	576	0	154
Douglas, Ariz	115	1,445	1,560	0	1,277	232	51	0
Eagle Pass, Tex	14,018	545,579	559,597	5,788	552,286	1,523	0	5,971
El Paso, Tex.[1]	9,778	4,328,149	4,337,927	23,015	4,301,174	13,736	2	1,560
Hidalgo, Tex	2,068	264,193	266,261	19	264,573	1,665	4	2
Laredo, Tex.[2]	87,856	1,844,927	1,932,783	1,593	1,918,731	14,043	0	1,996
Naco, Ariz	30	2,956	2,986	0	2,495	491	0	0
Nogales, Ariz	5,448	7,457	12,905	0	12,495	410	0	0
Presidio, Tex	30	45,643	45,673	64	45,073	519	17	0
Rio Grande City, Tex	292	9,025	9,317	0	8,774	543	0	2
Roma, Tex	2,147	52,675	54,822	3	54,149	673	0	4
San Ysidro, Calif	2,682	6,756	9,438	0	8,345	1,093	0	0
Thayer (Mercedes), Tex	42	56,563	56,605	13	56,425	167	0	0
Zapata, Tex	328	9,495	9,823	0	8,310	1,513	0	0
Total	126,728	8,234,458	8,361,186	30,832	8,293,376	38,594	134	9,689

[1] Includes Fort Hancock, Guadalupe Gate, and Ysleta.
[2] Includes Minera and San Ygnacio.

TABLE 4.—*Summary of transactions at continental and insular stations for the fiscal year 1935*

Location	Name of airport	Distance in miles to nearest Public Health Service station	Date designated	Number of airplanes arriving from foreign ports	Number of airplanes inspected by Public Health Service	Number of persons arriving from foreign ports or places	Number of persons inspected by Public Health Service	Number of aliens inspected by Public Health Service	Number of aliens certified for disease
Ajo, Ariz.	Municipal Airport	6	Nov. 15, 1929	0	0	0	0	0	0
Akron, Ohio [1]	do.[2]		Apr. 8, 1929						
Albany, N. Y.	Municipal Field	10	Sept. 28, 1928	0	0	0	0	0	0
Bellingham, Wash.	Graham Airport [2]		Apr. 18, 1931	1	0	2	0	0	0
Brownsville, Tex.	Municipal Airport	5	Jan. 8, 1930	441	441	3,793	3,793	535	2
Buffalo, N. Y.	do		June 10, 1929	0	0	0	0	0	0
	Buffalo Marine Airport [2]		July 29, 1933	0	0	0	0	0	0
Burlington, Vt.[1]	Burlington Municipal Airport [2]		June 29, 1934						
Calexico, Calif.	Calexico Municipal Airport [2]		Jan. 10, 1933	0	0	0	0	0	0
Cape Vincent, N.Y.[1]	Cape Vincent Harbor [2]		Apr. 25, 1934						
Caribou, Maine [1]	Caribou Municipal Airport [2]		Oct. 31, 1932						
Cleveland, Ohio	Cleveland Municipal Airport [2]		Sept. 23, 1932	0	0	0	0	0	0
Crosby, N. Dak.[1]	Crosby Municipal Airport [2]		June 28, 1934						
Detroit, Mich.	Wayne County Airport	20	Feb. 10, 1931	94	0	173	0	0	0
	Detroit Municipal Airport [2]	10	June 19, 1931						
	Ford Airport [2]		Aug. 1, 1929						
Douglas, Ariz.	Douglas Airport [2]		Jan. 8, 1930	0	0	0	0	0	0
Duluth, Minn.	Duluth Municipal Airport [2]		Sept. 4, 1931	1	0	2	0	0	0
	Duluth Boat Club Seaplane Base [2]		do	0	0	0	0	0	0
Eagle Pass, Tex.	Eagle Pass Airport [2]	1½	Mar. 5, 1930	2	2	8	8	0	0
El Paso, Tex.	Municipal Airport	9	Aug. 23, 1932	190	190	1,131	1,131	419	9
Fairbanks, Alaska [1]	Weeks Municipal Airfield		Apr. 1, 1935						
Glendale, Calif.	Grand Central Air Terminal [3]			257	257	1,237	1,237	217	0
Great Falls, Mont.[1]	Great Falls Municipal Airport [2]		June 2, 1930						
Havre, Mont.	Havre Municipal Airport [2]		do	0	0	0	0	0	0
Juneau, Alaska	Juneau Airport [2]	8	June 18, 1930	0	0	0	0	0	0
Ketchikan, Alaska	Ketchikan Airport [2]		do	0	0	0	0	0	0
Key West, Fla.	Meacham Field	4	Dec. 20, 1927	8	8	16	16	0	0
Laredo, Tex.	Laredo Airdrome [2]	3½	Jan. 24, 1930	20	20	50	50	1	0
Malone, N. Y.	Malone Airport [2]		Apr. 18, 1930	2	0	4	0	0	0
Miami, Fla.	Pan American Field	14	Oct. 16, 1928	3	3	12	12	0	0
	Dinner Key Seaplane Base [2]	11	Mar. 7, 1930	961	961	18,999	18,999	301	19
	Viking Airport and Seaplane Base [2]	4	May 16, 1934	170	170	455	455	20	0
Nogales, Ariz.	Nogales Municipal Airport	7	June 27, 1929	115	115	217	217	16	0
Ogdensburg, N. Y.	Ogdensburg Harbor [2]		Mar. 1, 1932	1	0	2	0	0	0

[1] No medical officer of Public Health Service on duty.
[2] Temporary permission.

TABLE 4.—*Summary of transactions at continental and insular stations for the fiscal year 1935*—Continued

Location	Name of airport	Distance in miles to nearest Public Health Service station	Date designated	Number of airplanes arriving from foreign ports	Number of airplanes inspected by Public Health Service	Number of persons arriving from foreign ports or places	Number of persons inspected by Public Health Service	Number of aliens inspected by Public Health Service	Number of aliens certified for disease
Pembina, N. Dak.	Fort Pembina Airport [2]	5	Feb. 2, 1930	537	0	537	0	0	0
Plattsburg, N. Y.[1]	Mobodo Airport [2]		June 2, 1930						
Portal, N. Dak.	Portal Airport [2]		Jan. 8, 1930	0	0	0	0	0	0
Port Angeles, Wash.	Port Angeles Airport [2]	52	do	0	0	0	0	0	0
Port Townsend, Wash.	Port Townsend Airport [2]	6	June 18, 1930	0	0	0	0	0	0
Put in Bay, Ohio [1]	Put in Bay Airport [2]		Mar. 12, 1934						
Rouses Point, N. Y.	Rouses Point Seaplane Base [3]		July 14, 1932	0	0	0	0	0	0
St. Thomas, Virgin Islands	St. Thomas Airport [3]			52	52	630	630	0	0
San Diego, Calif.	San Diego Municipal Airport	6	Jan. 24, 1930	358	8	1,445	25	2	0
San Juan, P. R.	Isla Grande [2]		Jan. 19, 1929	246	246	3,107	3,107	427	1
Sault Ste. Marie, Mich.	Sault Ste. Marie Airport [2]		Aug. 4, 1933	0	0	0	0	0	0
Scobey, Mont.	Scobey Airport [2]		June 2, 1930	0	0	0	0	0	0
Seattle, Wash.	Boeing Municipal Air Field		Sept. 11, 1928	459	0	1,746	0	0	0
	Lake Union		Dec. 27, 1928						
Skagway, Alaska [1]	Skagway Municipal Airport [2]		Nov. 30, 1931						
	Skagway Seaplane Base [2]		do						
Spokane, Wash.[1]	Spokane Municipal Airport [2]		June 2, 1931						
Swanton, Vt.[1]	Missisquoi Airport [2]		July 18, 1930						
Tampa, Fla.	International Airport [2]	7	Dec. 1, 1933	64	64	399	399	41	0
Watertown, N. Y.[1]	Watertown Muncipal Airport [2]		June 2, 1930						
West Palm Beach, Fla.	Roosevelt Flying Service Base [3]		Mar. 10, 1931	99	99	170	170	12	0
Wrangell, Alaska	Wrangell Seaplane Base [2]		Nov. 30, 1931	0	0	0	0	0	0
Total				4,081	2,636	34,135	30,249	1,991	31

[1] No medical officer of Public Health Service on duty.
[2] Temporary permission.
[3] Authorized for use but not officially designated.

Canal Zone

TABLE 5.—*Quarantine activities of the government of the Canal Zone during the fiscal year 1935* [1]

Activities	Balboa	Cristobal	Total
Vessels boarded and passed	2,777	3,392	6,169
Vessels granted pratique by radio	31	148	179
Total number of vessels passed	2,808	3,540	6,348
Crew passed at quarantine	144,830	225,861	370,691
Crew passed by radio	10,541	41,355	51,896
Total number of crew passed	155,371	267,216	422,587
Passengers passed at quarantine	47,827	97,829	145,656
Passengers passed by radio	2,558	2,428	4,986
Total number of passengers passed	50,385	100,257	150,642
Supplementary sanitary inspections of vessels	562	3,112	3,674
Vessels fumigated with HCN gas	14	34	48
Box cars fumigated with HCN gas	92	43	135
Fumigation certificates issued to vessels	14	34	48
Deratization exemption certificates issued	5	15	20
Rodents recovered after fumigation	111	180	291
Airplanes inspected and passed	127	459	586
Crew of airplanes inspected and passed	473	1,440	1,913
Passengers of airplanes inspected and passed	679	1,643	2,322
Vessels detained in quarantine	0	0	0
Crew detained on board ship for quarantine	0	0	0

[1] Senior Surg. C. V. Akin, U. S. Public Health Service, detailed as chief quarantine officer.

Medical Inspection of Aliens

TABLE 6.—*Alien passengers and seamen inspected and certified at maritime ports in the United States and possessions during the fiscal year 1935*

Place	Number of alien passengers examined	Alien passengers certified [1]					Number of alien seamen examined	Alien seamen certified [1]				
		Class A		Class B	Class C	Total		Class A		Class B	Class C	Total
		I	II					I	II			
ATLANTIC COAST												
Baltimore, Md	54	0	0	0	0	0	10,097	3	45	17	4	69
Beaufort, S. C	0	0	0	0	0	0	0	0	0	0	0	0
Boston, Mass	5,123	2	6	139	12	159	51,917	1	31	212	43	287
Brunswick, Ga	0	0	0	0	0	0	191	0	0	0	0	0
Charleston, S. C	32	0	0	1	0	1	2,696	0	6	1	0	7
Fall River, Mass	0	0	0	0	0	0	70	0	0	0	0	0
Fernandina, Fla	0	0	0	0	0	0	0	0	0	0	0	0
Fort Monroe, Va.[2]	464	0	0	2	0	2	9,083	0	22	4	0	26
Georgetown, S. C	0	0	0	0	0	0	0	0	0	0	0	0
Gloucester, Mass	0	0	0	0	0	0	417	0	0	0	0	0
Jacksonville, Fla	53	0	0	0	0	0	1,629	1	7	0	0	8
Key West, Fla	5,160	2	0	46	2	50	1,140	0	2	0	0	2
Lewes, Del	0	0	0	0	0	0	0	0	0	0	0	0
Miami, Fla	7,287	13	0	28	1	42	8,941	0	0	0	0	0
New Bedford, Mass	1	1	0	0	0	1	12	0	0	0	1	1
New London, Conn	9	0	0	0	0	0	0	0	0	0	0	0
Newport, R. I	0	0	0	0	0	0	0	0	0	0	0	0
New York, N. Y. (Ellis Island)	130,980	29	38	5,887	16	5,970	394,524	1	139	6	0	146

[1] Class A-I: Aliens certified for idiocy, imbecility, feeble-mindedness, insanity, epilepsy, chronic alcoholism. Class A-II: Aliens certified for tuberculosis or other loathsome or dangerous contagious disease. Class B: Aliens certified for diseases or defects which affect ability to earn a living. Class C: Aliens certified for diseases or defects of less degree.

[2] Includes Norfolk, Va., and Newport News, Va.

TABLE 6.—*Alien passengers and seamen inspected and certified at maritime ports in the United States and possessions during the fiscal year 1935*—Continued

Place	Number of alien passengers examined	Alien passengers certified					Number of alien seamen examined	Alien seamen certified				
		Class A		Class B	Class C	Total		Class A		Class B	Class C	Total
		I	II					I	II			
ATLANTIC COAST—contd.												
Perth Amboy, N. J.	2	0	0	0	0	0	1,152	0	1	0	0	1
Philadelphia, Pa.	195	0	0	0	2	2	16,101	51	0	3	4	58
Plymouth, Mass.	0	0	0	0	0	0	83	0	0	0	0	0
Port Everglades, Fla.	522	0	0	0	0	0	1,041	0	0	0	0	0
Portland, Maine	55	0	0	0	0	0	3,251	0	9	0	0	9
Providence, R. I.	4	0	0	0	0	0	665	0	7	0	0	7
Savannah, Ga.	56	0	0	0	0	0	1,703	0	9	0	0	9
Searsport, Maine	0	0	0	0	0	0	357	0	0	0	0	0
Vineyard Haven, Mass.	0	0	0	0	0	0	7	0	0	0	0	0
Washington, N. C.	0	0	0	0	0	0	0	0	0	0	0	0
West Palm Beach, Fla.	24	0	0	0	0	0	89	0	0	0	0	0
Wilmington, N. C.	0	0	0	0	0	0	0	0	0	0	0	0
Total	150,021	47	44	6,103	33	6,227	505,166	57	278	243	52	630
GULF COAST												
Boca Grande, Fla.	2	0	0	0	0	0	125	0	0	0	0	0
Carrabelle, Fla.	0	0	0	0	0	0	24	0	0	0	0	0
Cedar Keys, Fla.	0	0	0	0	0	0	0	0	0	0	0	0
Corpus Christi, Tex.	7	0	0	0	0	0	454	0	0	0	0	0
Galveston, Tex.	42	0	0	1	0	1	11,213	0	0	0	0	0
Gulfport, Miss.	0	0	0	0	0	0	235	0	0	0	1	1
Mobile, Ala.	25	0	0	1	0	1	3,003	0	5	4	0	9
New Orleans, La.	3,035	9	1	14	6	30	23,366	3	52	18	18	91
Panama City, Fla.	38	0	0	0	0	0	84	0	0	0	0	0
Pensacola, Fla.	9	0	0	0	2	2	1,081	0	4	0	1	5
Port Aransas, Tex.	0	0	0	0	0	0	0	0	0	0	0	0
Port St. Joe, Fla.	0	0	0	0	0	0	0	0	0	0	0	0
Sabine, Tex.	13	0	0	0	0	0	7,923	1	4	0	0	5
Tampa, Fla.	316	0	0	1	0	1	2,785	0	12	2	0	14
Total	3,487	9	1	17	8	35	50,293	4	77	24	20	125
PACIFIC COAST												
Aberdeen, Wash.	0	0	0	0	0	0	636	0	0	0	0	0
Angel Island, Calif. (San Francisco)	7,167	0	3	124	40	167	1,648	0	32	2	0	34
Astoria, Oreg.	24	0	0	0	0	0	1,478	0	7	0	7	14
Eureka, Calif.	0	0	0	0	0	0	0	0	0	0	0	0
Fort Bragg, Calif.	0	0	0	0	0	0	0	0	0	0	0	0
Marshfield, Oreg. (Coos Bay)	0	0	0	0	0	0	864	0	0	0	0	0
Portland, Oreg.	26	3	0	0	0	3	646	0	2	0	0	2
San Diego, Calif.	882	2	4	5	0	11	5,956	1	0	1	0	2
San Luis Obispo, Calif.	0	0	0	0	0	0	266	0	0	0	0	0
San Pedro, Calif.	3,687	3	4	107	3	117	49,178	6	114	94	5	219
Santa Barbara, Calif.	0	0	0	0	0	0	0	0	0	0	0	0
Seattle, Wash.[3]	1,964	2	6	22	29	59	12,227	0	17	2	0	19
South Bend, Wash.	1	0	0	0	0	0	1,125	0	0	0	0	0
Total	13,751	10	17	258	72	357	74,024	7	172	99	12	290
INSULAR												
Alaska: Ketchikan	1	0	0	0	0	0	0	0	0	0	0	0
Hawaii: Honolulu	2,999	0	10	33	18	61	34,295	0	23	5	2	30
Philippines:												
Cebu	1	0	0	0	0	0	0	0	0	0	0	0
Davao	21	0	0	0	0	0	0	0	0	0	0	0
Iloilo	1	0	0	0	0	0	0	0	0	0	0	0
Jolo	33	0	0	0	0	0	0	0	0	0	0	0
Legaspi	1	0	0	0	0	0	0	0	0	0	0	0
Manila	20,477	0	68	25	0	93	95	0	0	0	0	0
Zamboanga	152	0	0	0	0	0	0	0	0	0	0	0
Total	20,686	0	68	25	0	93	95	0	0	0	0	0

[3] Includes all ports on Puget Sound.

TABLE 6.—*Alien passengers and seamen inspected and certified at maritime ports in the United States and possessions during the fiscal year 1935*—Continued

Place	Number of alien passengers examined	Alien passengers certified					Number of alien seamen examined	Alien seamen certified				
		Class A		Class B	Class C	Total		Class A		Class B	Class C	Total
		I	II					I	II			
Puerto Rico:												
Aguadilla	4	0	0	0	0	0	81	0	0	0	0	0
Arecibo	4	0	0	0	0	0	30	0	0	0	0	0
Arroyo	0	0	0	0	0	0	28	0	0	0	0	0
Central Aguirre (Jobos)	0	0	0	0	0	0	0	0	0	0	0	0
Fajardo	42	0	0	0	0	0	114	0	0	0	0	0
Guanica	56	0	0	0	0	0	469	0	0	0	0	0
Humacao	0	0	0	0	0	0	56	0	0	0	0	0
Mayaguez	89	0	0	0	0	0	548	0	0	0	0	0
Ponce	30	0	0	0	0	0	544	0	2	0	0	2
San Juan	5,686	0	0	6	1	7	14,526	0	0	1	0	1
Total	5,911	0	0	6	1	7	16,396	0	2	1	0	3
Total, all stations	196,856	66	140	6,442	132	6,780	680,269	68	552	372	86	1,078

TABLE 7.—*Aliens inspected and certified at international border stations during the fiscal year 1935*

Place	Number of persons making permanent entry examined	Number of persons making temporary entry examined	Other persons examined	Total number of persons examined	Aliens certified				
					Total	Class A		Class B	Class C
						I	II		
MEXICAN BORDER									
Ajo, Ariz	0	0	2,261	2,261	0	0	0	0	0
Brownsville, Tex	187	108	1,891	2,186	93	1	17	51	24
Calexico, Calif	258	54	16,120	16,432	73	9	40	1	23
Columbus, N. Mex	0	37	1,197	1,234	0	0	0	0	0
Del Rio, Tex	78	0	4,113	4,191	1	0	0	0	1
Douglas, Ariz	115	0	1,452	1,567	95	2	27	24	42
Eagle Pass, Tex	240	0	3,497	3,737	36	1	3	18	14
El Paso, Tex.[1]	302	8,413	18,065	26,780	1,977	71	200	1,515	191
Hidalgo, Tex	31	5	728	764	163	3	38	62	60
Laredo, Tex	24,252	1,051	14,564	39,867	302	7	28	265	2
Naco, Ariz	29	1	2,956	2,986	214	14	30	58	112
Nogales, Ariz	270	2,482	4,737	7,489	498	12	47	253	186
Presidio, Tex	2	17	549	568	135	0	16	45	74
Rio Grande City, Tex	27	0	520	547	29	0	13	10	6
Roma, Tex	2	0	145	147	42	0	2	20	20
San Ysidro, Calif	311	846	8,281	9,438	154	6	22	126	0
Thayer (Mercedes), Tex	0	0	117	117	19	1	3	7	8
Tucson, Ariz	0	0	306	306	80	21	51	3	5
Zapata, Tex	57	108	163	328	1	0	0	1	0
Total	26,161	13,122	81,662	120,945	3,912	148	537	2,459	768
CANADIAN BORDER									
Bellingham, Wash	0	0	0	0	0	0	0	0	0
Blaine, Wash	335	0	448	783	91	20	3	26	42
Buffalo, N. Y	23	445	49	517	102	25	12	48	17
Calais, Maine	189	0	5	194	20	3	2	11	4
Chicago, Ill	0	0	24	24	16	5	4	6	1
Detroit, Mich	1,411	1,464	733	3,608	625	118	32	475	0
Duluth, Minn	5	447	1,720	2,172	5	2	0	3	0
Eastport, Idaho	163	206	1	370	26	0	1	22	3
Eastport, Maine	65	0	62,465	62,530	5	0	0	0	5
Erie, Pa	0	0	0	0	0	0	0	0	0
Halifax, N. S., Canada	275	232	71	578	267	1	3	93	170
Havre, Mont	0	17	0	17	0	0	0	0	0
Houlton, Maine	44	26	50	120	5	4	1	0	0

[1] Includes Fort Hancock, Guadalupe Gate, and Ysleta.

TABLE 7.—*Aliens inspected and certified at international border stations during the fiscal year 1935*—Continued

Place	Number of persons making permanent entry examined	Number of persons making temporary entry examined	Other persons examined	Total number of persons examined	Aliens certified				
					Total	Class A		Class B	Class C
						I	II		
International Falls, Minn	28	2,978	271,271	274,277	36	7	0	25	4
Jackman, Maine	54	0	79	133	55	2	0	11	42
Lewiston, N. Y	17	938	21,407	22,362	35	3	0	19	13
Malone, N. Y	12	3	35	50	12	5	0	0	7
Montreal, Canada	1,951	0	0	1,951	360	37	0	309	14
Newport, Vt	160	143	201	504	130	2	0	16	112
Niagara Falls, N. Y	197	319	832	1,348	45	6	4	33	2
Noyes, Minn	4	0	16	20	11	2	1	8	0
Ogdensburg, N. Y	14	6	0	20	3	0	0	2	1
Oroville, Wash	170	0	26,159	26,329	0	0	0	0	0
Portal, N. Dak	2	0	33	35	8	3	0	4	1
Port Angeles, Wash	0	0	0	0	0	0	0	0	0
Port Huron, Mich	134	196	535	865	149	14	3	96	36
Quebec, Canada	603	2,190	672	3,465	274	0	1	210	63
Rouses Point, N. Y	139	0	294	433	40	8	2	25	5
St. Albans, Vt	23	0	39	62	16	4	0	9	3
St. John, N. B., Canada	342	203	0	545	22	5	0	10	7
Sault Ste. Marie, Mich	0	1	0	1	0	0	0	0	0
Scobey, Mont	0	14	0	14	0	0	0	0	0
Sumas, Wash	21	49	20	90	19	4	1	13	1
Sweetgrass, Mont	119	1,552	0	1,671	0	0	0	0	0
Van Buren, Maine	26	12	0	38	1	0	0	1	0
Vanceboro, Maine	194	980	16	1,190	0	0	0	0	0
Vancouver, B. C., Canada	0	462	0	462	108	7	9	82	10
Victoria, B. C., Canada	153	120	0	273	56	6	1	18	31
Winnipeg, Man., Canada	1,475	444	3,981	5,900	1,313	9	11	1,083	210
Yarmouth, N. S., Canada	0	8	17	25	22	1	3	18	0
Total	8,348	13,455	391,173	412,976	3,877	303	94	2,676	804
Total, all stations	34,509	26,577	472,835	533,921	7,789	451	631	5,135	1,572

TABLE 8.—*Alien seamen inspected and certified at international border stations during the fiscal year 1935*

Place	Number of alien seamen examined	Alien seamen certified				
		Class A		Class B	Class C	Total
		I	II			
Bellingham, Wash	171	0	0	0	0	0
Brownsville, Tex	9	0	0	0	0	0
Buffalo, N. Y	14,563	0	3	65	70	138
Chicago, Ill	432	0	4	15	1	20
Duluth, Minn	68	0	0	0	0	0
Eastport, Maine	301	0	0	0	0	0
Erie, Pa	187	0	0	0	0	0
Lewiston, N. Y	152	0	0	0	0	0
Ogdensburg, N. Y	168	0	0	0	3	3
Port Angeles, Wash	79	0	0	0	0	0
Port Huron, Mich	163	0	1	10	0	11
Total	16,293	0	8	90	74	172

TABLE 9.—*Number and character of the mandatorily excludable conditions certified at United States ports during the fiscal year 1935*

	Idiocy, imbecility or feeble-mindedness	Epilepsy	Insanity	Constitutional psychopathic inferiority	Mental deficiency	Chronic alcoholism	Tuberculosis	Trachoma	Syphilis	Soft chancre	Gonorrhea	Other dangerous or loathsome contagious diseases	Total
Alien passengers	91	58	78	110	82	29	114	204	211	5	252	54	1,288
Alien seamen	0	3	5	1	0	0	16	16	143	90	306	48	628

TABLE 10.—*Summary of medical inspection of aliens, fiscal year 1935*

MARITIME STATIONS

GROUP I.—ALIEN PASSENGERS NOT EXAMINED ABROAD EXAMINED UPON ARRIVAL

Class	Total examined	Intensively examined	Passed	Certified on arrival				Total certified
				A-I	A-II	B	C	
First	68,987	857	68,638	10	3	317	19	349
Second	19,240	434	18,923	2	2	292	21	317
Third	88,118	3,680	86,176	16	90	1,760	76	1,942
Stowaways	413	324	390	0	7	11	5	23
Warrant cases	3,335	1,663	3,142	36	38	114	5	193
Total	180,093	6,958	177,269	64	140	2,494	126	2,824

GROUP II.—ALIEN PASSENGERS EXAMINED ABROAD REEXAMINED ON ARRIVAL

Class	Total examined	Intensively examined	Passed abroad	Passed on arrival	Certified on arrival (condition noted abroad)				
					A-I	A-II	B	C	Number certified
First	5,872	137	5,659	5,651	1	0	211	1	213
Second	1,842	83	1,332	1,331	0	0	510	0	510
Third	9,049	121	5,826	5,825	0	0	3,219	4	3,223
Total	16,763	341	12,817	12,807	1	0	3,940	5	3,946

Class	Certified on arrival (condition not noted abroad)					Total certified
	A-I	A-II	B	C	Number certified	
First	1	0	6	1	8	221
Second	0	0	1	0	1	511
Third	0	0	1	0	1	3,224
Total	1	0	8	1	10	3,956

GROUP III.—ALIEN SEAMEN EXAMINED ON ARRIVAL

	Total examined	Intensively examined	Passed	Certified				Total certified
				A-I	A-II	B	C	
Alien crew	680,083	210,743	679,007	68	551	372	85	1,076
Workaways	186	36	184	0	1	0	1	2
Total	680,269	210,779	679,191	68	552	372	86	1,078

CANADIAN AND MEXICAN BORDER STATIONS

GROUP I.—ALIEN PASSENGERS NOT EXAMINED ABROAD EXAMINED ON ARRIVAL

Class	Total examined	Intensively examined	Passed	Certified on arrival				Total certified
				A-I	A-II	B	C	
Statistical, making permanent entry (bona fide immigrants)	34,378	31,555	32,920	124	34	958	342	1,458
Statistical, making temporary entry	24,069	6,557	22,371	104	89	1,242	263	1,698
Nonstatistical, making entry (local crossers, etc.)	469,129	47,780	465,205	107	317	2,616	884	3,924
Warrant cases	3,032	2,909	2,401	116	191	243	81	631
Total	530,608	88,801	522,897	451	631	5,059	1,570	7,711

GROUP II.—ALIEN PASSENGERS EXAMINED ABROAD REEXAMINED ON ARRIVAL

Class	Total examined	Intensively examined	Passed abroad	Passed on arrival	Certified on arrival (condition noted abroad)				
					A-I	A-II	B	C	Number certified
Statistical, making permanent entry (bona fide immigrants)	132	131	106	104	0	0	26	0	26
Statistical, making temporary entry	2,508	1,787	2,504	2,477	0	0	4	0	4
Nonstatistical, making entry (local crossers, etc)	673	673	673	654	0	0	0	0	0
Total	3,313	2,591	3,283	3,235	0	0	30	0	30

Class	Certified on arrival (condition not noted abroad)					Total certified
	A-I	A-II	B	C	Number certified	
Statistical, making permanent entry (bona fide immigrants)	0	0	0	2	2	28
Statistical, making temporary entry	0	0	27	0	27	31
Nonstatistical, making entry (local crossers, etc.)	0	0	19	0	19	19
Total	0	0	46	2	48	78

TABLE 11.—*Distribution, according to class, of applicants for immigration visas who were medically examined during the fiscal year 1935*

Country and consular office	Total number of applicants examined	Number of applicants in each class			Percentage of applicants in each class		
		Quota	Non-quota	Non-immigrants	Quota	Non-quota	Non-immigrants
WESTERN HEMISPHERE							
Cuba: Habana	739	251	485	3	34.0	65.6	.4
Canada, total	11,371	3,122	6,646	1,603	27.5	58.4	14.1
Montreal	3,527	639	1,896	992	18.1	53.8	28.1
Quebec	493	0	493	0	0	100.0	0
Toronto	2,263	1,285	978	0	56.8	43.2	0
Vancouver	978	322	653	3	32.9	66.8	.3
Windsor	2,248	610	1,638	0	27.1	72.9	0
Winnipeg	1,675	264	803	608	15.8	47.9	36.3
Yarmouth	187	2	185	0	1.0	99.0	0
All countries, Western Hemisphere	12,110	3,373	7,131	1,606	27.8	58.9	13.3
EUROPE							
Belgium: Antwerp	693	585	108	0	84.4	15.6	0
England: London	1,965	1,326	639	0	67.4	32.6	0
Irish Free State: Dublin	524	243	276	5	46.6	52.5	.9
Northern Ireland: Belfast	238	172	66	0	72.2	27.8	0
Scotland: Glasgow	445	241	203	1	54.2	45.6	.2
Germany, total	6,128	5,451	677	0	87.4	11.0	0
Berlin	1,645	1,486	159	0	90.2	9.8	0
Hamburg	1,305	1,100	205	0	84.3	15.7	0
Stuttgart	3,178	2,865	313	0	90.2	9.8	0
Holland: Rotterdam	787	712	75	0	90.5	9.5	0
Poland: Warsaw	2,182	1,360	822	0	62.3	37.7	0
Denmark: Copenhagen	279	207	72	0	74.2	25.8	0
Norway: Oslo	449	266	183	0	59.2	40.8	0
Sweden, total	487	300	187	0	61.6	38.4	0
Goteborg	249	141	108	0	56.6	43.4	0
Stockholm	238	159	79	0	66.8	33.2	0
Italy: Naples	7,659	2,301	5,358	0	30.0	70.0	0
Czechoslovakia: Prague	1,026	565	460	1	55.0	45.0	0
Austria: Vienna	1,006	914	92	0	90.9	9.1	0
All European countries	23,868	14,643	9,218	7	61.3	38.6	.03

TABLE 12.—*Distribution according to sex of applicants for immigration visas who were medically examined and notified for disabilities during the fiscal year 1935*

Country and consular office	Number of each sex examined		Percentage of each sex examined		Percentage of males notified for—		Percentage of females notified for—	
	Male	Female	Male	Female	Class A conditions	Class B conditions	Class A conditions	Class B conditions
WESTERN HEMISPHERE								
Cuba: Habana	450	289	60.9	39.1	8.9	17.8	5.5	15.2
Canada, total	5,854	5,517	51.5	48.5	.8	12.5	.7	13.1
Montreal	1,738	1,789	49.3	50.7	.8	12.5	.2	14.3
Quebec	227	266	46.0	54.0	.4	11.9	0	16.9
Toronto	1,253	1,010	55.4	44.6	.7	6.6	1.9	6.6
Vancouver	422	556	43.1	56.9	.2	10.7	.4	8.2
Windsor	1,209	1,039	53.8	46.2	.7	19.7	.9	21.4
Winnipeg	946	729	56.5	43.5	1.6	11.1	.8	8.4
Yarmouth	59	128	31.6	68.4	0	23.7	0	21.1
All countries, Western Hemisphere	6,304	5,806	52.0	48.0	1.4	12.8	1.0	13.2

TABLE 12.—*Distribution according to sex of applicants for immigration visas who were medically examined and notified for disabilities during the fiscal year 1935*—Continued.

Country and consular office	Number of each sex examined		Percentage of each sex examined		Percentage of males notified for—		Percentage of females notified for—	
	Male	Female	Male	Female	Class A conditions	Class B conditions	Class A conditions	Class B conditions
EUROPE								
Belgium: Antwerp	406	287	58.5	41.5	.9	26.1	1.3	27.5
England: London	863	1,102	43.9	56.1	.8	4.8	.2	2.7
Irish Free State: Dublin	165	359	31.2	67.5	1.2	19.3	.8	19.5
Northern Ireland: Belfast	78	160	32.7	67.2	0	19.2	1.8	26.6
Scotland: Glasgow	144	301	32.3	67.6	1.3	20.1	1.3	18.9
Germany, total	2,674	3,454	43.6	56.4	1.0	21.7	.7	24.8
Berlin	748	897	45.0	55.0	.8	35.0	1.2	34.0
Hamburg	609	696	46.6	53.4	1.8	19.0	.5	24.2
Stuttgart	1,317	1,861	41.4	58.6	.9	22.8	.6	20.5
Holland: Rotterdam	435	352	55.2	44.8	.2	22.2	1.1	25.5
Poland: Warsaw	980	1,202	44.9	55.1	1.6	20.5	2.3	24.6
Denmark: Copenhagen	134	145	48.0	52.0	.7	28.3	0	25.5
Norway: Oslo	177	272	39.4	60.6	1.6	21.4	.7	19.1
Sweden, total	213	274	43.7	56.3	2.3	26.3	0	21.5
Goteborg	111	138	44.6	55.4	2.7	26.1	0	24.6
Stockholm	102	136	42.8	57.2	1.9	26.4	0	18.3
Italy: Naples	2,859	4,800	37.4	62.6	4.1	15.5	5.8	19.2
Czechoslovakia: Prague	439	587	42.6	57.4	1.6	17.8	2.0	21.6
Austria: Vienna	412	594	40.9	59.1	.2	15.0	1.5	17.5
All European countries	9,979	13,889	41.8	58.2	2.0	19.2	2.7	20.3

TABLE 13.—*Number and percentage of quota and nonquota applicants examined who were notified for different classes of disabilities during the fiscal year 1935*

Country	Quota					Nonquota				
	Total number quota applicants examined	Number notified for—		Percentage of total examined who were notified for—		Total number nonquota applicants examined	Number notified for—		Percentage of total examined who were notified for—	
		Class A conditions	Class B conditions	Class A conditions	Class B conditions		Class A conditions	Class B conditions	Class A conditions	Class B conditions
WESTERN HEMISPHERE										
Cuba	251	30	54	12.0	21.5	485	25	68	5.2	14.0
Canada	3,122	28	412	.9	13.2	6,646	47	909	.7	13.7
All countries, Western Hemisphere	3,373	58	466	1.7	13.8	7,131	72	977	1.0	13.7
EUROPE										
Belgium	585	6	154	1.0	26.3	108	2	31	1.8	28.7
England	1,326	7	53	.5	3.9	639	3	19	.4	2.9
Irish Free State	243	3	54	1.2	22.2	276	2	47	.7	17.1
Northern Ireland	172	3	41	1.7	23.8	66	0	15	0	22.7
Scotland	241	5	51	2.0	21.1	203	1	35	.4	17.2
Germany	5,451	34	1,377	.6	25.2	677	22	163	3.2	24.0
Holland	712	4	163	.5	22.8	75	1	24	1.3	32.0
Poland	1,360	26	352	1.9	25.9	822	18	145	2.2	17.6
Denmark	207	1	50	.4	24.1	72	0	25	0	34.7
Norway	266	3	48	1.1	18.8	183	2	40	1.0	21.8
Sweden	300	2	65	.6	21.6	187	3	50	1.6	26.7
Italy	2,301	94	700	4.0	30.4	5,358	303	670	5.6	10.5
Czechoslovakia	565	12	140	2.1	24.6	460	7	66	1.5	14.3
Austria	914	8	149	.8	16.3	92	2	18	2.1	19.5
All European countries	14,643	208	3,397	1.4	23.2	9,218	366	1,348	3.9	14.6

TABLE 14.—*Percentage distribution of total quota and nonquota applicants of each sex examined who were notified for different classes of disabilities during the fiscal year 1935*

Country	Quota				Nonquota			
	Male		Female		Male		Female	
	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B
WESTERN HEMISPHERE								
Cuba	12.9	23.0	9.6	17.8	5.9	13.8	4.2	14.4
Canada	.7	12.5	1.3	14.4	.9	14.4	.6	13.1
All countries, Western Hemishpere	1.7	13.3	1.8	14.6	1.3	14.4	.8	13.2
EUROPE								
Belgium	1.1	24.4	.8	29.3	0	39.1	3.2	20.9
England	.7	5.4	.3	2.9	.9	3.8	0	2.1
Irish Free State	1.1	19.3	1.2	23.8	1.3	20.0	.4	15.9
Northern Ireland	0	16.6	2.5	27.1	0	25.0	0	21.4
Scotland	1.5	22.7	2.2	20.5	1.3	22.7	0	16.6
Germany	.7	25.6	.4	24.9	3.9	23.9	2.8	24.1
Holland	.2	21.6	.9	24.3	0	27.6	3.9	39.2
Poland	1.6	21.3	2.3	30.7	1.7	18.4	2.4	17.2
Denmark	1.0	21.0	0	27.1	0	50.0	0	22.2
Norway	1.7	17.5	.6	19.7	1.5	28.5	.8	18.3
Sweden	1.6	25.2	0	19.2	3.3	27.8	0	25.7
Italy	3.4	28.1	4.5	32.0	4.4	9.2	6.3	14.2
Czechoslovakia	1.9	21.5	2.3	27.4	1.1	12.2	1.7	15.6
Austria	0	15.3	1.4	16.9	3.3	12.1	1.6	23.7
All European countries	1.3	22.4	1.5	23.9	3.3	13.3	4.4	15.4

TABLE 15.—*Number and percentage of applicants examined who were notified and refused visas on medical notification for different classes of disabilities during the fiscal year 1935*

Country and consular office	Number notified for—		Percentage of applicants examined who were notified for—		Number of visas refused for—		Percentage of applicants examined who were refused visas for—	
	Class A conditions	Class B conditions	Class A conditions	Class B conditions	Class A conditions	Class B conditions	Class A conditions	Class B conditions
WESTERN HEMISPHERE								
Cuba: Habana	56	124	7.6	16.8	56	58	7.6	7.8
Canada, total	89	1,453	.8	12.8	87	612	.8	5.4
Montreal	18	473	.5	13.4	16	241	.5	6.8
Quebec	1	72	.2	14.6	1	20	.2	4.1
Toronto	28	150	1.2	6.6	28	10	1.2	.4
Vancouver	3	91	.3	9.3	3	4	.3	.4
Windsor	18	460	.8	20.5	18	220	.8	9.8
Winnipeg	21	166	1.3	9.9	21	95	1.3	5.7
Yarmouth	0	41	0	21.9	0	22	0	11.8
All countries, Western Hemisphere	145	1,577	1.2	13.0	143	670	1.2	5.5
EUROPE								
Belgium: Antwerp	8	185	1.1	26.6	8	81	1.1	11.6
England: London	10	72	.5	3.6	10	28	.5	1.4
Irish Free State: Dublin	5	101	.9	19.2	5	12	.9	2.2

TABLE 15.—*Number and percentage of applicants examined who were notified and refused visas on medical notification for different classes of disabilities during the fiscal year 1395*—Continued

Country and consular office	Number notified for—		Percentage of applicants examined who were notified for—		Number of visas refused for—		Percentage of applicants examined who were refused visas for—	
	Class A conditions	Class B conditions	Class A conditions	Class B conditions	Class A conditions	Class B conditions	Class A conditions	Class B conditions
Northern Ireland: Belfast	3	56	1.2	23.5	3	14	1.2	5.8
Scotland: Glasgow	6	86	1.3	19.3	6	3	1.3	.6
Germany, total	56	1,540	.9	25.1	56	261	.8	4.4
Berlin	17	572	1.0	34.0	16	234	1.0	15.0
Hamburg	15	285	1.1	21.8	16	2	1.1	.1
Stuttgart	24	683	.7	21.4	24	25	.7	.7
Holland: Rotterdam	5	187	.7	23.7	5	88	.6	11.1
Poland: Warsaw	44	497	2.0	22.8	44	110	2.0	5.0
Denmark: Copenhagen	1	75	.3	26.8	1	20	.3	7.1
Norway: Oslo	5	88	1.1	20.0	5	34	1.1	7.5
Sweden, total	5	115	1.0	23.6	5	40	1.0	8.1
Goteborg	3	63	1.2	25.3	3	17	1.2	6.9
Stockholm	2	52	.8	21.4	2	23	.8	9.6
Italy: Naples	397	1,370	5.1	17.8	397	65	5.1	.8
Czechoslovakia: Prague	19	206	1.8	20.0	19	37	1.8	3.6
Austria: Vienna	10	167	.9	16.6	10	34	.9	5.3
All European countries	574	4,745	2.4	19.9	574	827	2.4	3.5

TABLE 16.—*Percentage distribution of the total quota and nonquota applicants notified for each class of disabilities who were refused visas on medical grounds during the fiscal year 1935*

Country	Quota						Nonquota					
	Number notified		Number refused visas		Percentage of notified cases refused visas		Number notified		Number refused visas		Percentage of notified cases refused visas	
	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B
WESTERN HEMISPHERE												
Cuba	30	54	30	29	100	53.7	25	68	25	29	100	42.6
Canada	28	412	28	162	100	39.3	47	909	47	407	100	44.8
All countries, Western Hemisphere	58	466	58	191	100	41.0	72	977	72	436	100	44.6
EUROPE												
Belgium	6	154	6	74	100	48.0	2	31	2	7	100	22.5
England	7	53	7	23	100	43.3	3	19	3	5	100	26.3
Irish Free State	3	54	3	7	100	12.9	2	47	2	5	100	10.6
Northern Ireland	3	41	3	12	100	29.2	0	15	0	2	0	13.3
Scotland	5	51	5	1	100	1.9	1	35	1	2	100	5.7
Germany	34	1,377	34	249	100	18.0	22	163	22	12	100	7.3
Holland	4	163	4	84	100	51.5	1	24	1	4	100	16.6
Poland	26	352	26	96	100	27.3	18	145	18	14	100	9.7
Denmark	1	50	1	14	100	28.0	0	25	0	6	0	24.0
Norway	3	48	3	25	100	52.0	2	40	2	9	100	22.2
Sweden	2	65	2	30	100	44.6	3	50	3	10	100	18.0
Italy	94	700	94	27	100	3.8	303	670	302	38	99.6	5.6
Czechoslovakia	12	140	12	27	100	19.0	7	66	7	10	100	15.0
Austria	8	149	8	32	100	21.4	2	18	2	2	100	17.1
All European countries	208	3,397	208	701	100	20.6	366	1,348	364	126	99.4	9.3

TABLE 17.—*Number and percentage of male and female applicants notified for class B disabilities who were refused visas on medical grounds during the fiscal year 1935*

Country and consular office	Number of applicants notified for class B conditions		Number of applicants refused visas for class B conditions		Percentage of applicants notified who were refused visas for class B conditions	
	Male	Female	Male	Female	Male	Female
WESTERN HEMISPHERE						
Cuba: Habana	80	44	42	16	52.5	36.4
Canada, total	729	724	338	274	46.4	37.8
Montreal	217	256	113	128	52.1	50.0
Quebec	27	45	9	11	33.3	24.4
Toronto	83	67	9	1	10.8	1.5
Vancouver	45	46	3	1	6.7	2.2
Windsor	238	222	136	84	57.1	37.8
Winnipeg	105	61	61	34	58.1	55.7
Yarmouth	14	27	7	15	50.0	55.6
All countries, Western Hemisphere	809	768	380	290	47.0	37.8
EUROPE						
Belgium: Antwerp	106	79	54	27	50.9	34.1
England: London	42	30	18	10	42.8	33.3
Irish Free State: Dublin	32	69	5	7	15.6	10.0
Northern Ireland: Belfast	15	41	3	11	20.0	26.8
Scotland: Glasgow	30	56	2	1	7.4	1.7
Germany, total	681	859	162	115	23.7	13.3
Berlin	264	308	145	105	54.9	34.0
Hamburg	116	169	2	0	1.7	0
Stuttgart	301	382	15	10	4.9	2.6
Holland: Rotterdam	97	90	49	39	50.5	43.3
Poland: Warsaw	201	296	64	46	31.8	15.5
Denmark: Copenhagen	38	37	13	7	34.2	18.9
Norway: Oslo	38	52	16	18	42.1	34.6
Sweden, total	56	59	22	18	39.3	30.5
Goteborg	29	34	11	6	37.9	17.6
Stockholm	27	25	11	12	40.7	48.0
Italy: Naples	446	924	47	18	10.5	1.9
Czechoslovakia: Prague	79	127	23	15	11.8	29.1
Austria: Vienna	62	105	13	21	20.9	20.0
All European countries	1,921	2,824	491	353	25.5	12.5

TABLE 18.—*Number and percentage of quota and nonquota applicants of each sex who were refused visas for mental conditions during the fiscal year 1935*

Country	Quota						Nonquota					
	Male			Female			Male			Female		
	Number examined	Number refused	Percent refused	Number examined	Number refused	Percent refused	Number examined	Number refused	Percent refused	Number examined	Number refused	Percent refused
WESTERN HEMISPHERE												
Cuba	178	2	1.1	73	2	2.7	269	0	0	216	1	.5
Canada	1,942	5	.3	1,180	13	1.1	2,887	16	.6	3,759	13	.3
All countries, Western Hemisphere	2,120	7	.3	1,253	15	1.2	3,156	16	.5	3,975	14	.4
EUROPE												
Belgium	360	2	.6	225	2	.9	46	0	0	62	2	3.2
England	555	2	.4	771	1	.1	308	2	.6	331	0	0
Irish Free State	88	1	1.1	155	2	1.2	75	1	1.3	201	1	.4
Northern Ireland	54	0	0	118	2	1.6	24	0	0	42	0	0
Scotland	66	1	1.5	175	4	2.2	77	1	1.3	126	0	0
Germany	2,419	10	.4	3,032	11	.4	255	9	3.5	422	12	2.8
Holland	388	1	.2	324	2	.6	47	0	0	28	1	3.5
Poland	698	8	1.1	662	13	2.0	282	3	1.1	540	11	2.0
Denmark	100	1	1.0	107	0	0	34	0	0	38	0	0
Norway	114	0	0	152	1	.6	63	1	1.6	120	0	0
Sweden	123	0	0	177	0	0	90	2	2.2	97	0	0
Italy	960	7	.7	1,341	11	.8	1,899	9	.5	3,459	81	2.3
Czechoslovakia	266	3	1.1	299	7	2.3	172	1	.5	288	3	1.0
Austria	378	0	0	536	5	.9	33	0	0	59	1	1.7
All European countries	6,569	36	.5	8,074	61	.7	3,405	29	.8	5,813	112	1.9

TABLE 19.—*Number and character of the mandatorily excludable conditions notified during the fiscal year 1935*

WESTERN HEMISPHERE

Disease or defect	Cuba: Habana	Canada								Total, all stations
		Montreal	Quebec	Toronto	Vancouver	Windsor	Winnipeg	Yarmouth	Total	
Class A–I										
Chronic alcoholism	0	0	0	0	0	1	0	0	1	1
Insanity	0	5	0	0	0	4	1	0	10	10
Mentally defective	0	5	0	8	0	1	0	0	14	14
Epilepsy	0	0	0	0	0	1	1	0	2	2
Feeble-mindedness	4	1	0	10	0	2	0	0	13	17
Constitutional psychopathic inferiority	1	1	0	3	0	0	4	0	8	9
Imbecility	0	0	0	1	0	1	0	0	2	2
Total Class A–I	5	12	0	22	0	10	6	0	50	55
Class A–II										
Leprosy	0	0	0	0	0	0	0	0	0	0
Trachoma	10	1	0	0	0	0	5	0	6	16
Tuberculosis, pulmonary	3	1	0	2	0	4	3	0	10	13
Tuberculosis, other forms	0	1	0	0	2	0	2	0	5	5
Ringworm	36	1	0	0	0	0	0	0	1	37
Venereal diseases	2	2	1	4	1	4	5	0	17	19
Total Class A–II	51	6	1	6	3	8	15	0	39	90
Grand total	56	18	1	28	3	18	21	0	89	145

EUROPE

Disease or defect	Belgium	England	Irish Free State	Northern Ireland	Scotland	Germany	Holland	Poland	Denmark	Norway	Sweden	Italy	Czechoslovakia	Austria	Total
Class A–I															
Insanity	0	0	0	0	0	3	0	3	1	0	1	3	0	0	11
Mentally defective	1	1	4	2	6	17	1	20	0	1	0	82	3	6	144
Epilepsy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feeble-mindedness	5	0	0	0	0	10	3	11	0	0	0	22	11	0	62
Constitutional psychopathic inferiority	0	4	0	0	0	8	0	1	0	1	1	0	0	0	15
Imbecility	0	0	0	0	0	2	0	0	0	0	0	2	0	0	4
Total Class A–I	6	5	4	2	6	40	4	35	1	2	2	109	14	6	236
Class A–II															
Trachoma	2	1	0	0	0	5	1	4	0	0	0	275	2	1	291
Tuberculosis, pulmonary	0	1	0	0	0	7	0	4	0	2	0	5	1	2	22
Ringworm	0	0	0	0	0	1	0	0	0	0	1	1	0	0	3
Venereal diseases	0	3	0	0	0	1	0	0	0	0	1	3	1	0	9
Total Class A–II	2	5	0	0	0	14	1	8	0	2	2	284	4	3	325
Grand total	8	10	4	2	6	54	5	43	1	4	4	393	18	9	561

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS in charge

During the fiscal year the Division of Sanitary Reports and Statistics continued to receive reports of outbreaks of diseases dangerous to the public health and the current prevalence of these diseases, both in the United States and in foreign countries, and to disseminate the information to health officers throughout the United States.

MORBIDITY AND MORTALITY REPORTS

Five States (Colorado, Florida, Nebraska, New Mexico, and South Dakota) were added to the list of States which have met the requirements for admission to the morbidity reporting area. Thirty-seven States have now met the required standard.

Collaborating and assistant collaborating epidemiologists, appointed as officers of the Public Health Service from the staffs of State and local health departments, assisted in the collection of morbidity and mortality reports by collecting and forwarding to the Public Health Service information as to outbreaks and the prevalence of communicable diseases in their respective jurisdictions. These appointments are made at the nominal salary of $1 per annum. On June 30, 1935, there were 4,643 collaborating and assistant collaborating epidemiologists on the rolls.

Reports of outbreaks and cases of quarantinable and other communicable diseases throughout the world were received from officers of the Public Health Service, American consular officers, the International Office of Public Health at Paris, the Pan American Sanitary Bureau, the Health Section of the League of Nations, and other sources. In compliance with the provisions of international sanitary conventions, notice of cases of quarantinable diseases was given to the International Office of Public Health, the Pan American Sanitary Bureau, and, through the Department of State, to foreign governments.

Telegraphic reports of the current prevalence of the principal communicable diseases were received weekly from the health officers of all of the States except Nevada. The data were published in the Public Health Reports and summaries of the information and comparisons with the data for the preceding year were compiled each week and promptly sent to State health officers. During epidemics, the more important information was sent to State health officers by telegraph.

Monthly reports of the numbers of cases of notifiable diseases were received from State health officers. These reports show prevalence by counties. Brief summaries of the totals were published in the Public Health Reports.

During the fiscal year the annual summary of cases of notifiable diseases and deaths from these diseases for the year 1933 was pub-

lished. At the close of the fiscal year the volume for 1934 was in course of preparation.

Reports showing the numbers of cases of the principal communicable diseases and deaths from these diseases were received weekly from cities of over 10,000 population in the United States. Statistics from about 140 of these cities in all parts of the country were published each week in the Public Health Reports.

The accompanying tables give a comparison of the numbers of reported cases of the principal notifiable diseases, with deaths, in the United States for the calendar years 1932, 1933, and 1934:

CASES

Disease	Number of States[1]	Aggregate population (in thousands)			Cases			Cases per 100,000 population		
		1932	1933	1934	1932	1933	1934	1932	1933	1934
Chicken pox	42	108,744	109,529	110,188	201,492	223,486	222,898	185.3	204.0	202.3
Diphtheria	47	124,307	125,175	125,905	59,784	50,378	43,093	48.1	40.2	34.2
Influenza	47	124,307	125,175	125,905						
Malaria	46	117,554	118,377	119,069						
Measles	47	124,307	125,175	125,905	403,294	396,941	774,822	324.4	317.1	615.4
Meningococcus meningitis	38	110,207	110,959	111,591	3,069	2,682	2,243	2.8	2.4	2.0
Mumps	40	89,639	90,275	90,810	98,548	85,031	95,185	109.9	94.2	104.8
Pellagra	45	104,702	105,412	106,010						
Pneumonia (all forms)	45	114,063	114,795	115,412						
Poliomyelitis	42	111,461	112,215	112,850	3,682	4,940	7,278	3.3	4.4	6.4
Scarlet fever	47	124,307	125,175	125,905	210,014	210,982	218,573	168.9	168.5	173.6
Smallpox	47	124,307	125,175	125,905	11,194	6,460	5,285	9.0	5.2	4.2
Tuberculosis (all forms)	47	124,307	125,175	125,905						
Tuberculosis (respiratory system)	42	114,604	115,407	116,084						
Typhoid fever and paratyphoid fever	47	124,307	125,175	125,905	26,618	23,287	22,133	21.4	18.6	17.6
Whooping cough	47	124,307	125,175	125,905	214,310	177,233	259,965	172.4	141.6	206.5

DEATHS

Disease	Deaths			Deaths per 100,000 population			Cases reported for each death registered		
	1932	1933	1934	1932	1933	1934	1932	1933	1934
Chicken pox	94	128	120	0.1	0.1	0.1	2,144	1,746	1,857
Diphtheria	6,017	4,853	4,217	4.8	3.9	3.3	10	10	10
Influenza	37,874	31,908	20,665	30.5	25.5	16.4			
Malaria	2,682	4,463	4,401	2.3	3.8	3.7			
Measles	1,881	2,173	6,020	1.5	1.7	4.8	214	183	129
Meningococcus meningitis	1,367	1,124	1,001	1.2	1.0	.9	2	2	2
Mumps	52	45	57	.1	(2)	.1	1,895	1,890	1,670
Pellagra	4,120	3,781	3,383	3.9	3.6	3.2			
Pneumonia (all forms)	92,955	84,488	96,426	81.5	73.6	83.5			
Poliomyelitis	730	700	752	.7	.6	.7	5	7	10
Scarlet fever	2,568	2,441	2,436	2.1	2.0	1.9	82	86	90
Smallpox	52	35	21	(2)	(2)	(2)	215	185	252
Tuberculosis (all forms)	77,222	73,845	70,711	62.1	59.0	56.2			
Tuberculosis (respiratory system)	64,326	61,467	59,012	56.1	53.3	50.8			
Typhoid fever and paratyphoid fever	4,822	4,380	4,124	3.9	3.5	3.3	6	5	5
Whooping cough	5,265	4,162	7,133	4.2	3.3	5.7	41	43	36

[1] In addition to the number of States given, the District of Columbia is also included.
[2] Less than 0.1 per 100,000 population.

Sanitary Legislation and Court Decisions

Legislation.—Supplement 111, containing citations to 1931 State laws and regulations on public health, was issued during the fiscal year, this publication having been prepared during the preceding

year. The preparation of citations covering State health laws and regulations enacted and adopted during the calendar year 1932 was undertaken, and, also, there were secured copies of public health ordinances and regulations adopted during 1934 by cities in the United States of over 10,000 population. This municipal material is for use in compiling selected ordinances and regulations which, it is considered, might be helpful to health officials and others interested in drafting and knowing about municipal health requirements.

Court decisions.—As in prior years, current decisions on public health matters, handed down by Federal and State courts of last resort, were abstracted and published in Public Health Reports.

Publications Issued by the Division

The Public Health Reports, one of the oldest of Government periodical publications, was issued by the Division each week during the year. It was first printed in 1878 under the title of "Bulletins of Public Health", later as "Abstracts of Sanitary Reports", and since 1895 it has been issued under the present title. The 52 numbers covering the fiscal year comprised volume 49, part 2, and volume 50, part 1, and contained 1,751 pages of text and tabular matter, exclusive of title pages and tables of contents, as compared with 1,578 pages in the fiscal year 1934, 1,762 pages in 1933, and 3,008 pages in 1932. The reduction of almost 50 percent in size of the Public Health Reports in recent years as compared with earlier years has been necessitated by a reduction in printing funds and has been secured by suspending publication of certain statistical material and by revising and condensing the text articles as much as possible. In spite of such economies in space, however, the close of the fiscal year left on hand unpublished a large number of manuscripts reporting important scientific investigations. Because of inadequate printing funds, permission was given during the year for the publication in outside journals of many reports which should have appeared in Public Health Service publications. The value of the Public Health Reports as a medium of reporting the results of important current research and of presenting current morbidity statistics to health officers and others concerned was retained to the greatest extent possible in the face of this handicap in printing.

During the year 60 important articles published in the Public Health Reports were issued in separate form as reprints, providing more extensive and more economical distribution to persons especially interested in the particular subjects and permitting the printing of editions for sale by the Superintendent of Documents. In recent years the number of articles reprinted and the number issued of each have been greatly reduced. In the last fiscal year 50 reprints were issued. Formerly about 100 articles appearing in the Public Health Reports each year were issued as separates.

Four supplements to the Public Health Reports were printed, as follows: No. 111, Citations to Public Health Laws and Regulations, 1931; No. 112, The Notifiable Diseases—Prevalence in States, 1933; No. 113, Dilaudid (Dihydromorphinone)—A Review of the Literature and a Study of its Addictive Properties; and No. 114, Information Regarding Quarantine and Immigration for Ship Surgeons.

New editions of 18 previously issued publications were secured during the year as the stock became exhausted and the demand for them justified additional printing. About half of these required some degree of revision in view of increased knowledge of the subject. A complete revision was made of Miscellaneous Publication No. 16, the Public Health Service "Nomenclature of Diseases and Conditions", as new terms had become adopted and many of the old terms had become obsolete because of the progress in medicine and surgery.

The issuing of a mimeographed semimonthly journal entitled "Hospital News" was initiated at the beginning of the fiscal year, with volume 1, no. 1, appearing under the date of July 1, 1934. This mimeographed periodical contains articles on clinical research, case histories, accounts of practices, observations, and reports on improvements in methods and new devices in the marine hospitals and other institutions served by medical officers of the Public Health Service. By this means such information is brought currently to the attention of the personnel engaged in hospital work. The Hospital News, conducted under the auspices of the Division of Marine Hospitals and Relief and the Division of Mental Hygiene, is issued by the Division of Sanitary Reports and Statistics. It has definitely filled a long unsupplied need for a medium of publication of important clinical reports from hospital personnel for record and discussion.

Publications Distributed and Exhibits Prepared

There were 79 new publications distributed by the Division, as compared with 76 during the preceding year. A total distribution of 230,921 copies of new publications and of editions of previously published documents was made. Of these, 154,887 were sent in response to individual requests for information and 76,034 were distributed to Service mailing lists.

There were 24 requests for the loan of stereopticon slides; and in response to these requests, 1,478 slides were lent to universities, health officers, public health lecturers, officials of the Public Health Service, and others.

During the past few years the Service has had an appropriation for the preparation and display of exhibits relating to public health. Although the funds appropriated during this fiscal year were inadequate, an important exhibit on biologics was prepared and displayed at the annual meeting of the American Medical Association at Atlantic City, N. J. Other important exhibits of the Service were displayed at medical and public health meetings in various cities of the United States. The exhibit material of the Service which was prepared for the Century of Progress Exposition at Chicago was returned to Washington at the close of the exposition. Much of this material was reconditioned and placed with other exhibits in the permanent exhibit room of the Public Health Service Building in Washington.

The following is a list of publications distributed by the Division during the fiscal year:

REPRINTS FROM THE PUBLIC HEALTH REPORTS

1618. Frequency of health examinations in 9,000 families, based on Nation-wide periodic canvasses, 1928–31. By Selwyn D. Collins. March 9, 1934. 26 pages.
1622. Psittacosis in the United States. Incidence, scientific aspects, and administrative control measures. By V. M. Hoge. April 6, 1934. 12 pages.
1623. Health services of tomorrow. By Thomas Parran, Jr. April 13, 1934. 10 pages.
1624. The standardization of gas gangrene (perfringens) antitoxin. By Ida A. Bengtson. April 27, 1934. 5 pages.
1625. Public Health Service publications. A list of publications issued during the period July–December 1933. April 20, 1934. 4 pages.
1626. Silicosis. By R. R. Sayers. May 18, 1934. 8 pages.
1627. Frequency of eye refractions in 9,000 families, based on Nation-wide periodic canvasses, 1928–31. By Selwyn D. Collins. June 1, 1934. 18 pages.
1628. Silicosis among granite quarriers. By J. J. Bloomfield and Waldemar C. Dreessen. June 8, 1934. 6 pages.
1629. Court decision holding United States Public Health Service milk ordinance valid. June 8, 1934. 4 pages.
1630. Effect of inhaled marble dust as observed in Vermont marble finishers. By Waldemar C. Dreessen. June 22, 1934. 9 pages.
1631. The pellagra-preventive value of green onions, lettuce leaves, pork shoulder, and peanut meal. By G. A. Wheeler and D. J. Hunt. June 22, 1934. 5 pages.
1632. Table showing the pellagra-preventive value of various foods. By W. H. Sebrell. June 29, 1934. 4 pages.
1633. Effectiveness of filtration in removing from water, and of chlorine in killing, the causative organism of amebic dysentery. By Bertha Kaplan Spector, John R. Baylis, and Oscar Gullans. July 6, 1934. 16 pages.
1634. Time distribution of common colds and its relation to corresponding weather conditions. By Mary Gover, Lowell J. Reed, and Selwyn D. Collins. July 13, 1934. 14 pages.
1635. Electrocution a new aid in the preparation of mosquito mounts. By C. P. Coogle. July 13, 1934. 3 pages.
1636. Pulmonary infection in pneumoconiosis. I. A bacteriologic and experimental study. By H. O. Proske and R. R. Sayers. July 20, 1934. 20 pages.
1637. Milk-sanitation ratings of cities. Cities for which milk-sanitation ratings of 90 percent or more were reported by the State milk-sanitation authorities during the period July 1, 1932, to June 30, 1934. July 27, 1934. 4 pages.
1638. Studies in chemotherapy. I. The action of sodium formaldehyde sulphoxylate in bacterial infections. By Sanford M. Rosenthal. August 3, 1934. 4 pages.
1639. Heart disease among seamen. By H. Arenberg. August 3, 1934. 9 pages.
1640. Effect on the eye of the yellow light of the sodium vapor lamp. By James E. Ives. August 10, 1934. 9 pages.
1641. Public Health Service publications. A list of publications issued during the period January–June 1934. August 10, 1934. 4 pages.
1642. A review of the Federal civil works projects of the Public Health Service. By C. E. Waller. August 17, 1934. 8 pages.
1643. Tendencies in standards of river and lake cleanliness. By H. W. Streeter. August 24, 1934. 12 pages.
1644. Recent court decisions on milk control. By James A. Tobey. August 24, 1934. 6 pages.
1645. Maximum temperatures and increased death rates in the drought area in 1934. By Selwyn D. Collins and Mary Gover. August 31, 1934. 4 pages.
1646. Child health activities in a State department of health. By Estella Ford Warner. September 7, 1934. 5 pages.
1647. Effect of various amounts of sodium fluoride on the teeth of white rats. By H. Trendley Dean, W. H. Sebrell, R. P. Breaux, and E. Elvove. September 14, 1934. 7 pages; 2 plates.
1648. Mortality rates by occupational class in the United States. By Rollo H. Britten. September 21, 1934. 11 pages.

1649. Whole-time county health officers, 1934. September 28, 1934. 9 pages.
1650. Some findings of the N. O. P. H. N. survey of public health nursing of significance to State health administrators. By Pearl McIver. September 14, 1934. 10 pages.
1651. Experimental studies of natural purification in polluted waters. No. IX. Nitrification in sewage mixtures. By Emery J. Theriault and Paul D. McNamee. October 5, 1934. 7 pages.
1652. The actual causes of dermatitis attributed to socks. By Louis Schwartz. October 5, 1934. 10 pages; 2 plates.
1653. Sickness among male industrial employees during the second quarter and first half of 1934. By Dean K. Brundage. October 19, 1934. 4 pages.
1654. Effectiveness and economy of county health department practice. Brunswick-Greensville health administration studies no. 1. Description of study. By Joseph W. Mountin. October 19, 1934. 10 pages.
1655. The Chicago epidemic of amoebic dysentery in 1933. By Herman N. Bundesen. October 26, 1934. 7 pages.
1656. The relation between housing and health. By Rollo H. Britten. November 2, 1934. 13 pages.
1657. The National Leprosarium, Carville, La. Review of the more important activities during the fiscal year ended June 30, 1934. By O. E. Denney. November 16, 1934. 8 pages.
1658. Streptococcus bacteriophage. A study of four serological types. By Alice C. Evans. November 23, 1934. 16 pages.
1659. What every person should know about milk. By Leslie C. Frank. December 14, 1934. 12 pages.
1660. Further studies on growth and the economic depression. A comparison of weight and weight increments of elementary-school children in 1921–27 and in 1933–34. By Carroll E. Palmer. December 7, 1934. 17 pages.
1661. Extent of rural health service in the United States, January 1, 1930–December 31, 1933. December 7, 1934. 16 pages.
1662. The distribution of immunity against encephalitis virus of the St. Louis type in the United States as determined by the serum-protection test in white mice. By J. G. Wooley and Charles Armstrong. December 14, 1934. 11 pages.
1663. Job analysis of a rural sanitation officer. Brunswick-Greensville health administration studies no. 2. By J. O. Dean and Joseph W. Mountin. December 21, 1934. 14 pages.
1664. The official United States and international unit for standardizing gas gangrene antitoxin (vibron septique). By Ida A. Bengtson. December 28, 1934. 16 pages.
1665. Effects of the inhalation of asbestos dust on the lungs of asbestos workers. By A. J. Lanza, William J. McConnell, and J. William Fehnel. January 4, 1935. 12 pages.
1666. Milk-sanitation ratings of cities. Cities for which milk-sanitation ratings of 90 percent or more were reported by the State milk-sanitation authorities during the period January 1, 1933, to December 31, 1934. February 1, 1935. 4 pages.
1667. Biological products. Establishments licensed for the propagation and sale of viruses, serums, toxins, and analogous products. February 1, 1935. 6 pages.
1668. Selected papers on the medical services in the Federal prison system with special reference to psychiatric problems. Presented at the conference held at Springfield, Mo., September 13–15, 1934. The role, organization, and function of psychiatric service in a correctional institution. By R. P. Hagerman, Wilson K. Dyer, and C. C. Limburg. November 9, 1934. The social viewpoint of psychiatric service in a correctional institution. By Amy N. Stannard. November 9, 1934. The personality factor in prison discipline. By F. G. Zerbst and D. E. Singleton. November 16, 1934. Problem neuroses and their management in a correctional institution. By M. J. Pescor. November 16, 1934. The constitutional psychopath as the warden's problem. By H. C. Hill. November 30, 1934. Psychiatric aspects of job placement. By J. G. Wilson. December 21, 1934. The educator's viewpoint of psychiatric service in a penal institution. By R. A. McGee. January 4,

1935. The administrator's viewpoint of psychiatric services in a correctional institution. By Joseph W. Sanford. January 18, 1935. The place of psychiatry in a coordinated correctional program. By F. Lovell Bixby. January 25, 1935. Principles of sanitation and hygiene for a correctional institution. By M. R. King. February 8, 1935. 46 pages.

1669. The effects of exposure to dust in two Georgia talc mills and mines. By Waldemar C. Dreessen and J. M. DallaValle. February 1, 1935. 13 pages.

1670. Endamoeba histolytica in washings from the hands and finger nails of infected persons. By Bertha Kaplan Spector, John W. Foster, and Nelson G. Glover. February 8, 1935. 2 pages.

1671. The family survey as a method of studying rural health problems. Brunswick-Greensville health administration studies no. 3. By Elliott H. Pennell. February 15, 1935. 14 pages.

1672. Public Health Service publications. A list of publications issued during the period July–December 1934. February 15, 1935. 3 pages.

1673. A general view of the causes of illness and death at specific ages. Based on records for 9,000 families in 18 States visited periodically for 12 months, 1928–31. By Selwyn D. Collins. February 22, 1935. 19 pages.

1674. A comparative study of streptococcal immunity produced in rabbits by heat-killed cultures, by active bacteriophage, and by inactivated bacteriophage. By Alice C. Evans. February 8, 1935. 17 pages.

1676. The occurrence of infestations with E. histolytica associated with waterborne epidemic diseases. By A. V. Hardy and Bertha Kaplan Spector. March 8, 1935. 12 pages.

1677. Variations in physique and growth of children in different geographic regions of the United States. Physical measurement studies no. 2. By Carroll E. Palmer and Selwyn D. Collins. March 8, 1935. 13 pages.

1679. Public health nursing in a bicounty health department. Brunswick-Greensville health administration studies no. 4. Prepared by Pearl McIver. April 5, 1935. 12 pages.

1682. Sickness among male industrial employees during the final quarter of 1934 and the entire year. By Dean K. Brundage. April 26, 1935. 3 pages.

SUPPLEMENTS

111. Citations to public health laws and regulations, 1931. 1934. 32 pages.

112. The notifiable diseases. Prevalence in States, 1933. 1934. 12 pages.

113. Dilaudid (Dihydromorphinone). A review of the literature and a study of its addictive properties. By M. R. King, C. K. Himmelsbach, and B. S. Sanders. 1935. 38 pages.

114. Information regarding quarantine and immigration for ship surgeons. 1935. 34 pages.

PUBLIC HEALTH BULLETINS

211. Studies in asphyxia. I. Neuropathology resulting from comparatively rapid carbon-monoxide asphyxia. II. Neuropathology resulting from comparatively slow carbon-monoxide asphyxia. III. Neuropathology resulting from comparatively slow carbon-monoxide asphyxia; reaction during 16 to 165 days after exposure. IV. Neuropathology resulting from comparatively rapid asphyxia at atmospheres deficient in oxygen. V. Blood chemistry changes resulting from comparatively rapid asphyxia by atmospheres deficient in oxygen. VI. Blood chemistry of dogs after comparatively rapid carbon-monoxide asphyxia. By W. P. Yant, John Chornyak, H. H. Schrenk, F. A. Patty, and R. R. Sayers. August 1934. 61 pages.

212. Leprosy. Observations on its epidemiology in Hawaii. By N. E. Wayson and Theodore R. Rhea. September 1934. 32 pages.

213. Epidemiological study of plague in the Hawaiian Islands. By C. R. Eskey. October 1934. 70 pages.

214. Report on the St. Louis outbreak of encephalitis. January 1935. 117 pages.

215. Skin hazards in American industry. Dermatitis in the rubber industry. By Louis Schwartz. Dermatitis in oil refining. By Louis Schwartz. Dermatitis in synthetic dye manufacturing. By Louis Schwartz. Dermatitis in candy making. By Louis Schwartz. Dermatitis among silk throwsters. By Louis Schwartz and Louis Tulipan. Dermatitis in the manufacture of linseed oil. By Louis Schwartz. Dermatitis due to perfume. By Louis Schwartz. Dermatitis due to pyrethrum contained in an insecticide. By Louis Schwartz. October 1934. 54 pages; 17 plates.
216. The potential problems of industrial hygiene in a typical industrial area in the United States. By J. J. Bloomfield, W. Scott Johnson, and R. R. Sayers. December 1934. 35 pages.
219. A survey of tuberculosis in Louisiana. By L. L. Lumsden. April 1935. 76 pages.

NATIONAL INSTITUTE OF HEALTH BULLETINS

163. Key catalog of parasites reported for carnivora (cats, dogs, bears, etc.) with their possible public health importance. By C. W. Stiles and Clara Edith Baker. December 1934. 310 pages.
164. Experimental studies on cancer. I. The influence of the parenteral administration of certain sugars on the pH of malignant tumors. By Carl Voegtlin, R. H. Fitch, Herbert Kahler, J. M. Johnson, and J. W. Thompson. II. The estimation of the hydrogen ion concentration of tissues in living animals by means of the capillary glass electrode. By Carl Voegtlin, Herbert Kahler, and R. H. Fitch. III. The influence of hydrogen ion concentration upon the reversal of proteolysis in oxygenated extracts of normal and neoplastic tissues. By Mary E. Maver, J. M. Johnson, and Carl Voegtlin. IV. A comparison of the growth of the Jensen rat sarcoma in subcutaneous and intramuscular transplants. By W. R. Earle and Carl Voegtlin. January 1935. 58 pages; 4 plates.

ANNUAL REPORT

Annual Report of the Surgeon General of the United States Public Health Service for the fiscal year 1934. 1934. 143 pages.

MISCELLANEOUS PUBLICATIONS

10. Regulations for the sale of viruses, serums, toxins, and analogous products in the District of Columbia and in interstate traffic. Approved February 25, 1935, to supersede regulations issued March 13, 1934, and amendments thereto. 1935. 11 pages.
11. Official list of commissioned and other officers of the United States Public Health Service. Also a list of all stations of the Service. January 1, 1935. 61 pages.

UNNUMBERED PUBLICATIONS

Index to Public Health Reports, volume 49, part 1, January–June 1934. 24 pages.
Index to Public Health Reports, volume 49, part 2, July–December 1934. 23 pages.
National Negro Health Week program. This pamphlet is published annually, usually about the middle of March, for community leaders in an effort to suggest ways and means by which interested individuals and organizations may be organized for a concerted and effective attack upon the community's disease problems. Twenty-first annual observance. March 31 to April 7, 1935. 8 pages.
National Negro Health Week poster. Twenty-first annual observance. 1935.
National Negro Health Week leaflet. Twenty-first annual observance. 1935. 2 pages.

DIVISION OF MARINE HOSPITALS AND RELIEF

Asst. Surg. Gen. S. L. CHRISTIAN in charge

Out-patient and hospital treatment was furnished to American seamen and other legal beneficiaries in 154 ports of the United States and its possessions. Contracts were maintained with 152 hospitals located chiefly in ports not served by the 25 marine hospitals. At the close of the year, 4,455 patients remained in hospitals, including 162 insane in St. Elizabeths Hospital and 358 patients at the National Leper Home.

The volume of work which for 137 years has faithfully reflected the activities of the American merchant marine again showed an increase, for throughout the year the marine and contract hospitals treated a daily average of 482 more patients than they did in the fiscal year 1934, and this figure would have been still larger but for the fact that during the month of June funds became so limited that it was necessary to reduce the number of in-patients from 4,945 on June 1, to 4,455 on June 30.

As in the preceding year, operation of the hospitals was exceedingly difficult on account of inadequate appropriation and personnel, and toward the close of the year the Public Health Service faced a very considerable deficit, which was taken care of by using impounded salary funds, transferred from the Bureau of Internal Revenue, by making drastic reductions in the allotments to the marine hospitals, and by discontinuing all replacements of equipment between May 15 and June 30, 1935. It was necessary to carry forward into the new year requisitions totaling approximately $50,000. In the face of greatly advanced costs of commodities of all sorts, the per diem cost was kept down to the low figure of $3.31.

This per diem cost is 91 cents cheaper than the per diem of 1,016 hospitals which reported their costs to the American Hospital Association, the Catholic Hospital Association of the United States and Canada, and the American Protestant Hospital Association for the calendar year 1933, and during that year costs were much lower than they were for the fiscal year under consideration. In view of the experiences of 1935 and with basic allotments for 1936 essentially the same as those for 1935, it is impossible to see how the relief activities of the Service can continue to function efficiently throughout 1936 upon funds available at the present time.

On July 1, 1934, the Division of Marine Hospitals and Relief, together with the Division of Mental Hygiene, issued the first number of Hospital News, a mimeographed pamphlet of about 25 pages devoted to articles of especial interest to personnel engaged in hospital and other clinical work. Forty-nine articles were distributed during the year, and many compliments were received from Service officers and others on the subjects dealt with.

In addition to the old-line beneficiaries, the hospitals continued to furnish medical relief to persons injured in line of duty on Civil Works Administration projects, for which no reimbursement was

received, and to enrolled members of the Civilian Conservation Corps and patients of the Veterans' Administration. Each of the latter two agencies reimbursed the Service at the established rate of $3.75 per day for in-patient treatment and $1 for each out-patient treatment.

For a complete statement of relief furnished at each station and the customary collateral functions performed by the marine hospitals for the Army, Navy, Civil Service Commission, Steamboat Inspection Service, Coast Guard, Employees' Compensation Commission, Post Office Department, Bureau of Immigration, Coast and Geodetic Survey, Bureau of Fisheries, Bureau of Lighthouses, Bureau of Narcotics, Veterans' Administration, Civilian Conservation Corps, and Civil Works Administration, see pages 112 to 116.

Classes of Beneficiaries and Amount and Character of Services Rendered

Summary of services by class of beneficiary

Class of beneficiary	Hospital days		Out-patient treatments		Physical examinations (not related to treatment)		Remarks
	Number	Percent of total	Number	Percent of total	Number	Percent of total	
American merchant seamen.	1,145,469	63.58	593,554	51.57	8,955	10.15	Communicable diseases are reported to local health officers.
Veterans	81,322	4.51	1,247	.11	788	.89	Patients of the Veterans' Administration.
Lepers	130,136	7.22	6	.....	13	.01	National Leper Home, Carville, La.
Coast Guard personnel	80,195	4.45	151,744	13.18	8,966	10.16	All medical services and supplies, ashore and afloat.
Injured Federal employees.	108,700	6.03	118,473	10.29	26,469	29.99	Patients of the Employees' Compensation Commission.
Immigrants	25,062	1.39	10,334	.89	337	.38	Patients of the Bureau of Immigration.
Seamen, Engineer Corps and Army Transport Service.	48,075	2.67	22,134	1.92	667	.76	Civilian employees on Army vessels.
Seamen from foreign vessels.	6,479	.36	873	.08	126	.14	Pay patients.
Seamen and keepers, Lighthouse Service.	13,966	.78	6,054	.53	142	.16	Medical supplies also furnished to lighthouse vessels.
Civilian Conservation Corps.	103,638	5.75	1,903	.17	443	.50	Patients of the Civilian Conservation Corps.
Civil Works Administration.	35,598	1.98	12,055	1.05	1,554	1.76	Patients of the Civil Works Administration.
Alaska cannery workers leaving United States.	.....	.....	1,070	.09	4,609	5.22	Vaccinations and other preventive measures.
Pilots and other licensees	.....	.....	.....	.....	7,511	8.51	For the Steamboat Inspection Service.
Civil-service applicants and employees.	.....	.....	.....	.....	20,447	23.16	For the Civil Service Commission.
Shipping Board	.....	.....	.....	.....	1,461	1.66	To determine fitness for sea duty.
All others entitled to treatment.	23,128	1.28	231,534	20.12	5,779	6.55	From Bureau of Fisheries, Army, Navy, Mississippi River Commission, Coast and Geodetic Survey, etc.
Total	1,801,768	100.00	1,150,981	100.00	88,267	100.00	

In addition to the above services and in accordance with Department Order No. 9, dated September 26, 1934, a commissioned medical officer was detailed to supervise the 10 emergency medical relief units in the Treasury Department in the District of Columbia; and, upon request of their respective heads of departments and agencies, similar supervision has been extended to the Securities and Exchange Commission, Rural Electrification Administration, Federal Housing Administration, Reconstruction Finance Corporation, National Bureau of Standards, Department of Commerce, Shipping Board, and the Suburban Resettlement Administration.

During the year important new hospital facilities were completed and occupied at Baltimore, Norfolk, Carville, Chicago, and Memphis.

DENTAL TREATMENT

Dental services furnished at marine hospitals and relief stations by full-time dental officers are shown in the following list:

Number of patients treated	174,353
Number of individual sittings	233,770
X-rays	39,207
Prophylactic treatments (hours)	14,406
Vincent's stomatitis treatments (hours)	4,452
Pyorrhea treatments (hours)	4,449
Extractions	83,189
Alveolectomies	2,177
Alloy fillings	47,081
Gold inlays	1,142
Porcelain crowns	132
Silicate cement fillings	20,554
Dentures (full and partial)	6,974
Fracture cases (hours)	1,463
Number of treatments (out-patient)	478,444
Number of treatments (in-patient)	199,014
Total number of treatments	677,458

Of the 174,353 beneficiaries treated, only 25,961 cases were entirely completed. This is at the rate of 149 completed cases per 1,000 patients.

Although the above is a considerable increase in the actual treatment rendered to beneficiaries over preceding years, it is still far short of adequate treatment. There is an urgent need for additional dental officers as well as dental hygienists, dental technicians, and nurses. Treatments for diseased soft structures of the mouth and oral prophylaxes required 23,307 hours, which is equal to the full-time duty of one-sixth of the dental-officer personnel, yet only 107 patients out of each 1,000 received oral prophylaxes.

At marine hospitals and relief stations where full-time dental officers are on duty, the total cost of all dental treatment, including salaries, supplies, repairs, and overhead expense, was $303,761.26. Had it been necessary to pay for the treatment according to the fee table by which contract dentists are paid, the total cost would have been $1,145,769.49.

CONTRACT DENTAL SERVICE

At small stations where the services of a full-time dental officer are not needed, a local dentist is given an appointment as a contract dentist and is paid for his services on a fee basis. Owing to increased costs and inadequate funds, it was necessary to reduce this class of treatment to a considerable extent. This has worked a very great hardship on certain beneficiaries, such as Coast Guard personnel, who are often detailed to small stations considerably distant from the marine hospitals. During the year 2,858 beneficiaries were given routine dental treatment by contract dentists at a total cost of $14,721.42, or $5.15 per patient.

Senior Dental Surg. C. T. Messner is in charge of dental activities in the field and Bureau.

Coast Guard

The average number of Coast Guard beneficiaries on active duty and retired was 9,413. Medical services furnished this group in recent years are shown in the following table:

Year	Numerical strength of Coast Guard and medical services given				Average amount of medical service per person		
	Number of Coast Guard personnel	Hospital days	Out-patient treatments	Physical examinations	Hospital days	Out-patient treatments	Physical examinations
1923	4,684	41,681	32,530	4,207	8.9	6.7	0.9
1924	4,896	36,504	45,857	7,008	7.6	9.4	1.5
1925	7,077	60,336	90,494	13,394	8.5	12.8	1.9
1926	9,839	71,799	125,226	19,061	7.3	12.7	1.9
1927	10,984	76,564	155,977	18,787	6.9	14.2	1.7
1928	12,462	85,691	137,971	17,220	6.9	11.0	1.4
1929	12,833	88,870	169,697	17,748	6.9	13.2	1.4
1930	12,963	90,179	196,334	14,382	6.9	15.1	1.1
1931	13,020	86,829	187,063	8,262	6.7	14.4	.6
1932	13,189	91,655	198,800	11,481	6.9	15.1	.9
1933	13,181	106,126	214,805	9,557	8.0	16.3	.7
1934	10,401	88,896	172,510	6,367	8.5	16.6	.6
1935	9,413	80,195	151,744	8,966	8.5	16.1	.9

Twenty medical and dental officers are assigned exclusively to Coast Guard duty, and 103 local physicians under appointment as acting assistant surgeons furnish medical and surgical relief and make physical examinations of Coast Guard and Lighthouse Service personnel at isolated units remote from any Public Health Service relief station.

Medical officers have been assigned, as usual, to the cutters on the international ice patrol, to those on the cadet practice cruise in South American waters, and to the Bering Sea patrol. In addition, a medical officer is permanently assigned to the cutter *Itasca*, whose base is Honolulu, T. H. During the year a medical officer and a dental officer were assigned to duty ashore at the headquarters of the Bering Sea patrol force, at Unalaska, Alaska, to render relief to the personnel of the 165-foot patrol boats which had their base at this point

for the first time. A medical officer and a dental officer are assigned to the cutter *Northland* on its annual arctic cruise. This cutter has a specially appointed sick bay; and in addition to the care of Coast Guard personnel, the medical and dental officers extend medical, surgical, and dental relief to Alaskan natives, personnel of other Government departments, and others to whom such relief is not otherwise available.

A full-time medical officer has been assigned to duty on the cutter *Haida*, with base at Cordova, Alaska. During March 1935, the *Haida* made a special cruise to the Shumagin and Sanak Islands to investigate and render assistance in a reported infantile paralysis epidemic.

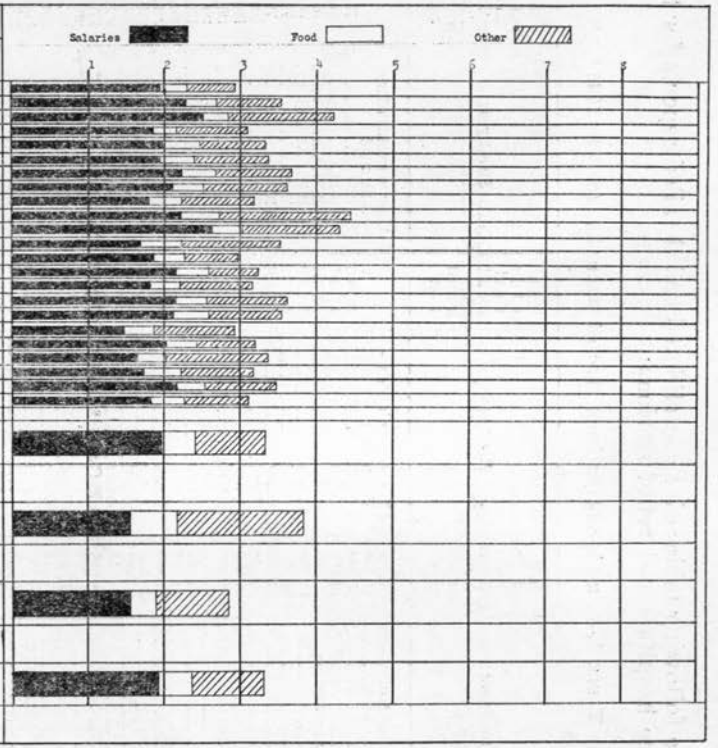
Medical Director A. J. McLaughlin is assigned to duty at Coast Guard headquarters as representative of the Surgeon General and chief of the medical section.

Operating Costs

The total amount expended, including reimbursements from the Veterans' Administration and Civilian Conservation Corps, classified according to the General Accounting Office Bulletin, is shown below:

01	Personal services	$3,496,350
0200	Janitor and laundry supplies, X-ray films, etc	58,710
0210	Medical and hospital supplies	270,220
0220	Scientific and educational supplies	7,204
0230	Fuel	177,710
0250	Forage	43,196
0260	Provisions	977,881
0280	Sundry supplies	58,988
03	Subsistence and support of persons (contract hospital care, etc.)	347,027
04	Care of animals and vehicles	102
0500	Telegraph service	1,138
0510	Telephone service	27,550
06	Travel expense	61,687
07	Freight	56,411
10	Furnishing heat, light, power, and water (service)	204,188
1100	Rent of buildings and offices	10,998
1110	Other rents	5,229
1280	Repairs and parts, motor vehicles	5,180
1290	Repairs and alterations, other equipment	13,867
1373	Laundry service	30,666
1375	Ashes and garbage removal	2,892
1380	Miscellaneous services	2,495
2250	Burials	23,776
3000	Passenger-carrying vehicles	5,521
3010	Furniture, furnishings, and fixtures	95,793
3020	Scientific equipment	36,128
3040	Livestock	504
3050	Other equipment	10,315
	Total	60,317.26

GROUP OF HOSPITALS	HOSPITAL LOCATION	RELIEF DAYS	COST PER PATIENT DAY TOTAL	SALARIES	FOOD	OTHER
GENERAL	Baltimore, Md.	93,750	$2.90	$1.93	$0.36	$0.61
	Boston, Mass.	51,267	3.56	2.28	.40	.88
	Buffalo, N.Y.	19,579	4.24	2.50	.35	1.39
	Chicago, Ill.	75,498	3.10	1.87	.34	.89
	Cleveland, Ohio	61,261	3.35	1.98	.46	.91
	Detroit, Mich.	54,019	3.36	1.93	.45	.98
	Ellis Island, N.Y.	166,710	3.66	2.20	.43	1.03
	Evansville, Ind.	24,714	3.61	2.07	.43	1.11
	Galveston, Texas	63,098	3.19	1.77	.43	.99
	Key West, Fla.	16,140	4.43	2.22	.50	1.71
	Louisville, Ky.	21,016	4.23	2.62	.41	1.25
	Memphis, Tenn.	38,314	3.55	1.89	.54	1.32
	Mobile, Ala.	45,352	2.96	1.84	.39	.73
	New Orleans, La.	126,275	3.24	2.13	.45	.66
	Norfolk, Va.	88,529	3.16	1.81	.40	.95
	Pittsburgh, Pa.	21,734	3.60	2.14	.41	1.05
	Portland, Me.	25,262	3.52	2.08	.46	.98
	St. Louis, Mo.	35,425	2.92	1.47	.40	1.05
	San Francisco, Calif.	152,436	3.19	2.03	.41	.75
	Savannah, Ga.	54,262	3.34	1.94	.38	1.32
	Seattle, Wash.	112,241	3.13	1.71	.49	.93
	Stapleton, N.Y.	106,016	3.47	2.16	.39	.92
	Vineyard Haven, Mass.	8,431	3.19	1.79	.46	.83
	New York, N.Y. (a)					
	Per diem cost for General Hospitals		3.33	1.98	.42	.93
	Total Relief Days	1,463,309		Cost	$4,871,863.37	
TUBERCULOSIS SANATORIUM	Fort Stanton, N.M.	74,476	3.81	1.56	.62	1.63
				Cost	$ 283,985.36	
LEPROSARIUM	Carville, La.	129,639	2.83	1.56	.36	.91
				Cost	$ 367,183.42	
ALL	Per diem cost for all hospitals		3.31	1.93	.43	.95
	Relief days for all hospitals	1,667,424		Cost	$5,523,032.15	



(a) In-patient department of station closed.

Average per diem cost of in-patient relief, United States marine hospitals, fiscal year 1935

Consolidated and Detailed Reports

The following tables give consolidated and detailed reports for the marine hospitals and relief stations:

Table 1.—*Number of patients treated annually, 1868 to 1935*[1]

Fiscal year	Sick and disabled patients furnished relief	Fiscal year	Sick and disabled patients furnished relief	Fiscal year	Sick and disabled patients furnished relief
Prior to reorganization:		After reorganization—Continued.		After reorganization—Continued.	
1868	11,535	1891	52,992	1914	53,226
1869	11,356	1892	53,610	1915	55,782
1870	10,560	1893	53,317	1916	58,357
After reorganization		1894	52,803	1917	64,022
1871	14,256	1895	52,643	1918	71,614
1872	13,156	1896	53,804	1919	79,863
1873	13,529	1897	54,477	1920	110,907
1874	14,356	1898	52,709	1921	144,344
1875	15,009	1899	55,489	1922	153,633
1876	16,808	1900	56,355	1923 [2]	126,956
1877	15,175	1901	58,381	1924	159,686
1878	18,223	1902	56,310	1925	204,944
1879	20,922	1903	58,573	1926	245,140
1880	24,860	1904	58,556	1927	249,973
1881	32,613	1905	57,013	1928	240,592
1882	36,184	1906	54,363	1929	260,552
1883	40,195	1907	55,129	1930	279,350
1884	44,761	1908	54,301	1931	259,364
1885	41,714	1909	53,704	1932	257,208
1886	43,822	1910	51,443	1933	294,101
1887	45,314	1911	52,209	1934	304,439
1888	48,203	1912	51,078	1935	329,586
1889	49,518	1913	50,604		
1890	50,671				

[1] These figures do not include patients treated in connection with veterans' relief activities of the Service as follows: 1918, 192; 1919, 13,856; 1920, 279,036; 1921, 667,832; 1922, 242,379; 1923, 9,704; 1924, 3,414; 1925, 4,360; 1926, 3,749; 1927, 2,830; 1928, 3,448; 1929, 4,907; 1930, 6,817; 1931, 9,278; 1932, 9,667; 1933, 8,377; 1934, 716, and 1935, 2,448.

[2] In this year, and subsequently, the practice of recounting out-patients applying for treatment in more than 1 calendar month was discontinued.

Table 2.—*Transactions at United States Marine hospitals and other relief stations*

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1935	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
Grand total	332,034	49,018	1,163	4,455	1,801,768	283,016	1,150,981	88,267
FIRST-CLASS STATIONS								
Marine Hospitals								
Baltimore, Md	11,078	2,473	6,970	260	93,750	8,605	50,283	2,984
Boston, Mass	7,939	1,566	2,930	106	51,267	6,373	38,474	3,885
Buffalo, N. Y	4,751	673	22	39	19,579	4,078	28,593	1,013
Carville, La	1,548	426	22	358	129,639	1,122	1,623	-------
Chicago, Ill	5,594	2,104	26	183	75,498	3,490	22,629	1,337
Cleveland, Ohio	6,710	1,913	81	181	61,261	4,797	18,970	1,043
Detroit, Mich	4,197	1,785	8,586	205	54,019	2,412	19,409	1,017
Ellis Island, N. Y	8,582	4,328	90	383	168,710	4,254	11,146	372
Evansville, Ind	1,108	837	8	54	24,714	271	659	151

TABLE 2.—*Transactions at United States Marine hospitals and other relief stations*—Continued

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1935	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
FIRST-CLASS STATIONS—contd.								
Marine Hospitals—Continued								
Fort Stanton, N. Mex.	1,348	319	17	192	74,476	1,029	4,031	193
Galveston, Tex.	6,363	2,068	54	178	63,098	4,295	19,392	1,047
Key West, Fla.	1,476	454	9	30	16,140	1,022	5,295	109
Louisville, Ky.	1,298	745	12	50	21,016	553	4,198	440
Memphis, Tenn.	3,934	1,622	18	114	38,314	2,312	14,141	1,555
Mobile, Ala.	3,651	1,260	38	122	45,352	2,391	11,155	1,680
New Orleans, La.	11,559	3,579	79	265	126,275	7,980	33,002	3,201
New York, N. Y.	37,654					37,654	224,776	14,300
Norfolk, Va.	9,244	2,726	78	235	88,529	6,518	33,389	1,975
Pittsburgh, Pa.	2,461	733	15	49	21,734	1,728	3,860	769
Portland, Maine	1,638	553	12	49	25,242	1,085	3,725	354
St. Louis, Mo.	2,673	825	18	107	35,425	1,848	10,798	1,215
San Francisco, Calif.	16,756	4,119	91	258	152,436	12,637	65,464	2,388
Savannah, Ga.	3,959	1,714	28	136	54,262	2,245	10,314	1,345
Seattle, Wash.	12,107	3,130	108	309	112,241	8,977	22,398	5,416
Stapleton, N. Y.	11,335	3,423	50	212	106,016	7,912	29,423	585
Vineyard Haven, Mass.	280	142	4	25	8,431	138	286	9
Contract overflow hospitals	102	102	4	38	14,124			
Total	179,345	43,619	1,070	4,138	1,681,548	135,726	687,433	48,383
SECOND- AND THIRD-CLASS STATIONS								
Aberdeen, Wash.	366	35			261	331	675	109
Albany, N. Y.	184	19		1	290	165	328	262
Anacortes, Wash.	181	25	2		139	156	351	20
Apalachicola, Fla.	40	5			22	35	153	
Ashtabula, Ohio	332	13	3		223	319	975	67
Astoria, Oreg.	462	40	1		307	422	834	129
Balboa Heights, Canal Zone	908	194	2	16	3,336	714	757	
Bangor, Maine	45	12			244	33	58	69
Beaufort, N. C.	398	78	1	2	413	320	1,469	26
Bellingham, Wash.	388	13			80	375	901	588
Biloxi, Miss.	582	3	2		14	579	845	20
Boothbay Harbor, Maine	32	7			27	25	44	9
Brunswick, Ga.	78					78	207	10
Burlington, Iowa	43	20	1	1	336	23	51	1
Cairo, Ill.	613	67	1	2	560	546	1,476	142
Calais, Maine	3					3	3	81
Cambridge, Md.	92	10			132	82	219	4
Cape May, N. J.	2,007	56	2		209	1,951	4,291	65
Charleston, S. C.	804	82	1	3	924	722	1,375	294
Chincoteague, Va.	63					63	159	20
Cincinnati, Ohio	138	7			107	131	299	97
Cordova, Alaska	296	58	2	3	1,111	238	410	9
Corpus Christi, Tex.	323	51			295	272	413	13
Crisfield, Md.	753	7	1		32	746	1,235	20
Duluth, Minn.	572	46	1	1	772	526	1,098	129
Eastport, Maine	32					32	119	9
Edenton, N. C.	33					33	108	
Elizabeth City, N. C.	206	2			11	204	615	34
El Paso, Tex.	246	32		1	1,083	214	1,408	189
Erie, Pa.	404	15	2	1	200	389	1,158	101
Escanaba, Mich.	41	10			91	31	88	14
Eureka, Calif.	227	39		1	261	188	472	18
Everett, Wash.	176	17			63	159	305	
Fall River, Mass.	177	19			252	158	380	22
Gallipolis, Ohio	163	44		2	650	119	369	14
Gary, Ind.	79					79	229	3
Georgetown, S. C.	33					33	59	8
Gloucester, Mass.	488	13		2	56	475	1,410	25
Grand Haven, Mich.	224	17		1	169	207	557	90
Green Bay, Wis.	149	10		1	46	139	429	47
Gulfport, Miss.	166	7			58	159	358	78
Hancock, Mich.	72	2	1		10	70	122	21
Honolulu, Hawaii	1,316	127	5	4	1,393	1,189	2,823	505
Houston, Tex.	1,271	86	2		513	1,185	3,777	75
Indiana Harbor, Ind.	201	3	1		20	198	324	
Jacksonville, Fla.	1,074	54	1	1	494	1,020	2,778	657

TABLE 2.—*Transactions at United States Marine hospitals and other relief stations*—Continued

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1935	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
SECOND- AND THIRD-CLASS STATIONS—continued								
Juneau, Alaska	335	39		3	755	296	330	108
Ketchikan, Alaska	753	113	2	3	899	640	1,214	297
La Crosse, Wis	41	5			125	36	66	24
Lewes, Del	208	19		1	183	189	559	6
Los Angeles, Calif	1,699	152		6	2,496	1,547	6,085	582
Ludington, Mich	298	9			37	289	470	4
Machias, Maine	24					24	52	31
Manila, P. I	910	83	2	5	1,785	827	1,395	1,091
Manistee, Mich	52	3			16	49	550	33
Manitowac, Wis	293	17			99	276	655	5
Marquette, Mich	252	19			256	233	815	64
Marshfield, Oreg	121	13	1		26	108	197	24
Menominee, Mich	49	2			49	47	149	20
Miami, Fla	1,195	170	2	4	1,478	1,025	3,645	157
Milwaukee, Wis	1,148	120	2	4	1,817	1,028	3,015	622
Morehead City, N. C	535	42	1	1	292	493	1,902	5
Muskegon, Mich	18	1			6	17	22	11
Nantucket, Mass	111	8	1		77	103	300	5
Nashville, Tenn	54					54	134	83
Natchez, Miss	642	64		1	573	578	1,383	49
Newark, N. J	20					20	40	17
New Bedford, Mass	317	21	1		239	296	564	55
New Bern, N. C	381	67	1	1	459	314	674	13
New Haven, Conn	149	14			96	135	214	73
New London, Conn	3,150	34	1	1	338	3,116	4,657	119
Newport, Oreg	140	16	1		164	124	308	10
Newport, R. I	322	55		5	1,042	267	473	34
Newport News, Va	319					319	523	17
Ogdensburg, N. Y	97	5	1		45	92	211	43
Olympia, Wash	65	18		1	455	47	84	
Oswego, N. Y	148	3			17	145	430	47
Paducah, Ky	1,035	9		1	55	1,026	2,326	46
Panama City, Fla	255	20	1		166	235	485	7
Pensacola, Fla	419	41		1	275	378	988	71
Perth Amboy, N. J	68	5			43	63	111	12
Petersburg, Alaska	215	22			128	193	654	38
Philadelphia, Pa	6,574	332	5	5	3,067	6,242	23,212	3,407
Ponce, P. R	140	32		1	486	108	410	22
Port Angeles, Wash	359	40			207	319	536	47
Port Arthur, Tex	2,000	54	3	1	371	1,946	6,314	154
Port Huron, Mich	434	5	1		18	429	1,003	386
Portland, Oreg	2,078	226	4	5	3,217	1,852	5,861	1,086
Port Townsend, Wash	96	2			11	94	597	22
Providence, R. I	532	30		2	461	502	1,153	294
Provincetown, Mass	281					281	808	36
Reedville, Va	441					441	1,327	9
Richmond, Va	116	23			208	93	158	22
Rock Island, Ill	5,557	5			18	5,552	19,936	7,135
St. Thomas, Virgin Islands	179	11		1	130	168	246	4
San Diego, Calif	623	44		2	917	579	2,515	652
Sandusky, Ohio	176	9		2	74	167	276	14
San Juan, P. R	1,089	117	2	3	1,300	972	2,786	148
San Pedro, Calif	4,536	377	3	13	5,031	4,159	10,833	730
Sault Ste. Marie, Mich	1,228	62		3	467	1,166	1,972	94
Seward, Alaska	326	69	3	4	950	257	444	19
Sheboygan, Wis	69	1			9	68	130	14
Sitka, Alaska	357	6			129	351	653	109
South Bend, Wash	62	16			175	46	109	20
Southport, N. C	779	103	3	2	1,442	676	979	18
Superior, Wis	366	32			473	334	730	8
Tacoma, Wash	298	17		1	169	281	681	53
Tampa, Fla	635	54	2	2	377	581	1,214	114
Toledo, Ohio	798	109	5	5	1,622	689	1,781	132
Vicksburg, Miss	682	15	1		70	667	2,293	73
Washington, D. C	31,181	320	2	9	4,217	30,861	66,791	14,344
Washington, D. C., dental clinic	1,258					1,258	12,829	
Washington, N. C	296	27			197	269	481	8
White Stone, Va	731					731	3,406	13
Wilmington, N. C	552	74	2	3	721	478	1,146	160
Wrangell, Alaska	159	18	1		138	141	275	3

TABLE 2.—*Transactions at United States Marine hospitals and other relief stations*—Continued

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1935	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
FOURTH-CLASS STATIONS								
Ashland, Wis.	136	10		1	103	126	269	110
Bath, Maine	50	3			155	47	259	3
Bay City, Mich.	148	13			86	135	373	5
Bridgeport, Conn.	21	12	1	1	102	9	10	
Hartford, Conn.	2	2			27			
Nome, Alaska	37	12		2	139	25	37	
Saginaw, Mich.	8					8	24	
Wilmington, Del.	43	3			10	40	88	
MISCELLANEOUS								
Curtis Bay, Md. (U. S. Coast Guard)	1,609					1,609	5,329	125
U. S. Coast Guard Academy, New London, Conn.	2,494	269	1	6	3,505	2,225	8,232	374
St. Elizabeth's Hospital, Washington, D. C.	179	179	4	162	58,683			
Special acting assistant surgeons for Coast Guard and Lighthouse service	4,576	98	1		814	4,478	13,045	1,021
U. S. Coast Guard vessels and bases	12,863					12,863	60,594	979
Medical relief activities, Treasury Department	33,140					33,140	129,065	
Emergency	76	14			229	62	144	
Total	152,689	5,399	93	317	120,220	147,290	463,548	39,884
Grand total	332,034	49,018	1,163	4,455	1,801,768	283,016	1,150,981	88,267

TABLE 3.—*Medical services for various classes of beneficiaries*

Beneficiary	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1935	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
American seamen	165,064	27,631	748	2,607	1,145,469	137,433	593,554	8,955
Foreign seamen	657	311	7	7	6,479	346	873	126
Coast Guard	39,165	3,129	18	211	80,195	36,036	151,744	8,966
Bureau of Fisheries	66	8			68	58	143	
Army	261	75	4	6	996	186	741	386
Navy and Marine Corps	334	115	3	4	2,061	219	845	56
Mississippi River Commission	9	2			31	7	18	1
Engineer Corps and Army Transport Service	7,136	1,443	38	108	48,075	5,693	22,134	667
Lighthouse Service	2,413	423	22	33	13,966	1,990	6,054	142
Coast and Geodetic Survey	1,091	158	2	7	4,418	933	4,283	349
Employees' Compensation Commission	28,956	4,698	15	243	108,700	24,258	118,473	26,469
Veterans' Administration	2,448	2,339	233	339	81,322	109	1,247	788
Immigration Service	4,860	1,382	3	83	25,062	3,478	10,334	337
Public Health Service officers and employees	9,606	892	12	40	14,323	8,714	60,649	2,267
Lepers	442	438	22	358	130,136	4	6	13
Civilian Conservation Corps	5,311	4,250	20	354	103,638	1,061	1,903	443
Civil Works Administration	3,626	1,654	7	52	35,598	1,972	12,055	1,554
Miscellaneous	60,589	70	9	3	1,231	60,519	165,925	36,748
Total	332,034	49,018	1,163	4,455	1,801,768	283,016	1,150,981	88,267

TABLE 4.—*Classification of out-patient treatments furnished at United States marine hospitals and other relief stations*

	General medical	Dental	Eye, ear, nose, and throat	Neuropsychiatric	Tuberculosis	Surgical	Venereal diseases	Inoculations and vaccinations	Arsenicals	Physiotherapy and X-ray	Total
Marine hospitals	86,127	246,088	40,520	72	301	77,061	82,038	7,416	23,654	124,156	687,433
Other relief stations	94,405	21,788	16,357	177	384	70,586	16,853	5,584	6,618	19,716	252,468
Special acting assistant surgeons	7,012	201	1,028	32	5	1,402	416	2,633	224	92	13,045
Coast Guard vessels and bases	23,988	15,962	5,444	23	81	10,232	5,655	3,166	1,193	3,082	68,826
Medical relief activities, Treasury Department	69,465	-------	27,809	----	----	31,791	-------	------	-- ---	-------	129,065
Emergency	144	-------	-------	----	----	-------	-------	------	------	-------	144
Total	281,141	284,039	91,158	304	771	191,072	104,962	18,799	31,689	147,046	1,150,981

DIVISION OF VENEREAL DISEASES

Asst. Surg. Gen. R. A. VONDERLEHR in charge

The Division of Venereal Diseases continued its studies of the cause, treatment, and prevention of syphilis and gonorrhea. These investigations were of a clinical and laboratory nature. Cooperative work with State and local health departments, both in an advisory capacity and in attempts to stimulate and encourage the development of local programs was included. The insidious character of the diseases with the control of which this division is concerned makes it necessary to continue projects over a considerable period of time. To this extent the present report may be regarded as a continuation of that of the preceding year.

COOPERATIVE CLINICAL STUDIES

This project has continued over 6 or 7 years, and a large number of scientific papers have been prepared during this period. The work is cooperative, combining cases treated in five of the largest clinics for the treatment of syphilis in this country, and the guidance of the directors of these clinics, with the coordinating and statistical facilities of the Public Health Service.

These studies have been conducted in cooperation also with the Health Organization of the League of Nations. The latter organization published, during the year, a report on the different systems of treatment employed both in this country and abroad. It is of considerable interest to note that the alternating continuous method for the treatment of early syphilis, advocated by the group of investigators in the United States, was the one which accomplished the best results. This report was published in the Quarterly Bulletin of the Health Organization, League of Nations, March 1935.

A number of scientific papers were prepared both on the treatment of early syphilis and of cardiovascular syphilis. The studies of early syphilis have indicated the effectiveness of treatment and refuted the contention of certain investigators that modern treatment is ineffective. The investigations pertaining to the treatment of cardiovascular syphilis have indicated both the possibility of preventing the development of this serious complication by early adequate treatment and of obtaining symptomatic relief after the condition has developed.

COOPERATIVE WORK WITH STATE HEALTH DEPARTMENTS

Upon the request of State health departments, officers were assigned from time to time to stimulate, organize, and direct programs against syphilis and gonorrhea within the States. Assistance has

also been given to State and local health departments in their informative and educational campaigns. This assistance, however, has been mutual, and the States have given material aid in the general program. Reference should be made here especially to the attempts of many of the State health departments to stimulate morbidity reports of syphilis and gonorrhea. During the year, 254,551 new cases of syphilis and 161,810 new cases of gonorrhea were reported to the State health departments. Six hundred and fifty-six clinics furnished morbidity reports to State health departments. These clinics reported 81,590 new cases of syphilis and 50,470 new cases of gonorrhea. They discharged as arrested or cured 60,850 patients and gave a total of 3,338,692 treatments, including 889,310 doses of arsphenamine. The policy of distributing a monthly statement of morbidity reports on syphilis and gonorrhea to State and city health officers and others interested in venereal-disease control has been continued. It is believed that the continued release of this statement and the attendant publicity given to the morbidity reports will ultimately lead to a real attempt to obtain complete reporting.

Educational and Informative Activities

This work has been coordinated with the activities of State and local health departments as far as possible. It includes the distribution of the monthly abstract journal Venereal Disease Information, and various reprints pertaining to modern advances in the diagnosis and treatment of the venereal diseases to the physicians of the United States and to other workers interested in the control of syphilis and gonorrhea.

Special articles published in Venereal Disease Information which have been reprinted and widely distributed are as follows: Lymphogranuloma Inguinale; What Treatment in Early Syphilis Accomplishes; The Value of Instructing the Syphilis Patient; Trend of Syphilis and Gonorrhea in the United States; and The Evaluation of Serodiagnostic Tests for Syphilis in the United States. The educational program further embraces the distribution of pamphlets to citizens upon request, either directly or through State and local health departments. Four bulletins have been reprinted during the year: The Facts About Venereal Diseases; Sex Education in the Home; The Problem of Sex Education in Schools; and High Schools and Sex Education. The distribution of films and the preparation of exhibits and lectures have also been continued.

Considerable attention has been given the subscription list of Venereal Disease Information. Leaflets descriptive of this monthly abstract journal have been distributed on a large scale to physicians and other scientific workers. In this distribution the State health departments have given very useful cooperation. The paid subscription list has more than doubled during the period.

Four thousand two hundred and seventy-six requests for bulletins and pamphlets were referred to the State departments of health for the distribution of this material directly to citizens within their

boundaries. The Public Health Service distributed to State health departments and to organizations and individuals 71,790 pamphlets. The revision of such educational pamphlets as have become obsolete has been continued. A number have been replaced with more modern bulletins.

Health Survey in the South

In order to determine the permanent results of an intensive program against syphilis, detailed surveys were made during the preceding year in Macon County, Ala., Pitt County, N. C., and Albemarle County, Va., to obtain information with regard to the health of the individuals included in the original program. These surveys were analyzed and reported during the present fiscal year. Based on information from former Negro patients, from the employers of these individuals, from physicians in the areas concerned, and from the health officers in these counties there was every indication that the disability in the treated group had been materially reduced. This project indicated the excellent results which may be expected in an intensively developed program against syphilis, even though it be conducted over a short period of time.

Research

A fairly well balanced program of investigative and experimental work has been maintained during the year. For syphilis the program included a continuation of the study of the carrier problem with special reference to the possible public health menace of inadequately treated cases with manifestations of involvement of the central nervous system. Two additional steps in the experimental resurvey of the general subject of personal prophylaxis in syphilis were completed and reports submitted for publication. A study designed to contribute additional information in regard to the life cycle of the syphilis spirochete, utilizing single-cell methods, has also been completed.

In gonorrhea an effort to establish more clearly the clinical value of diagnosis by means of the complement fixation test has been well advanced. Following the Price technique, with a special antigen, an increasing experience seems to indicate that a high degree of specificity and reliability may be attributed to the method. A determination of the limitations of the technique will be carried out by the testing of suitable groups of patients suffering from other conditions. It is hoped also to carry this work into the field of precipitation reactions.

The fourth venereal disease, lymphogranuloma inguinale, has assumed an increased clinical and public health importance during recent years. A start has been made in the direction of artificially cultivating the virus of this disease and in studying the use of antigens prepared from this virus in the production of diagnostic skin reactions. If successful, further work looking toward the refinement of an antigen suitable for use in a precipitation test will be attempted.

There seems to be a considerable degree of doubt as to whether the usually accepted conception of the bacteriology of chancroid is entirely tenable. In the light of more recent advances in bacteriology a general resurvey of the entire question appears to be desirable, and preliminary steps in this direction have been taken.

Study of Serodiagnostic Tests for Syphilis

During the year the evaluation of serodiagnostic tests for syphilis was completed. This project, held in cooperation with the American Society of Clinical Pathologists and many of the clinics and hospitals of the country, permitted an estimation of the efficiency of serologic tests for syphilis as performed by the serologists who originated these tests. Fundamental data pertaining to the specificity and sensitivity of these serologic tests have been published.

For a number of years the medical profession and public-health workers have been deeply interested in the relative value of the complement fixation and the precipitation tests for syphilis. One of the pertinent conclusions of the committee conducting this work was that a properly performed and highly sensitive precipitation test might be used routinely for excluding the likelihood of syphilis. When a negative result is obtained by this method, no further study of the specimen need be made. The general adoption of this procedure in busy laboratories with limited budgets will accomplish a great deal not only in providing for the efficient diagnosis of syphilis but also in the saving of considerable sums of money by eliminating the necessity for unnecessary serologic tests.

Another recommendation was that the results of all serologic tests be reported as positive, doubtful, or negative. This is in accord with the recommendations of the Health Organization of the League of Nations which were made subsequent to the serologic conferences at Copenhagen and Montevideo. General adoption of this system of reporting will accomplish much in the simplification of the diagnosis of syphilis.

Venereal Disease Clinic, Hot Springs, Ark.

Not only has the number of new patients admitted to this clinic increased during the past year, but it has been possible, owing to the provisions of the Transient Bureau, to keep these patients under treatment for a much longer period of time so that the total number of treatments has increased to a greater extent even than the total number of new admissions. As a result, the treatment given the average patient at the clinic has been adequate in a much higher percentage of cases than formerly. The total number of cases of venereal disease admitted to the clinic was 8,032. These patients were given 198,051 treatments, including 41,739 doses of the arsphenamines. The staff at this station showed an active interest in research work and rendered most valuable assistance in several of the projects of this division.

TABLE 1.—*Report of State departments of health showing the number of cases of syphilis and gonorrhea reported, the annual rates per 1,000 inhabitants, the amount of arsphenamine distributed, and the laboratory examinations made, from July 1, 1934, to June 30, 1935*

State	Number of cases			Annual rate for syphilis and gonorrhea per 1,000 inhabitants [1]	Doses of arsphenamine distributed	Laboratory examinations		
	Syphilis	Gonorrhea	Syphilis and gonorrhea			Serologic tests made	Microscopic examinations for Spirochaeta pallida	Microscopic examinations for gonococcus
Total	254,551	161,810	416,361	3.3	1,393,267	1,973,584	6,497	380,402
Alabama	4,692	1,534	6,226	2.3	23,063	75,403	18	12,843
Arizona	520	1,799	2,319	5.1				
Arkansas	4,751	2,987	7,738	4.1	41,892	61,369	504	14,047
California	17,488	16,430	33,918	5.5	192,211	77,895	606	37,686
Colorado [2]								
Connecticut	2,593	1,802	4,395	2.7	16,665	56,266	10	4,758
Delaware	1,930	383	2,313	9.6	4,398	6,684		746
District of Columbia	1,839	1,428	3,267	6.6	13,435	6,195	95	6,921
Florida	5,438	1,043	6,481	4.1				
Georgia	9,625	5,261	14,886	5.1	73,650	98,758	12	5,901
Idaho						19,943		2,095
Illinois	16,170	14,466	30,636	3.9	87,324	98,249	2,636	49,811
Indiana	2,795	2,056	4,851	1.5	48,126	148,351		7,373
Iowa	1,528	1,972	3,500	1.4	7,369	1,415	15	2,491
Kansas	1,453	907	2,360	1.2	10,273	53,618		3,298
Kentucky	2,652	3,712	6,364	2.4	17,909	12,326	347	6,402
Louisiana	2,150	1,302	3,452	1.6	12,734	28,393	39	3,016
Maine	499	518	1,017	1.3	5,486	12,606	26	3,764
Maryland	9,291	2,897	12,188	7.3	52,344	13,524	49	4,761
Massachusetts	4,813	6,486	11,299	2.6	93,829	126,296		10,344
Michigan	6,782	6,095	12,877	2.5	45,248	44,057		39,682
Minnesota	4,172	3,788	7,960	3.1	11,124	150,566		12,975
Mississippi	13,290	21,093	34,383	16.7		46,466		2,915
Missouri	6,404	3,446	9,850	2.7	17,938	27,535		5,209
Montana	421	476	897	1.7				
Nebraska	464	878	1,342	1.0	5,000	27,804	6	4,548
Nevada [2]								
New Hampshire	196	209	405	.9	4,309	11,063		4,100
New Jersey	7,121	3,331	10,452	2.5	42,668	52,461	374	12,381
New Mexico	574	366	940	2.2				
New York	62,339	17,710	80,049	6.1	104,673	270,865		29,520
North Carolina	14,210	4,693	18,903	5.7	73,032	131,791	206	5,264
North Dakota	180	529	709	1.0		12,930		1,992
Ohio	8,092	3,142	11,234	1.6	[3] 38,213	[3] 30,248	[3] 578	[3] 10,304
Oklahoma	1,995	1,858	3,853	1.6				
Oregon	702	913	1,615	1.6	5,352	13,228	31	4,315
Pennsylvania	4,296	2,846	7,142	.7	42,279	82,664		15,374
Rhode Island	998	732	1,730	2.5	21,780	16,997	57	3,005
South Carolina	3,190	4,340	7,530	4.3				
South Dakota	89	411	500	.7		6,520		
Tennessee	11,850	6,333	18,183	6.8	67,698	52,754	425	10,052
Texas	5,692	1,739	7,431	1.2	132,023	9,635	45	3,033
Utah [2]								
Vermont	247	375	622	1.7	1,271	6,601	8	1,609
Virginia	4,945	3,451	8,396	3.4	[4] 13,236	[4] 11,927	[4] 35	[4] 3,976
Washington	2,235	2,559	4,794	3.0	10,518	48,613	198	23,360
West Virginia	3,525	1,731	5,256	2.9	47,353	11,626	88	2,175
Wisconsin	315	1,783	2,098	.7	8,844	9,942	89	8,356
Wyoming [2]								

[1] Excludes chancroid which formerly was included in the annual rates.
[2] Not reporting.
[3] For 11 months.
[4] For 10 months.

TABLE 2.—*Report of 127 correctional and penal institutions cooperating with State departments of health* [1]

New cases admitted:	
Syphilis	7,947
Gonorrhea	3,859
Chancroid	167
Total	11,973
Cases discharged as arrested or cured	7,581
Treatments given	358,809
Doses of arsphenamines administered	60,802
Serologic tests made	58,184
Microscopic examinations for gonococcus	19,321

[1] Includes 49 prison camps.

TABLE 3.—*Report of 656 clinics, furnished through State health departments, July 1, 1934, to June 30, 1935* [1]

State	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsphenamine administered	Serologic tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Total	6,462	133,730	81,590	50,470	1,670	60,850	3,338,692	889,310	663,140	250,094
Alabama	48	4,872	3,889	943	40	910	65,155	23,063	61,883	10,226
Arkansas	14	6,955	4,460	2,495	-------	789	[2] 359,002	41,867	61,353	14,029
California	476	11,286	5,765	5,473	48	5,251	273,963	64,977	42,465	33,077
Connecticut	192	1,526	822	704	-------	855	55,161	13,580	6,052	1,411
Delaware [3]	30	301	209	91	1	118	6,074	2,375	945	155
District of Columbia	12	3,273	1,839	1,428	6	266	57,611	13,435	6,195	6,921
Georgia	105	6,096	4,547	1,342	207	4,715	117,769	54,347	27,861	1,823
Illinois	221	10,906	5,701	5,123	82	11,073	330,940	81,314	81,134	42,665
Indiana	169	4,121	1,968	2,117	36	1,580	134,749	38,507	15,980	2,997
Iowa	24	688	345	343	-------	235	28,577	7,369	1,415	2,491
Kansas	24	768	448	319	1	167	15,680	5,341	3,121	2,374
Kentucky	228	6,360	2,607	3,678	75	1,451	69,768	17,252	11,862	6,338
Louisiana	12	423	284	139	-------	3	6,671	2,365	4,465	519
Maine	108	818	398	418	2	232	17,884	5,436	1,567	442
Maryland	440	5,319	3,166	1,932	221	2,631	138,917	52,146	13,409	4,354
Massachusetts	52	5,973	3,007	2,966	-------	1,541	-------	-------	-------	-------
Michigan	148	5,595	2,553	2,963	79	2,608	206,566	39,644	38,117	35,325
Minnesota	36	851	426	425	-------	242	21,674	4,259	2,185	1,204
Nebraska	48	840	418	416	6	160	24,634	5,000	4,792	3,229
New Hampshire	58	302	143	159	-------	125	12,498	3,085	608	537
New Jersey	362	6,899	4,373	2,511	15	3,443	261,591	46,035	31,440	12,381
New York	1,142	9,233	6,632	2,583	18	7,949	289,053	83,193	35,440	10,112
North Carolina	465	8,407	7,217	1,049	141	1,489	101,983	63,450	43,731	1,934
Ohio [4]	359	6,343	3,739	2,125	479	2,096	163,337	36,652	27,018	9,095
Oregon	12	455	370	85	-------	170	20,488	5,352	1,153	796
Pennsylvania	630	6,048	3,604	2,424	20	4,031	84,334	39,850	17,876	-------
Rhode Island	72	736	523	213	-------	512	29,079	9,338	16,997	3,004
Tennessee	527	9,900	6,655	3,087	158	3,321	237,144	63,156	49,796	8,809
Texas	1	67	49	17	1	23	1,867	500	121	42
Virginia [5]	37	2,192	1,468	707	17	194	27,978	13,236	11,927	3,976
Washington	36	1,623	839	783	1	1,277	45,833	10,518	23,436	19,395
West Virginia	242	3,489	2,585	888	16	970	74,901	33,824	8,854	2,097
Wisconsin	132	1,065	541	524	-------	423	57,781	8,844	9,942	8,336

[1] States which did not report and those which had no clinics have been omitted from the above table: They are Arizona, Colorado, Florida, Idaho, Mississippi, Missouri, Montana, Nevada, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, Utah, Vermont, and Wyoming.

[2] Includes 159,833 baths given at the U. S. Public Health Service Clinic, Hot Springs National Park, Ark.

[3] For 6 months.

[4] For 11 months.

[5] For 10 months.

TABLE 4.—*Report of cooperative clinic activities furnished through State health departments from 1919 to 1935*

Year	Number of clinics reporting	New cases admitted	Total treatments given	Cases discharged as arrested or cured	Treatments per new case admitted
1919	167	59,092	527,392	14,278	8.92
1920	383	126,131	1,576,542	34,215	12.50
1921	442	140,748	2,108,003	55,467	14.98
1922	541	141,279	2,045,232	60,169	14.48
1923	513	119,217	1,992,631	55,503	16.71
1924	504	118,023	2,147,087	51,658	18.19
1925	495	110,372	2,088,494	47,828	18.92
1926	416	100,776	1,881,380	44,329	18.67
1927	425	107,688	1,964,233	44,701	18.24
1928	451	110,756	2,174,832	49,487	19.64
1929	445	120,315	2,128,417	52,136	17.69
1930	477	127,978	2,547,162	55,592	19.90
1931	512	143,982	2,847,024	57,665	19.77
1932	533	150,906	2,979,730	64,645	19.75
1933	572	154,302	3,263,927	65,116	21.15
1934	616	129,291	3,085,401	55,904	23.86
1935	656	133,730	3,331,400	60,850	24.91

TABLE 5.—*Annual report of the United States Public Health Service clinic at Hot Springs National Park, Ark., from July 1, 1934, to June 30, 1935* [1]

Total applicants	14,946
Venereal	[2] 7,155
Nonvenereal	7,112
Did not return	679
Syphilis	5,272
New cases	4,375
Readmitted cases	897
Gonorrhea	2,760
New cases	2,495
Readmitted cases	265
Syphilis (new cases)	4,375
Primary	375
Secondary	611
Tertiary	3,133
Neuro	218
Congenital	38
Gonorrhea (new cases)	2,495
Acute	1,324
Chronic	1,171
Total treatments given	357,884
Arsphenamine	41,739
Heavy metal	105,296
Other intravenous	4,243
Gonorrhea	46,773
Baths	159,833
Laboratory examinations	134,031
Complement fixation tests	31,226
Precipitation tests	30,048
Icterus indices	31,226
Darkfields	504
Gonococcus smears	14,029
Urine analyses	26,780
Special	218

[1] From the annual report of the clinic.
[2] The 7,155 patients represent 8,032 cases; 877 patients had both syphilis and gonorrhea.

TABLE 6.—*Report of the United States Public Health Service Clinic at Hot Springs National Park, Ark., from July 1, 1922, to June 30, 1935*

Year	Number of applicants	Number of cases			Treatments given [1]
		Total venereal diseases	Syphilis	Gonorrhea	
Total	73,610	57,300	35,978	21,322	1,082,398
1922	2,720	1,775	1,182	593	43,830
1923	3,389	1,854	1,326	528	41,559
1924	3,676	2,186	1,447	739	50,683
1925	3,411	2,782	2,011	771	50,608
1926	3,570	3,064	2,211	853	54,590
1927	4,757	3,682	2,504	1,178	58,489
1928	5,467	4,134	2,626	1,508	72,466
1929	5,265	3,986	2,512	1,474	75,519
1930	5,704	4,441	2,743	1,698	79,180
1931	4,881	5,088	2,776	2,312	66,246
1932	5,106	6,184	3,188	2,996	93,707
1933	4,036	4,485	2,850	1,635	73,466
1934	6,682	5,607	3,330	2,277	124,004
1935	14,946	8,032	5,272	2,760	198,051

[1] Baths not included.

TABLE 7.—*Statistical summary of activities in the control of venereal diseases for the fiscal years 1934 and 1935*

	1935	1934 [1]
MEDICAL ACTIVITIES		
A. Cases of venereal disease reported to State health departments:		
I. Syphilis	254,551	231,129
II. Gonorrhea	161,810	153,542
III. Chancroid	3,090	1,813
Total	419,451	386,484
B. Doses of arsphenamines distributed by State health departments	1,393,267	1,284,009
C. Clinics:		
I. Clinics established during the year	68	97
II. Clinics reporting to State health departments	656	616
III. Report from clinics:		
a. New cases admitted	133,730	129,293
b. Cases discharged as arrested or cured	60,850	55,905
c. Treatments given	3,338,692	3,085,401
d. Doses of arsphenamines administered	889,310	828,945
e. Serologic tests made	663,140	553,646
f. Microscopic examinations for gonococcus	250,094	213,115
EDUCATIONAL ACTIVITIES		
A. Pamphlets:		
I. Requests for pamphlets received by the Public Health Service	10,206	12,227
II. Pamphlets distributed:		
a. By the Public Health Service to State health departments and others	71,790	75,372
b. By State health departments	583,836	385,743
Total	655,626	461,115
III. Venereal disease pamphlets issued by the Public Health Service	5	9
B. Lectures, exhibits and film showings reported by State health departments:		
I. Number	2,021	[2] 1,530
II. Average attendance	100	91
C. Motion-picture films lent by the Public Health Service	261	208

[1] Data for 1934 were changed from previously published figures because of the receipt of additional reports.

[2] Exclusive of an unknown number of film showings with a total attendance of 30,000 reported by the Rhode Island State Health Department.

DIVISION OF MENTAL HYGIENE

Asst. Surg. Gen. WALTER L. TREADWAY in charge

The year ending June 30, 1935, marks the fifth full 12 months' activities of the Division of Mental Hygiene. The functions of the Division continued unchanged during the year. They comprised studies of the nature and treatment of drug addiction and the dissemination of information upon the subject; studies of the abusive uses of narcotic drugs; administrative functions incident to the establishment and operation of the narcotic farms; the supervising and furnishing of medical and psychiatric services for the Federal penal and correctional system; studies and investigations of the causes, prevalence, and means for the prevention and treatment of mental and nervous diseases; and cooperation with other agencies interested in the various phases of work with which the Division is concerned.

STUDIES OF THE NATURE AND TREATMENT OF DRUG ADDICTION

Studies of the nature and treatment of drug addiction were continued at the United States Penitentiary Annex, Fort Leavenworth, Kans., during the first half of the year. Experimental investigations were conducted on the value of certain substitutes for morphine, and studies were completed on the following: Isocodeine, pseudocodeine, dihydrodesoxymorphine-D, and dilaudid (dihydromorphinone). All of these substitutes were found to have addictive properties similar to morphine. It was also found that they have a cross-tolerance and alleviate withdrawal symptoms in a manner similar to that of morphine.

Considerable progress was made in the study of the role of carbohydrate metabolism during the phase of addiction and withdrawal. The value of the intravenous administration of glucose solution during the period of abstinence and the disturbance of the sympathetico-adrenal mechanism were studied. These investigations are incomplete and plans have been made for their continuation.

A process for manufacturing dihydrodesoxymorphine-D was patented by Dr. Lyndon F. Small, consultant in alkaloid chemistry to the Public Health Service, and its custody lodged, ex officio, with the Secretary of the Treasury.

Further studies of the addiction liability of this new substance were carried out among cancer patients, in cooperation with the State Department of Health of Massachusetts, under the immediate supervision of Asst. Surg. C. K. Himmelsbach. The results of these studies indicate that the substance in question has very limited clinical value and exceedingly dangerous addicting properties, and recommendations have been made that it not be manufactured or distributed in the United States.

Arrangements were made for Dr. Small to apply for patents governing the manufacture of 9 products derived from morphine

which give promise of scientific value. The custody of the patents is to be lodged with the Secretary of the Treasury.

Dissemination of Information

Further information concerning the incidence and other factors in drug addiction were collected during the year. Several articles relating to the work of the Division were published, including "Dilaudid (Dihydromorphinone)—A Review of the Literature and a Study of Its Addictive Properties" and "Dedication and Opening of the Lexington Narcotic Farm." Advisory assistance was rendered various agencies, including representatives of local political jurisdictions with reference to the drug addiction problem.

Studies of Abusive Uses and the Medicinal and Scientific Needs

Investigations relative to the addiction liability of dihydrodesoxymorphine-D with special reference to its use in inoperable cancer offered opportunity for observations as to the indispensable uses of opiates in the management of cancer. These observations indicate that a very much smaller quantity of opium alkaloids is required for the control of cancer pain than is ordinarily supposed. In some instances the pain of cancer may be controlled by the use of such substances as aspirin, and the use of codeine plays a very important part in the control of pain in many cases.

Studies on the addiction liability of dihydrodesoxymorphine-D suggest that addiction in the human being becomes a greater liability when opiates are administered at regular and stated intervals instead of being used when and if necessary to control actual pain.

They also indicate that the indispensable use of opium alkaloids in the treatment of chronic tuberculosis may be very much less than that ordinarily used.

These studies point the way to the possibility of and need for an informative memorandum based upon first-hand knowledge of the indispensable uses of the opium alkaloids in the practice of medicine, with the possibility of reducing the frequency with which these drugs are used ill-advisedly.

Narcotic Farms

The first United States Narcotic Farm, at Lexington, Ky., was formally dedicated and opened by the Surgeon General on the afternoon of May 25, 1935. It was opened for inspection by the general public on the day of dedication and on the following Sunday, Monday, and Tuesday, after which it was closed to visits by the general public. During the 4 days in which it was opened to general inspection, 17,341 persons visited the institution, many of whom came long distances by motor from adjoining States. Three thousand four hundred and eighty visitors attended the dedication and opening exercises.

Admissions were accepted on and after May 29, 1935. Arrangements were made for the transfer of some 300 addict prisoners from the Federal prison system; to accept cases placed on probation by

FACADE OF THE BUILDINGS OF THE LEXINGTON NARCOTIC FARM, SHOWING THE MAIN ENTRANCE.

AIRPLANE VIEW OF THE LEXINGTON NARCOTIC FARM. THE FARM COMPRISES ABOUT 1,050 ACRES OF LAND.

courts having jurisdiction, one condition of such probation being that the probationers voluntarily submit themselves to confinement and treatment in a narcotic farm; and to accept a limited number of persons voluntarily seeking treatment. On June 30, 1935, there were under care at the Lexington Narcotic Farm a total of 280 inmates.

The institution at Lexington, Ky., is for men only, 1,000 beds being provided, although it is contemplated that facilities will be developed for women addicts in the near future, as an adjunct to those facilities already provided for men.

Senior Surg. Lawrence Kolb was assigned to duty as medical officer in charge of the United States Narcotic Farm, Lexington, Ky., on October 1, 1934, preparatory to equipping and opening the institution, and the professional, subprofessional, and technical staff were recruited and placed on duty before the opening for the reception of admissions.

The institution at Fort Worth, Tex., is in process of being developed. The preliminary plans have been approved, and it is anticipated that the contract for the necessary buildings will be accepted some time during the autumn of 1935.

Preliminary contracts for beginning work at the above-mentioned institution were approved by the Procurement Division on October 13, 1934, and ground was broken with appropriate ceremonies for the beginning of grading and other preliminary construction work.

The institution at Lexington is designed primarily for the care of the more intractable type of person, largely the prisoner group. For that reason the custodial features have been emphasized. The institution at Fort Worth will be more open in character, being designed as a cottage type, and the custodial features will be less emphasized than those at Lexington. Experiences have indicated that there are certain groups of addicts who require that greater emphasis be placed on custodial care, while others may be benefited by a more liberal policy. The institution at Fort Worth, therefore, will be supplemental to that at Lexington.

The inception of the institution at Lexington is an expression on the part of the United States Government that restrictive laws governing commerce in narcotics are not the only measures to be applied as a possible solution of the medico-social problem of drug addiction. The presence in American communities of persons who are addicted to the use of narcotic drugs constitutes an ultimate market for smuggled or contraband drugs and tends to menace the legal supply of such drugs originally destined for medical or scientific purposes. Public policies, therefore, which have for their object the regulation and control of the production and distribution of narcotic drugs are proportionately as effective as those which undertake to control, segregate, or cure the drug addict population of a community.

The dedication and opening of this institution at Lexington, Ky., represents a change in the policy of the United States toward the so-called "drug-addiction problem." No person will be eligible

for treatment or confinement in the institution unless he is an addict as defined in the law authorizing these narcotic farms, and then only if he complies with the regulations governing admissions.

Medical and Psychiatric Services in Federal Penal and Correctional Institutions

The Service continued the work of supervising and furnishing the medical and psychiatric services for the Federal penal and correctional system, and the Attorney General requested the Public Health Service to extend the psychiatric service to all Federal courts.

A 3-day conference of medical officers and others in the prison service was held at the United States Hospital for Defective Delinquents, Springfield, Mo., on September 13, 14, and 15, 1934. A total of 51 persons attended this meeting, consisting of the chief medical officers, psychiatrists, psychologists, wardens, superintendents, and educational directors of the various penal institutions, and administrative officials of the Bureau of Prisons and the Public Health Service.

At the close of the fiscal year 1935, the Service was operating 16 medical units in connection with the various institutions under the control of the Department of Justice, one unit, that at the Federal Correctional Camp, Fort Eustis, Va., having been discontinued on October 15, 1934.

During the course of the year the inmate population of the various institutions increased as follows:

Penal institution	Number of inmates on June 30, 1934	Number of inmates on Dec. 31, 1934	Number of inmates on June 30, 1935	Increase on June 30, 1935, over June 30, 1934	Percent increase
Alcatraz	----------	212	242	242	----------
Alderson	338	356	469	131	38.8
Atlanta	1,992	2,148	2,515	523	26.3
Chillicothe	862	950	1,458	596	69.1
El Reno	616	867	730	114	18.5
Fort Eustis	172	[1]	----------	[2]	----------
Fort Leavenworth	1,495	1,649	1,570	75	5.0
La Tuna	469	525	505	36	7.7
Leavenworth	2,466	2,431	2,828	362	14.7
Lewisburg	1,195	1,225	1,312	117	9.8
McNeil	843	786	907	64	7.6
Milan	233	309	543	310	133.0
New Orleans	262	392	517	255	97.3
New York	120	142	144	24	20.0
Petersburg	278	460	601	323	116.2
Springfield	395	446	505	110	27.8
Tucson	118	219	213	95	80.5
Total	11,854	13,117	15,059	3,205	27.0

[1] Discontinued Oct. 15, 1934.
[2] Decrease, 172.

A progressive program of classification and rehabilitation of prisoners has been carried on in the larger penal institutions, in which the medical service has taken an active part, members of the medical staff serving as members of the disciplinary boards and classification committees. Through this means each prisoner has been given treatment

for his physical and mental disorders and has had the benefit of medical, psychiatric, and psychological supervision in his work assignments and solution of his adjustment problems, thereby placing him in his proper status at the institution and enabling the medical department to carry on a more extensive rehabilitative program. Periodical sanitary inspections were made by the medical staffs at the various institutions, resulting in greatly improved sanitary conditions.

At the United States Penitentiary, Atlanta, Ga., a plan was put into effect which gives promise of yielding better results than those obtained with a general "sick line." It consisted of dividing the prison population of 2,500 men among 5 physicians so that each was responsible for the medical care of a definite group of about 500 men. This permitted a much closer relationship between patient and physician approximating that enjoyed by the family physician in private life. It gives promise of solving many administrative difficulties associated with the so-called morning "sick call or line" of a correctional institution.

The medical staff at the United States Penitentiary Annex, Fort Leavenworth, Kans., assisted the classification committee in selecting 315 narcotic drug addicts from among the inmate population at that institution for transfer to the United States Narcotic Farm, Lexington, Ky. Those with serious criminal records, or incorrigibles, were not chosen, preference being given to those whose medical, criminal, and sociological histories indicated the best possibilities for a cure for drug addiction.

Passed Asst. Surg. O. C. Williams took over the direction of the medical activities at the United States Penitentiary, Leavenworth, Kans., on August 17, 1934. Spinal anesthesias for operations below the diaphragm and avertin anesthesias for the extraction of teeth and other operations have been found from past experience at this institution to be the most satisfactory for prison use where the professional personnel is limited and where a large majority of the help throughout the hospital is necessarily of inmates. A total of 678 spinal anesthesias and 70 avertin anesthesias has been given, and all have been entirely satisfactory.

During the first 9 months of the fiscal year 1935, a paper X-ray chest film was made on each new admission to the United States Industrial Reformatory, Chillicothe, Ohio. One thousand films were made and analyzed and compared with the results of primary physical examinations, and when indicated, with celluloid films of the same cases. An analysis of the results obtained from the paper films indicated that the additional expense involved in carrying out this procedure was not justified, and the use of paper chest films routinely was discontinued. The hospital at the above-mentioned institution was approved by the American College of Surgeons and placed on the accredited list in April 1935. The population of this institution has almost doubled in the last year. However, the medical unit has been able to render adequate service in spite of the additional burden.

The results of efforts at rehabilitation at the United States Penitentiary, McNeil Island, have been gratifying. Of all admissions during the fiscal year 1935, 32.3 percent were admitted to the hospital for medical and surgical treatment which might assist in the rehabilita-

tion of the inmate. Of these, 79 percent were successfully treated and relieved of conditions which had been a handicap to them on the outside.

The program of medical rehabilitation at the United States Penitentiary, Lewisburg, Pa., has been extended and systematized so that it is now extremely rare for a prisoner to leave the institution with even minor remediable defects uncorrected. As a result of this program the surgical operations increased 28 percent during the year, while the average daily population was only 10 percent higher. At least 60 percent was of a constructive and rehabilitative nature. An intensive campaign to study and more adequately treat the psychoneurotic patients resulted in a decided decrease in the number of patients reporting sick at times other than the morning "sick call." Of the 713 men discharged from this institution during the year, 95 percent showed improvement in physical and mental condition as compared with their condition upon admission.

In addition to the medical services rendered by the Public Health Service unit at the United States Detention Farm, La Tuna, Tex., the chief medical officer at that institution made 241 visits to the El Paso County jail for the purpose of furnishing medical service to the Federal prisoners confined there, treating a total of 1,680 prisoners.

Some changes occurred in the administrative staff of the United States Hospital for Defective Delinquents, Springfield, Mo., during the year. Senior Surg. Lawrence Kolb, superintendent and chief medical officer, was transferred to the United States Narcotic Farm, Lexington, Ky., and was succeeded by Surg. L. M. Rogers. In February 1935, Surgeon Rogers was relieved from duty because of illness and Surg. Marion R. King was assigned for duty there as superintendent and chief medical officer.

The medical staff at this institution has been heavily taxed throughout the year due to insufficient personnel. Provisions have been made, however, to correct this situation during the coming fiscal year. In spite of the excessive amount of work, all officers and employees have responded loyally to the exigency and the sick have received adequate care and attention at all times. More than half of the inmates of this hospital are afflicted with mental disease. At the end of the fiscal year there were 151 insane, 75 chronic infirm, and 60 tuberculous patients. In addition, 219 prisoners, comprising a prison camp service, were confined at this institution.

Since its opening on September 30, 1933, 290 insane persons have been admitted to the hospital. The records of 102 of these patients have been closed, owing to transfer, recovery, discharge, or death. Of these 102 patients, 52.9 percent were improved, 10.7 percent died, and 8.8 percent recovered.

An outline containing directions and information for medical aftercare of indigent and mental patients in the various States was prepared during the year and has proved of value for reference purposes in the disposition of chronic infirm, tuberculous, and mental patients at the time of release.

A request was received from the Attorney General for the Public Health Service to provide medical services for the Federal Prison

Camp No. 8, Montgomery, Ala., on June 13, 1935. Arrangements were made to furnish this service beginning with the new fiscal year.

During the year the following articles were published in connection with the work in the Federal penal and correctional institutions: "Selected Papers on the Medical Services in The Federal Prison System, with Special Reference to Psychiatric Problems", "Methods to Detect Malingering in Pulmonary Tuberculosis", "The Surgical Eradication of Pyorrhea", "Nonoperative Relief of Foot Pain", "The Injection Treatment of Hemorrhoids—with a Résumé of 115 Cases", and "Collection of Specimens of Blood for Serologic Tests for Syphilis."

An indication of the scope of the medical services rendered the Federal penal and correctional system by the Public Health Service may be obtained from the following: During the fiscal year 1935 there were furnished 300,774.4 hospital relief days and 672,916 outpatient relief days.

Studies and Investigations on the Causes, Prevalence, and Means for the Prevention and Treatment of Nervous and Mental Diseases

Upon the request of the Governor, a survey of mental health administration of the State of Washington was made. The field of mental health administration in that State would appear to embrace the following activities: (1) The formulation of a policy respecting the qualifications and training of medical and technical personnel, both special and general, required to meet the problems of mental illness within the State; (2) regulations governing the practice of psychiatry; (3) regulations governing the qualifications and appointment of commissions for the detection and certification of mental diseases and defects; (4) regulations governing the operation of facilities for the diagnosis, treatment, and care of persons with mental diseases or mental defects, and for inebriates and problem children; (5) regulations governing the rendering of expert testimony in alleged mental disease; (6) regulations governing the mental examination of offenders against the law and the disposition of mentally disordered and mentally defective delinquents; (7) the formulation and supervision of those measures and policies governing the treatment, care, disposition, and general supervision of mentally disordered members of the population, including regulations governing a system of interchange of mental patients with jurisdictions having responsibility for their care; (8) the development and supervision of facilities and agencies for out-patient and in-patient treatment, and the supervision of mentally disordered persons in the population, including the insane, mentally defective, epileptic, and problem situations manifesting symptoms of mental ill health; and (9) taking stock of the material with which mental health administration is called upon to deal, so that comparisons may be made from time to time of the conditions under which mental diseases are found, and when they occur, and including an analysis of the omissions and commissions attributed to a given public policy. Such inquiries, which are largely of a statistical nature, should relate not only to professional successes or failures but also to the economic questions involved. The effectual fulfillment of such a

policy for mental health administration in the State of Washington involves the development of a department, division, or special governmental agency charged specifically with carrying it into effect, and the appointment of a competent, reliable, and experienced physician with such necessary deputies and assistants as may be required for achieving the aims and objectives of the administrative policies outlined above.

A lecture course in mental hygiene was conducted for a class of Public Health Service officers assigned to the National Institute of Health for training.

DIVISION OF PERSONNEL AND ACCOUNTS

Asst. Surg. Gen. W. F. DRAPER, in charge

The Personnel and Accounts Division supervises all operations of the Service relating to personnel, finances, and the maintenance of property records. The organization of the Division has remained unchanged during the year. Through a personnel section, a finance section, and a property-record section, all matters relating to appointments, separations, and other changes in status of personnel, estimates of appropriations, allotments, and encumbrances, records of expenditures, including administrative audit, and all records of nonexpendable property are administered under the supervision of the Assistant Surgeon General in charge of the Division.

Because of the increase in the capacity of the marine hospitals there is urgent need of additional funds with which to provide medical officers and other classes of personnel essential for hospital operation. For the past few years, in order to keep within the appropriations it has been necessary to assign medical internes to duties which should be performed by more experienced doctors. A similar shortage of medical and other personnel exists also at the quarantine stations. A number of complaints have been received from Members of Congress and representatives of employees unions to the effect that the compensation of employees at the marine hospitals and quarantine stations is not commensurate with that of similar positions elsewhere in the Government service. In most instances the complaints are fully warranted.

PERSONNEL

COMMISSIONED OFFICERS

On July 1, 1934, the regular corps consisted of the Surgeon General; 8 assistant surgeons general; 49 medical directors, 1 pharmacologist director; 37 senior surgeons, 1 senior dental surgeon, 1 senior sanitary engineer, 81 surgeons, 13 dental surgeons, and 15 sanitary engineers, 97 passed assistant surgeons, 16 passed assistant dental surgeons, 5 passed assistant sanitary engineers, 1 passed assistant pharmacist, 21 assistant surgeons, 12 assistant dental surgeons, 1 assistant sanitary engineer, and 10 assistant pharmacists—a total of 370 officers. Of this number, 16 medical directors, 12 senior surgeons, 14 surgeons, 3 passed assistant surgeons, and 3 assistant pharmacists were on waiting orders. During the fiscal year the following changes occurred in the several grades: 2 assistant surgeons general reverted to the grade of medical director and 1 senior surgeon and 1 passed assistant surgeon were assigned to duty in the Bureau as assistant surgeons general; 1 medical director, 1 surgeon, 1 passed assistant surgeon and 1 assistant dental surgeon were placed on waiting orders status; 2 medical directors and 3 senior surgeons on waiting orders

status died during the year and 1 assistant dental surgeon was separated from the corps because of inability to qualify for the next higher grade; 2 senior surgeons were promoted to the grade of medical director, 12 surgeons were promoted to the grade of senior surgeon, 2 passed assistant surgeons were promoted to the grade of surgeon, 6 assistant surgeons were promoted to the grade of passed assistant surgeon, and 7 assistant dental surgeons were promoted to the grade of passed assistant dental surgeon; 16 doctors were appointed to the corps in the grade of assistant surgeon and 2 dentists were appointed to the corps in the grade of assistant dental surgeon.

On July 1, 1935, after these changes had occurred, the regular corps consisted of the Surgeon General, 8 Assistant Surgeons General, 51 medical directors, 1 pharmacologist director, 43 senior surgeons, 1 senior dental surgeon, 1 senior sanitary engineer, 71 surgeons, 13 dental surgeons, 15 sanitary engineers, 100 passed assistant surgeons, 23 passed assistant dental surgeons, 5 passed assistant sanitary engineers, and 1 passed assistant pharmacist, 31 assistant surgeons, 6 assistant dental surgeons, 1 assistant sanitary engineer, and 10 assistant pharmacists—a total of 382 officers. Of this number 15 medical directors, 9 senior surgeons, 15 surgeons, 4 passed assistant surgeons, 1 assistant dental surgeon, and 3 assistant pharmacists were on waiting orders.

At the close of the fiscal year 1935, 6 senior surgeons, 1 surgeon, and 1 passed assistant surgeon were serving by detail as Assistant Surgeons General in charge of divisions of the Bureau in accordance with acts approved July 1, 1902, July 9, 1918, and April 9, 1930; 1 medical director was on duty as director of the public health district, New York, N. Y.; 1 senior surgeon, 1 surgeon, and 2 passed assistant surgeons were serving on detail to the United States Employee's Compensation Commission; 2 medical directors were assigned as assistants to the Director, Pan American Sanitary Bureau, Washington, D. C.; 4 senior surgeons, 1 surgeon, 1 dental surgeon, 1 passed assistant surgeon, and 1 assistant pharmacist were serving on detail to the Bureau of Indian Affairs, Department of the Interior, in connection with the control of communicable diseases among the Indians; 1 senior surgeon was serving (as alienist and medical officer) on detail to the Morningside Hospital, near Portland, Oreg., which cares for the Alaska insane, under contract with the Department of the Interior; 1 medical director, 1 surgeon, 1 dental surgeon, 3 passed assistant surgeons, and 2 passed assistant dental surgeons were serving on detail with the United States Coast Guard; in connection with mental hygiene activities, 1 senior surgeon, 1 surgeon, 4 passed assistant surgeons, and 4 assistant surgeons were assigned for duty at various penal and correctional institutions, and 1 senior surgeon, 1 surgeon, 3 passed assistant surgeons, 1 passed assistant dental surgeon, 1 assistant surgeon, and 1 assistant pharmacist were assigned to duty at the United States Narcotic Farm, Lexington, Ky.

RESERVE OFFICERS

On July 1, 1934, the reserve commissioned officers on active duty numbered 37, consisting of 4 surgeons, 1 dental surgeon, 10 passed assistant surgeons, 11 assistant surgeons, and 11 assistant dental surgeons.

On July 1, 1935, the number of reserve officers on active duty was 64, consisting of 4 surgeons, 1 dental surgeon, 10 passed assistant surgeons, 1 passed assistant dental urgeon, 37 assistant surgeons, and 11 assistant dental surgeons.

ACTING ASSISTANT SURGEONS

On July 1, 1934, there were 695 acting assistant surgeons in the Public Health Service, and by July 1, 1935, this number had increased to 707.

Of the 707 acting assistant surgeons, 98 were on duty at marine hospitals; 433 were engaged in immigration, relief, and maritime, border, insular, and foreign quarantine work, 5 were engaged in the prevention of trachoma; 5 were on duty in connection with field investigations of public health and rural sanitation; 113 were on detail with the United States Coast Guard; 1 was serving with the Bureau of Mines by detail; 20 were serving at various penal and correctional institutions; and 32 were engaged in antivenereal disease activities as part-time employees at nominal compensation. Eleven of the thirty-two acting assistant surgeons engaged in antivenereal disease activities held appointments as collaborating epidemiologists.

ATTENDING SPECIALISTS

On July 1, 1934, there were 481 attending specialists in the Service, and during the year this number increased to 520, of which number 270 were consultants to marine hospitals, while 42 were available for call at second- and third-class relief stations; 26 were engaged in antivenereal disease activities; 65 were serving at various penal and correctional institutions; and 117 were consultants in connection with quarantine, immigration, and scientific research activities.

INTERNES

On July 1, 1934, there were 118 medical and dental internes in the service; on July 1, 1935, there were 129. Internes are appointed for temporary periods of 1 year for duty at marine hospitals and stations where mental hygiene activities are being conducted.

PHARMACISTS AND ADMINISTRATIVE ASSISTANTS

On July 1, 1934, there were 14 pharmacists and 34 administrative assistants in the Public Health Service. During the year 1 pharmacist was retired under provisions of the act of May 29, 1930; an addition of 10 was made in the administrative corps and one in that corps was demoted to clerk. The total corps at the end of the fiscal years was 13 pharmacists (9 chief and 4 junior) and 43 administrative assistants (12 first class, 7 second class, 10 third class, and 14 fourth class).

NURSES, DIETITIANS, AND RECONSTRUCTION AIDES

On July 1, 1934, there were on duty in the Public Health Service 498 nurses, 27 dietitians, 31 reconstruction aides, 4 social workers, and 35 guard attendants. On July 1, 1935, there were on duty 560

nurses, 31 dietitians, 31 reconstruction aides, 4 social workers, and 67 guard attendants, distributed as follows: Hospital Division—nurses 517, dietitians 30, reconstruction aides 28, social workers 4; Mental Hygiene Division—nurses 35, reconstruction aides 3, dietitians 1, guard attendants 67; Domestic Quarantine Division—nurses 5; Foreign Quarantine Division—nurses 3. There were 34 resignations, the smallest number ever reported. These positions were filled with new appointees. Since the last report, the First United States Narcotic Farm at Lexington, Ky., has been opened with 10 nurses, 1 dietitian, 1 reconstruction aide, and 30 guard attendants. One nurse was detailed to the office of Industrial Hygiene for 2 months in connection with the study of mercurial poisoning among fur cutters. Nurses have been detailed for short periods to the marine hospitals by the State emergency relief associations in various States.

CONTRACT DENTAL SURGEONS

On July 1, 1934, there were 52 contract dental surgeons employed at the marine hospitals, second-, third-, and fourth-class relief stations, and the various penal and correctional institutions. These part-time employees are appointed for local duty and receive fixed and uniform fees for dental work performed for service beneficiaries. At the close of the fiscal year 1935, this number had increased to 54; 8 were at marine hospitals, 34 were at second-, third-, and fourth-class relief stations, 6 were serving at various penal and correctional institutions, and 6 were detailed to the United States Coast Guard for duty.

EPIDEMIOLOGISTS

During the year the number of assistant collaborating epidemiologists was decreased from 4,674 to 4,643. These employees are health officers or employees of State or local boards of health, who receive only nominal compensation from the Federal Government and who furnish the service with reports of communicable diseases received by State or local health organizations. The number of collaborating epidemiologists increased from 33 to 44. These appointees are on duty in the different States.

NATIONAL INSTITUTE OF HEALTH

The National Institute of Health continued under the administration of Director George W. McCoy and Assistant Director R. E. Dyer. The scientific staff comprised 63 members, of whom 19 were commissioned medical officers, 29 other research workers, and 15 consulting experts. The staff was assisted by 19 technicians and 78 other subordinates, making a total of 160. Of this total, 142 were on full-time schedule.

Property Records

The property return section has accounted for all property of the Service, and 328 property returns were audited during the year. A total of $10,430.91 was turned in to "Miscellaneous receipts" from sales of property. Surplus property not desired by any other Government department was sold for $2,837.14, unserviceable property

for $1,483.26, hides for $338.16, and unserviceable boats and boat property for $6,110.51. Property surplus to the Public Health Service valued at $64,248.21 was transferred to other Government departments. Of this amount, $46,176.20 was from Perry Point. Surplus property of other Government departments valued at $2,038.01 has been received by the Public Health Service. Property valued at $70,879.33 has been transferred from Service stations where it was surplus to stations where it could be used. By the exchange value on old typewriters and adding machines turned in on the purchase price of new machines, $902.43 was saved.

Accounts Section

The Accounts Section of the Division of Personnel and Accounts conducts all bookkeeping and accounting in connection with the expenditure of Public Health Service appropriations. This includes also accounts of miscellaneous collections, allotments, records of encumbrances, cost accounting, and the administrative audit. A statement of appropriations, expenditures, and balances, with miscellaneous receipts, is published as an appendix to this report.

Personnel Statement

The accompanying tabular statement shows the personnel of the Service as of July 1, 1935. Of the 10,985 employees shown in the table, 4,643 listed as collaborating epidemiologists and assistant collaborating epidemiologists, receive only nominal compensation. They are mainly officers or employees of State and local health organizations who collaborate in the collection of morbidity statistics by furnishing the figures collected by those organizations relating to cases of communicable diseases. The personnel statement also includes all part-time employees, those employed on a per diem basis, and those whose compensation is on a fee basis.

Consolidated personnel report as of July 1, 1935

	Medical and scientific																			
	Regular corps							Reserve corps												
	Surgeon general	Medical director	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Medical director	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Acting assistant surgeon	Attending specialist and consultant	Contract dental surgeon	Interne	Temporary C. W. A. workers	Pharmacist
Bureau	1		8														[1] 30	
FIELD																		
Hospital division:																		
Marine hospitals:																		
Baltimore, Md		1			4	3	2					2	4	26		11		
Boston, Mass		1			1	1	1						4	11		4		
Buffalo, N. Y					1	1							3	9	1			1
Carville, La					1								4	4				1
Chicago, Ill		1			3		3						5	15		8		
Cleveland, Ohio		1			1	2						1	10	9		3		
Detroit, Mich				1	1	2	1					3	3	14		1		1
Ellis Island, N. Y		1		1	2	2	3				1	1	11	7		5		
Evansville, Ind					1								2	9	1			1
Fort Stanton, N. Mex					1		2					1	2	2		2		
Galveston, Tex				1		2						1	3	12	1	7		
Hudson Street, N. Y		1			1	2	1			1		2	8	17		3		2
Key West, Fla						1	1						2	1				1
Louisville, Ky					1	1						1	1	9	2	1		1
Memphis, Tenn				1		2							2	10	1	1		
Mobile, Ala				1		3					1		3	6		2		
New Orleans, La					3	10					1		4	13		15		1
Norfolk, Va		1			1	2	3					1	4	11		10		
Pittsburgh, Pa					1	2						1	2	8		2		
Portland, Maine		1				1					2	1		13		2		
St. Louis, Mo				1		1	1					2	2	16	1			
San Francisco, Calif		1			2	6	3				1	1	5	20		13		1
Savannah, Ga				1		1					2		7	8				1
Seattle, Wash				2	1	7	2				1	2	3	13		8		

[1] Clerical.

Stapleton, Staten Island, N. Y.		1		1	3	3	2					3	3	6		11		1
Vineyard Haven, Mass.						1							1	1	1			
Total hospitals																		
Relief stations:																		
Second class		3			2	3	3					2	18	33	10	1		
Third class													146	9	24			
Total relief stations																		
Foreign quarantine division:																		
Quarantine stations:																		
Baltimore, Md.					1								2					
Boston, Mass.				2									1					
Ellis Island (also immigration)		3		1		1							15					
El Paso, Tex.													2					
Fort Monroe, Va.		1																
Galveston, Tex.				1									3					
Honolulu, T. H.		1				1	1						12					
Laredo, Tex.													5					
Marcus Hook, Pa.		1					1						2					
New Orleans, La.				1		1							4					
Rosebank, N. Y.		1				3							5	1				
San Francisco, Calif. (also immigration)					1	1							3					
San Juan, P. R.					1								2					
Foreign ports		2			5	11							34	2				
All other stations		3		4	4	7							178					2
Total quarantine and immigration																		
Domestic quarantine division:																		
Interstate					5	2												
Trachoma					1								5	4				
Rural sanitation (regular)		1		1	2								2	3				
Civil Works Administration project																	94	
All other stations				1	3		1											
Total all activities																		
Scientific research division:																		
National Institute of Health		4		1	7	7							1	6				
Leprosy investigations				1		2												
Malaria investigations				2	2	1												
Nutrition studies														1				
Stream pollution					2	1								4				
Industrial hygiene and sanitation				1		2	2						1	34				
Child hygiene					1									8				
Statistical Office														8				
All other stations		2		2	6	4	1						1	39				
Total all activities																		

Consolidated personnel report as of July 1, 1935—Continued

	Medical and scientific																			
	Regular corps							Reserve corps												
	Surgeon general	Medical director	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Medical director	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Acting assistant surgeon	Attending specialist and consultant	Contract dental surgeon	Interne	Temporary C. W. A. workers	Pharmacist
Sanitary reports and statistics																		
Division of venereal diseases					1	1	1						32	26				
Division of mental hygiene:																		
Alderson, W. Va.												3	3			4		
Atlanta, Ga.												3	1	6				
Chillicothe, Ohio											1	2	1	5		1		
Fort Leavenworth, Kans.						2	1					1	1	1		3		
Leavenworth, Kans.						1	1					1	2	3		3		
Petersburg, Va.													3	2				
McNeil Island, Wash.										1	1		1	4		1		
All other stations				2	2	6	4					8	8	41	6	7		
Total all activities																		
Miscellaneous:																		
Detailed to other offices		2		5	3	3	1					2	1					
Coast Guard		1			2	5					2	3	113	4	6			
Perry Point, Md. (supply station)							1											
Public health districts		1																
Waiting orders		15		9	15	4	4											
All others		1		1	4	4	1						1	3				
Total miscellaneous																		
Grand total	1	52	8	45	99	129	48			5	11	48	707	520	54	129	124	13

	General and technical														Totals			
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific—National Institute	Administrative assistant	Druggist	Nurse	Aide (P. T. and O. T.)	Dietitian	Laboratorian in roentgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other field employees	Departmental personnel	Medical and scientific	General and technical	Subtotal	Grand total
Bureau														183	9	213		222
FIELD																		
Hospital division:																		
Marine hospitals:																		
Baltimore, Md			1	1	32	4	3		1			8	87		53	137	190	
Boston, Mass			1	1	18	1	1		1			9	62		23	94	117	
Buffalo, N. Y					7	1			1			4	18		16	31	47	
Carville, La			1	1	1							6	262		10	271	281	
Chicago, Ill			2		26	1	2					11	77		35	119	154	
Cleveland, Ohio				1	22							6	64		27	93	120	
Detroit, Mich			1	1	27	1	2					7	62		26	101	127	
Ellis Island, N. Y			2	1	55	2	4		1			7	186		34	258	292	
Evansville, Ind					9							3	31		14	43	57	
Fort Stanton, N. Mex					10	2	2					9	114		10	137	147	
Galveston, Tex			1	1	19	1						5	54		27	81	108	
Hudson Street, N. Y				1	6	6		1	1			8	41		38	64	102	
Key West, Fla					7							3	19		6	29	35	
Louisville, Ky					7							3	27		17	37	54	
Memphis, Tenn				1	11							4	38		17	54	71	
Mobile, Ala			1	1	15		2					4	51		16	74	90	
New Orleans, La			1	1	45	3	3		1			17	140		47	211	258	
Norfolk, Va				1	29	1	2	1	1			8	103		33	146	179	
Pittsburgh, Pa				1	8							3	19		16	31	47	
Portland, Maine			1	1	8							3	25		20	38	58	
St. Louis, Mo					11			1				5	31		24	48	72	
San Francisco, Calif			1		48	3	3	1				12	148		57	216	273	
Savannah, Ga				1	15		1					4	38		20	59	79	
Seattle, Wash			2	1	38	2	2					8	101		39	154	193	
Stapleton, Staten Island, N. Y			2	1	36	3	3					8	114		34	167	201	
Vineyard Haven, Mass					2							1	7		4	10	14	
Total hospitals															663	2,703		3,366

Consolidated personnel report as of July 1, 1935—Continued

	General and technical														Totals			
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific—National Institute	Administrative assistant	Druggist	Nurse	Aide (P. T. and O. T.)	Dietitian	Laboratorian in roentgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other field employees	Departmental personnel	Medical and scientific	General and technical	Subtotal	Grand total
FIELD—continued																		
Hospital division—Continued.																		
Relief stations:																		
Second class			1		20	1			1			15	20		75	58	133	
Third class												6			179	6	185	
Total relief stations															254	64		318
Foreign quarantine division:																		
Quarantine stations:																		
Baltimore, Md			1							1	1		17		3	20	23	
Boston, Mass			1							2	2	1	18		3	24	27	
Ellis Island (also immigration)												2	9		20	11	31	
El Paso, Tex												1	11		2	12	14	
Fort Monroe, Va										2	2	1	15		1	20	21	
Galveston, Tex			1							1	3	1	11		4	17	21	
Honolulu, T. H										2		1	24		15	27	42	
Laredo, Tex													16		5	16	21	
Marcus Hook, Pa			1		2					2	2	1	20		4	28	32	
New Orleans, La			1							4	4	3	17		6	29	35	
Rosebank, N. Y			3							6	6	7	83		10	105	115	
San Francisco, Calif. (also immigration)			1		1					4	2	2	39		5	49	54	
San Juan, P. R										1		2	24		3	27	30	
Foreign ports												3	20		54	23	77	
All other stations			4	1	2					15	16	14	211		198	263	461	
Total quarantine and immigration															333	671		1,004
Domestic quarantine division:																		
Interstate												6	58		7	64	71	
Trachoma					5							1			10	6	16	

Rural sanitation (regular)					4							14	7		9	25	34	
Civil Works Administration projects																94	94	
All other stations												1	28		5	29	34	
Total all activities															31	218		249
Scientific research division:																		
National Institute of Health		36										12	94		26	142	168	
Leprosy investigations												1	4		3	5	8	
Malaria investigations												5	8		5	13	18	
Nutrition studies															1		1	
Stream pollution												2	11		7	13	20	
Industrial hygiene and sanitation												2	9		40	11	51	
Child hygiene						1						5			9	6	15	
Statistical Office												6	5		8	11	19	
All other stations			1						1			14	62		55	78	133	
Total all activities															154	279		433
Sanitary reports and statistics	4,643												2			4,645		4,645
Division of venereal diseases									1			4	14		61	19	80	80
Division of mental hygiene:																		
Alderson, W. Va					5							1			6	6	12	
Atlanta, Ga			1		3										14	4	18	
Chillicothe, Ohio			1		3								2		10	6	16	
Fort Leavenworth, Kans			1		2								3		9	6	15	
Leavenworth, Kans			1		3								2		11	6	17	
Petersburg, Va													3		5	3	8	
McNeil Island, Wash			1		2										8	3	11	
All other stations			5	2	21	4	1					14	209		84	256	340	
Total all activities															147	290		437
Miscellaneous:																		
Detailed to other offices															17		17	
Coast Guard					1										136	1	137	
Perry Point, Md. (supply station)												4	5		1	9	10	
Public health districts			1									3			1	4	5	
Waiting orders															47		47	
All others															15		15	
Total miscellaneous															217	14		231
Grand total	4,643	36	43	20	586	37	31	4	10	40	38	321	3,000	183	1,869	9,116		10,985

CHIEF CLERK'S OFFICE

DANIEL MASTERSON, Chief Clerk

DEPARTMENTAL PERSONNEL

On July 1, 1934, the civilian force on duty in the Administration Building consisted of 181 employees, of whom 162 were paid from the appropriation "Salaries, Office of the Surgeon General", 10 from the appropriation "Expenses, Division of Venereal Diseases", and 9 from the appropriation "Expenses, Division of Mental Hygiene." In the course of the year 3 new employees were added, chargeable to the appropriation "Expenses, Division of Mental Hygiene", making a total of 184 positions in the Bureau at the close of the fiscal year.

During the year 9 employees resigned, 3 died, and 1 was retired on account of physical disability. Thirteen vacancies were filled by original appointment, 4 by transfer of employees from other Government agencies, and 1 by transfer from the Public Health Service field service.

Only 4 administrative promotions were possible, and these were in the Division of Mental Hygiene. Increases in grade or salary were given to nine employees by advancements to positions left vacant by the resignation, death, or retirement of the incumbents. The average salary at the beginning of the fiscal year was $1,898, but had fallen to $1,890 at the close of the year.

Sick leave averaged 9.3 days per employee, as compared with 8.4 days for the preceding year. Largely as a result of reduced annual leave allowance, a considerable number of employees found it necessary to take leave without pay, a circumstance that worked hardship in some instances.

There were 2,032 visits to the emergency room maintained in the Administration Building, in 260 of which there was attendance by a physician.

Three deaths occurred among the personnel. Miss Lucy Minnigerode, who had been Superintendent of Nurses since 1919, died on March 24, 1935. Miss Blanche E. Bogard, senior clerk in the dental section of the Hospital Division since 1920, died on January 6, 1935. Miss Ethel Clark, assistant clerk in the Division of Personnel and Accounts, died December 4, 1934, after a service in this Bureau since April 30, 1920. Mr. Jennings B. Phillips, assistant clerk in the Chief Clerk's Office, retired on June 30, 1935, on account of physical disability after a Government service of nearly 17 years.

PRINTING AND BINDING

Prior to the fiscal year 1933 the annual allotment to the Public Health Service for printing and binding had been $93,000, which sum was far from being adequate for the reasonable printing and binding requirements of the Service considered essential to the most

effective performance of its authorized and required work. However, in 1933, because of a decreased appropriation for the Treasury Department, this allotment was drastically cut to $50,000, with resulting serious impairment to the health work of the Service. While this allotment has now been increased to $58,000 for the fiscal year 1936, it cannot be too strongly urged that the fund be restored to its former figure at the earliest practicable date. A further enlargement beyond that amount could easily be justified by the needs involved. Reasonable printing expenditures for disseminating the results of researches and investigations and other useful health information authorized by law is one of the best means of achieving the greatest results from the progress being made in sanitary science and of promoting general health in our country. In the meantime, constant attention is being given in this office to the most economical utilization of the funds available.

OFFICE QUARTERS

During the fiscal year the new Administration Building at Nineteenth Street and Constitution Avenue was improved by the completion of the handsome marble terrace surrounding the structure, by the grading and landscaping of the grounds and approaches, by the painting of the interior, and by the installation of new cork floors to replace defective mastic tile flooring originally provided. The auditorium in this building has proved very useful for numerous gatherings connected with the work of the Public Health Service, and in addition has been frequently used by other departments and agencies of the Government.

The comprehensive Public Health Service exhibit shown at the Century of Progress exhibition at Chicago was returned to Washington and has been utilized, with other exhibit material, to equip a very interesting exhibit room in the administration building, where the public may view many instructive features of disease-prevention work.

PUBLIC HEALTH SERVICE LIBRARY

The library added to its shelves 258 volumes and approximately 200 pamphlets, its collection now numbering 13,851 bound volumes and 7,450 pamphlets. Journals to the number of about 250 are being received regularly and circulated to Service personnel interested therein. Many of these journals are subsequently bound and form valuable reference material.

Visitors to the library, and requests received by letter, telephone, and person, showed a constant increase throughout the year, and there is pressing need for an increase in the library staff, which now consists of but three persons.

EMPLOYEE ACTIVITIES

During the year a credit union was organized by the personnel on duty in the administration building under the recently enacted Federal credit-union law. This union, like many others of its kind,

is proving very successful, as it provides its members, to a considerable extent, with their own banking facilities. Besides furnishing a convenient and profitable method of regular savings, it affords also a source of credit of decided practical value.

The Public Health Service Relief Association, which was organized in 1929, has continued to progress, and provides the means of giving immediate and substantial aid to employees who may be confronted with unexpected emergencies. This association has been notably successful and has accumulated a fund of considerable size.

APPENDIX

FINANCIAL STATEMENT

The following is a statement of expenditures from appropriations of the Public Health Service for the fiscal year 1935:

Appropriation	Appropriated and received from other sources	Obligations			Unobligated balance
		Incurred	Liquidated	Outstanding	
Salaries, Office of Surgeon General	$293,080	$291,777	$291,777		$1,303
Pay, etc., commissioned officers	1,594,342	1,576,729	1,575,385	$1,344	17,613
Pay of acting assistant surgeons	289,111	275,924	274,224	1,700	13,187
Pay of other employees	948,737	936,331	935,175	1,156	12,406
Freight, transportation, etc	25,190	24,737	22,749	1,988	453
Maintenance, National Institute of Health	50,000	49,055	46,752	2,303	945
Books	450	448	426	22	2
Pay of personnel and maintenance of hospitals	[1] 6,041,079	6,041,079	6,012,818	28,261	
Quarantine Service	322,150	306,733	299,548	7,185	15,417
Preventing the spread of epidemic diseases	209,123	205,003	200,059	4,944	4,120
Preventing the spread of epidemic diseases, 1935–36	8,000	1,515	1,399	116	6,485
Field investigations of public health	233,273	229,184	225,295	3,889	4,089
Interstate Quarantine Service	35,814	34,686	33,937	749	1,128
Studies of rural sanitation	25,411	25,267	25,175	92	144
Control of biologic products	41,584	41,141	41,113	28	443
Expenses, Division of Venereal Diseases	62,255	62,106	60,054	2,052	149
Expenses, Division of Mental Hygiene	[2] 393,184	387,992	378,806	9,186	5,192
Educational exhibits	1,000	986	863	123	14
Working-capital fund, narcotic farm, Lexington, Ky	65,000	47,135	42,338	4,797	17,865
Payment to officers and employees in foreign countries due to appreciation of foreign currency	49,100	46,668	43,320	3,348	2,432
Total	[3] 10,687,883	10,584,496	10,511,213	73,283	103,387

[1] Includes $693,485 reimbursement for care and treatment of beneficiaries of the Veterans' Administration and Civilian Conservation Corps and $25,234 miscellaneous reimbursement.
[2] $65,000 transferred to working-capital fund, narcotic farm.
[3] Statement does not include expenditure of $7,490 from trust funds.

FUNDS TRANSFERRED FROM OTHER DEPARTMENTS

Expenditures from allotments of funds from other bureaus and offices for direct expenditure during the fiscal year 1935 were as follows:

Appropriation title	Balance from previous fiscal year	Allotted	Expended
Veterans' Administration: Working fund		$304,899	$304,899
Department of Justice: Medical and hospital service, penal institutions		[1] 432,478	432,297
Public Works Administration: National Industrial Recovery	$459,748		459,748
Civil Works Administration: Working fund	37,795		37,795
Federal Emergency Relief Administration: Working fund		1,000,000	943,533
Public Works Administration: Working fund	75		75
Total	497,618	1,737,377	2,178,347

[1] This amount includes $14,000 transferred under acts of Mar. 29, 1934, and Feb. 13, 1935.

MISCELLANEOUS RECEIPTS—COVERED INTO THE TREASURY

The revenue derived from operations of the Public Health Service during the fiscal year 1935, and covered into the Treasury as miscellaneous receipts, were as follows:

Source	Amount
General fund receipts:	
Quarantine charges	$218,534.52
Hospitalization charges and expenses	35,979.39
Sale of subsistence	11,328.01
Sale of occupational-therapy products	561.94
Sale of obsolete, condemned, and unserviceable equipment	9,312.14
Rents	2,417.00
Reimbursement for Government property lost or damaged	398.45
Commissions on telephone pay stations installed in service buildings	1,257.10
Sale of refuse, garbage, and other byproducts	1,241.60
Sale of livestock and livestock products	377.90
Other revenues	235.21
Total	281,643.26
Trust-fund receipts:	
Sale of effects of deceased patients	955.76
Inmates' funds	1,363.78
Grand total	283,962.80

QUARANTINE SERVICE—EXPENDITURES BY STATIONS

Name of station	Pay of officers and employees	Maintenance	Total
CONTINENTAL QUARANTINE STATIONS			
Baltimore, Md	$30,479.69	$9,754.26	$40,233.95
Biscayne Bay (Miami), Fla	16,989.13	5,880.47	22,869.60
Boca Grande, Fla	1,141.25	65.00	1,206.25
Boston, Mass	37,720.41	20,594.96	58,315.37
Brownsville, Tex	12,649.34	2,853.84	15,503.18
Brunswick, Ga	1,345.48	325.72	1,671.20
Calexico, Calif		10.00	10.00
Cape Fear (Southport), N. C	7,834.98	2,196.58	10,031.56
Charleston, S. C	23,149.04	8,549.96	31,699.00
Columbia River (Astoria), Oreg	3,644.48	3,194.20	6,838.68
Corpus Christi, Tex	1,997.50	60.92	2,058.42
Del Rio, Tex	4,579.45	1,033.86	5,613.31
Eagle Pass, Tex	10,465.88	1,021.58	11,487.46
El Paso, Tex	22,389.46	2,867.64	25,257.10
Eureka, Calif		12.00	12.00
Galveston, Tex	22,407.92	7,839.26	30,247.18
Gulfport, Miss	3,815.55	429.95	4,245.50
Hidalgo, Tex	4,267.56	506.37	4,773.93
Key West, Fla	1,708.29		1,708.29
Laredo, Tex	19,745.00	2,081.66	21,826.66
Marcus Hook, Pa	40,102.27	12,659.72	52,761.99
Mercedes, Tex	1,518.80	643.16	2,161.96
Mobile, Ala	20,890.16	6,166.02	27,056.18
New Orleans, La	44,987.62	15,777.16	60,764.78
Newport, R. I		35.00	35.00
New York (Rosebank), N. Y	145,534.31	68,498.76	214,033.07
Nogales, Ariz	2,483.16	1,618.78	4,101.94
Norfolk (Fort Monroe), Va	30,652.59	7,088.46	37,741.05
Pensacola, Fla	11,687.69	1,596.96	13,284.65
Perth Amboy, N. J	1,366.58	900.00	2,266.58
Portland, Maine	10,751.00	2,357.71	13,108.71
Portland, Oreg	1,413.01	112.48	1,525.49
Port Townsend, Wash	11,486.70	2,539.68	14,026.38
Presidio, Tex	3,641.87	745.19	4,387.06
Providence, R. I		95.00	95.00
Rio Grande, Tex	2,255.30	125.80	2,381.10
Roma, Tex	3,681.00	616.60	4,297.60
Sabine, Tex	11,688.47	1,147.09	12,835.56
St. Andrews (Panama City), Fla		100.00	100.00
St. Johns River (Jacksonville), Fla	8,500.18	1,263.16	9,763.34
San Diego (Point Loma), Calif	10,937.61	4,138.24	15,075.85

QUARANTINE SERVICE—EXPENDITURES BY STATIONS—continued

Name of station	Pay of officers and employees	Maintenance	Total
CONTINENTAL QUARANTINE STATIONS—continued			
San Francisco, Calif.	$43,010.93	$19,970.83	$62,981.76
San Pedro (Los Angeles), Calif.	19,882.51	3,673.31	23,555.82
Savannah, Ga.	13,025.81	4,601.96	17,627.77
Seattle, Wash.	10,103.13	1,040.14	11,143.27
Tampa, Fla.	11,210.49	3,995.83	15,206.32
Vineyard Haven, Mass.		20.00	20.00
Ysleta, Tex.		21.70	21.70
Zapata, Tex.	1,862.16	360.00	2,222.16
Freight and miscellaneous		49,822.67	49,822.67
Travel of medical directors within districts		1.28	1.28
Total, continental quarantine stations	689,003.76	281,010.92	970,014.68
INSULAR QUARANTINE STATIONS			
Hawaii	29,448.78	11,855.85	41,304.63
Philippine Islands	13,840.56		13,840.56
Puerto Rico	22,265.38	11,248.90	33,514.28
Virgin Islands	10,960.64	2,617.33	13,577.97
Total, insular quarantine stations	76,515.36	25,722.08	102,237.44
Grand total, all stations	765,519.12	306,733.00	1,072,252.12

INDEX

A

B

C

F

G

H

I

L

Q

R

20980—35——11

S

T

U

V

W

Y

Z