

ANNUAL REPORT
OF THE
SURGEON GENERAL *of the*
PUBLIC HEALTH SERVICE
of the UNITED STATES

FOR THE FISCAL YEAR

1936



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1936

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ANNUAL REPORT
BUREAU OF
PUBLIC HEALTH SERVICE
UNITED STATES
DEPARTMENT OF THE TREASURY

TREASURY DEPARTMENT

Document No. 3081

Public Health Service



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LETTER OF TRANSMITTAL

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, January 5, 1937.

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 1936.

Very truly yours,

H. MORGENTHAU, Jr.,
Secretary.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

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CHARGE

STATE UNIVERSITY OF NEW YORK
JAN 10 1961

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ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE

TREASURY DEPARTMENT,
UNITED STATES PUBLIC HEALTH SERVICE,
Washington, D. C., October 15, 1936.

SIR: In accordance with the act approved July 1, 1902, I submit for transmission to Congress the following report of the transactions of the United States Public Health Service for the fiscal year ended June 30, 1936. This is the sixty-fifth annual report of this Service, and presents its activities during the one hundred and thirty-eighth year of its existence.

On January 31, 1936, Surg. Gen. Hugh S. Cumming was retired (placed on waiting orders) after having served as an officer of the Public Health Service for 42 years and as Surgeon General since 1920—a period of 16 years.

PROMOTION OF PUBLIC HEALTH UNDER THE SOCIAL SECURITY PROGRAM

Under the public health provisions of the Social Security Act, a national health program has been made possible for the first time in the history of the Public Health Service. This modernized national health program was inaugurated during the latter part of the fiscal year. With the advice and assistance of the State health officers, grants-in-aid were made to the States for the last 5 months of the fiscal year 1936 and allocations were made for 1937. By the close of the period covered by this report, every State had submitted a program of work under the provisions of the public health title of the Social Security Act.

Among the important duties of the Public Health Service are the investigations of disease and cooperation with the States in advancing public health administration. Both investigative activities and the extension of cooperative health service have been greatly stimulated through the Social Security Act and appropriations made under its authority.

During the period covered by this report, cooperation was given the Works Progress Administration and the State health agencies in providing technical supervision for community sanitation, malaria control drainage, and the sealing of abandoned mines; assistance was furnished other Federal departments and bureaus in problems of environmental sanitation; and cooperation was maintained with the State and Territorial health authorities of California, Oregon, Washington, Montana, and Hawaii in measures directed to the control of bubonic plague. Bubonic plague was introduced on the West Coast about 35 years ago, and since that time it has been going steadily eastward and northward. The infection has recently been discovered in Montana, Idaho, and Utah.

Through emergency funds, community sanitation projects, sponsored by the State health departments, were conducted with technical supervisory assistance from the Public Health Service; by the end of the fiscal year, 896,879 sanitary latrines had been constructed in unsewered villages and in unsewered areas of cities for the purpose of preventing the spread of typhoid fever, hookworm disease, dysentery, and enteritis; and a total of 340,000 acres of mosquito-breeding area had been drained, involving the construction of 22,000 miles of ditches.

INVESTIGATIONS OF PUBLIC HEALTH PROBLEMS

Although the studies relating to the cause and prevention of disease do not appear different from previous studies, they are designed to increase our knowledge so that we may develop rational methods of control. Leads that appear hopeful at first, often, in a sense, prove fruitless; but in research, so-called "negative results" are of value, at least in eliminating certain of these leads and thus directing study into more promising paths.

LABORATORY AND CLINICAL STUDIES

The cancer investigations conducted at the research laboratory in Boston, Mass., were of a basic nature, and included studies of absorption spectra of blood and tissue extracts, dibenzanthracene—a substance found to produce tumor growth in mice, the effects of radon and X-rays, the occurrence of lung tumors in mice, and various biochemical studies relating to tumor cells.

Studies conducted at the National Institute of Health were concerned with the effect of diets deficient in the amino acid lysine, cancer tissue cultures, the chemistry of cell growth and cell division, and chemotherapy.

Because of the increasing importance of heart disease, increasing attention has been given to this condition. Studies of heart disease in Washington included clinical observations carried out at various hospitals and clinics and laboratory experiments at the National Institute of Health. Both studies have dealt almost exclusively with rheumatic fever, the largest single cause of disability and death from heart disease, taking rank in importance with tuberculosis, syphilis, and cancer. The studies of heart disease in the Philadelphia office were conducted with two objectives: (1) To secure more accurate and extensive data than are now available on the incidence and distribution of the etiological types of heart disease throughout the United States, and (2) to assemble, by intensive methods in one community, better epidemiological data on rheumatic fever.

Laboratory experiments at the leprosy investigation station, at Honolulu, Territory of Hawaii, dealt almost entirely with investigations concerning the relation of the state of nutrition to the susceptibility to and the progress of leprosy in laboratory animals. Experiments have definitely demonstrated that the incubation period for the disease can be shortened by depleting the rats of vitamin B₁ before inoculating them with the organism of rat leprosy.

Malaria is still important from a public health standpoint in certain regions of the country. A new field malaria research laboratory was set up at Savannah, Ga., for the purpose of studying the bionom-

ics of *Anopheles* mosquitoes, the principal vector of malaria. The artificial means of control which are effective in urban communities are expensive. It is hoped that investigations here will result in the discovery of some method of control by natural and self-perpetuating means which will be applicable to rural communities.

The virus isolated and described by Surg. Charles Armstrong has been established as the cause of a type of meningitis occasionally occurring in man. Protection tests indicate that immunity to this virus is rather common among some groups of our population and suggest that infection of man may occur in the absence of meningeal symptoms, just as usually happens in monkeys and mice inoculated by routes other than the central nervous system.

Studies at the National Institute of Health have shown that certain chemicals, notably sodium aluminum sulphate and picric acid, or a combination of the two, when instilled into the nostrils of experimental animals have the property of preventing infection after subsequent introduction of the virus of epidemic encephalitis (St. Louis type) and that of poliomyelitis.

Investigations of typhus-Rocky Mountain spotted fever conducted at the Institute, have included the cultivation of the viruses of typhus and spotted fever in the chick embryo, preparation of vaccines against typhus and spotted fever from chick embryo cultures, the determination of the ability of dog fleas to transmit typhus in nature, studies on the pathology of typhus and spotted fever, determination of the susceptibility of various species of wild rodents to endemic typhus, and attempts to isolate endemic typhus virus from wild rodents and their parasites trapped at rural typhus foci.

A system of classification of the hemolytic streptococci has been worked out, based on sensitivity to three races of bacteriophage and fermentation reactions in lactose, salicin, mannite, trehalose, and sorbitol broths.

Special investigations undertaken in connection with the control of biologic products include studies of gas gangrene antitoxins, meningococcus meningitis, hemolytic streptococcus, typhoid vaccine, staphylococcus preparations, and arsenical preparations.

The sugar researches being made at the National Institute of Health, while of a fundamental nature from a purely chemical point of view, have been conducted with an aim to possible application, directly or indirectly, in the fields of medicine and the related biological sciences.

New zoological investigations were undertaken during the year, the most important among these being studies of trichinosis and oxyuriasis.

EPIDEMIOLOGICAL STUDIES

Epidemiological investigations combined with laboratory studies have shown that there are several previously unrecognized infections likely to be confused with poliomyelitis, and that comparisons of epidemics and of the regular occurrence of poliomyelitis should be based on the number of frank paralytic cases. As a result of the epidemiological studies on poliomyelitis it was discovered that vaccines against this disease might, in rare cases, give rise to the disease itself.

The study of 11 cities to determine whether there was a quantitative relation between the fluoride concentration of the common water supply and the clinical effect was completed during the year and the results were published. In connection with mottled enamel surveys in South Carolina, Indiana, Ohio, Texas, New Mexico, Louisiana, and Kansas, 3,136 children were examined during the fiscal year. There are at present 335 reported or surveyed endemic areas in the United States located in 25 States.

The studies on diarrheal diseases of the southwestern part of the country have shown that the problem is a large one and that the usual type of the organisms causing bacillary dysentery are responsible for a large proportion of the cases.

Surveys to determine the prevalence of brucellosis, particularly in atypical and chronic forms, are in progress at San Antonio, Tex., and in Mecklenburg County, N. C.

STUDIES ON NUTRITION

Since an officer of the Public Health Service proved, many years ago, that pellagra was a dietary-deficiency disease, investigations have been conducted to determine the pellagra-preventive value of various foodstuffs. Prior to the year under report, this evaluation had been made on about 20 different foods. Tests made during the year showed that canned mackerel is a good source of the pellagra-preventive vitamin and that certain liver extracts may be of considerable value in the treatment of the disease.

Other nutritional studies included experiments to determine what relation, if any, exists between lactoflavin and pellagra; the effect of lactoflavin on nutritional cataracts and on symptoms of so-called rat pellagra; the effects of small amounts of cystine amine fed to rats on a cystine-deficient diet; the preparation of fractions of yeast to secure a material of high pellagra-preventive potency and studies of the ascorbic acid (vitamin C) content of plants.

INDUSTRIAL DISEASES

With the development of new industrial processes, investigations of the possible danger to health that these new methods bring are made necessary. During the year studies were made of skin hazards in the manufacturing processes in 14 factories. Of a total of approximately 7,000 workers employed in these factories, about one-third were actually examined for the existence of skin hazards. Special studies of outbreaks of dermatitis were made in five plants upon the request of the management. In one plant a study was begun as to the skin hazards involved in the manufacture and distribution of two new products, one an artificial silk and the other a rubber compound.

An investigation has been made of the dust hazard incident to the asbestos textile industry in North Carolina. Of 517 persons examined, 46, or 8.9 percent, were diagnosed as having asbestosis.

For the fifteenth consecutive year rates of disability from a group of 33 industrial sick-benefit associations, covering about 158,000 males, were published. In 1935 the incidence rate was slightly higher than in 1934, when the lowest rate was recorded for any year since the inauguration of industrial morbidity reports.

A program designed to establish active industrial hygiene units in the health departments of industrial States was inaugurated with the passage of the Social Security Act. A seminar for 34 physicians and engineers from 16 State health departments was held in May 1936 for the purpose of training personnel in the highly specialized field of industrial hygiene.

The analysis of the data collected during the study of 529 employees of the fur-cutting industry is almost completed; 43 cases of chronic mercurial poisoning were found. One of the significant features of the disease was the extent to which it involved disorders of the nervous system.

CHILD HEALTH

Four reports on studies of physical growth and development in children were completed during the year and are in process of publication. The principal finding was that, so far as size and growth of children are concerned, the depression has not seriously affected any considerable number of American children. Four other studies relating to fatal accidents of childhood were prepared for publication. Automobile accidents, burns, drowning, falls, poisonings, and mechanical suffocation are the most frequent causes of accidental fatalities of children under 15 years of age.

MILK SANITATION

With the view that properly pasteurized milk is the only safe milk, investigations were continued regarding the efficacy of pasteurization methods.

Studies of the thermal resistance of the *Escherichia coli* test organism have been made with the object of developing a nonpathogenic criterion organism for use in testing the efficiency of pasteurization machinery and the testing of devices and processes for the bactericidal treatment of dairy and milk plant containers and equipment.

A survey of milk-borne disease outbreaks for the year 1935 resulted in the reporting of 16 cases of typhoid fever, 2 cases of paratyphoid, 2 of scarlet fever, 9 of septic sore throat, and 14 miscellaneous diseases.

SEWAGE TREATMENT AND WATER PURIFICATION

Because of the increase in human and industrial wastes, the tendency to overburdening streams with these wastes, and the concentration of population on streams and watersheds, there has been an increasing need for water-treatment and sewage-disposal plants. During the past 3 or 4 years there has been an increase of approximately 30 percent in sewage facilities in the United States through the use of Federal funds. Past studies have led to improvement in the procedures, and these investigations are being continued.

The objective of studies of the activated sludge process of sewage treatment is the determination of those factors which, by affecting the biological balance, reduce the efficiency of purification.

Experiments begun last year on the physical and chemical changes occurring in deposits of sewage sludge under conditions approaching those of natural streams, using a specially constructed recirculation

channel permitting observations of these changes to be carried out over extended periods, were continued and amplified to include parallel observations on the oxidation of sewage when diluted and carried by the stream very largely in solution and suspension.

A procedure for measuring chloramine in the concentrations used in water purification was developed because of the widespread use of chloramine in the disinfection of water supplies and because no specific test had been theretofore available.

ROCKY MOUNTAIN SPOTTED FEVER AND PLAGUE

The largest quantity of Rocky Mountain spotted fever vaccine yet produced, 506.8 liters, was prepared during the fiscal year. Sufficient vaccine to vaccinate the personnel in 48 camps located in the more dangerous endemic areas of the West and Northwest was furnished to the Civilian Conservation Corps. Smaller amounts of vaccine have been furnished to 10 other Federal agencies for administration to field employees, principally those of the Forest Service and the Resettlement Administration. Improved tick-rearing technique and knowledge that vaccine can be stored without loss of potency have made it possible to extend the period of vaccine manufacture. There has been a marked decrease in the incidence of Rocky Mountain spotted fever during the 1936 season and the total number of cases for the year will probably be well below the 1935 figure.

In July 1935, *B. pestis* was demonstrated in ground squirrels about 10 miles south of Dillon, Beaverhead County, Mont. Field data indicated that sylvatic plague had probably entered Montana from Idaho in 1933 or 1934 and that epizootics in ground squirrels had occurred in Beaverhead and Madison Counties during 1934 and 1935. Observations have shown that *Pulex irritans*, a known vector of plague, is prevalent on coyotes, occurs frequently on dogs, may infest prairie dogs, and occurs on deer in western Oregon.

A filter-passing virus has been isolated from *D. andersoni* collected near Nine Mile, Mont., and from several lots of ticks of the species *D. occidentalis* from southwestern Oregon. The evidence suggests that this virus is the causative agent of disease in wild animals. There is no apparent relationship between this virus and any known tick-borne disease.

A new species of tick, *Ornithodoros parkeri*, was identified and described. The species was first collected near Casper, Wyo., from ground squirrels and their burrows, a jack rabbit, and a prairie dog. Tests to determine whether this tick is a transmitting agent of relapsing fever have thus far given negative results.

THE HEALTH INVENTORY

Analysis was being made of the data collected by the health inventory project which the Public Health Service conducted with funds made available by the Works Progress Administration. This study includes a survey of disabling illness, physical impairments, and medical care among 865,000 families in 90 cities and 23 rural counties throughout the United States, a communicable disease survey to determine the incidence and fatality of 13 diseases, chiefly among persons less than 15 years of age, a study of the amount of

time lost due to illness among industrial workers, the relation of illness to occupation and the hazards of the occupational environment, a census of hospitals, a survey of hospital outpatient departments, and a survey of public health facilities.

Further studies are in progress on the causes of illness and the extent and kind of medical care in the 9,000 families canvassed in the study which was made in cooperation with the Committee on the Costs of Medical Care.

PUBLIC HEALTH ADMINISTRATION

The basic knowledge for public health work is acquired through research; but this knowledge is of the greatest value only when it is applied through proper and improved methods in public health administration.

These studies pursued three main lines of investigation during the year: (1) Studies of administrative problems in public health organizations; (2) determination of the influence of health education measures on the knowledge and practices of people; and (3) inquiries into certain features of illness and medical service. From these studies evidence has been adduced to show that the program of representative county health departments encompasses but a small part of the total health problem. An analysis of the experience of county health departments from the standpoints of survival and growth was made for 811 counties covering the period 1908-34.

The study of rural midwife practice in Brunswick County, Va., begun in 1934, was completed during the fiscal year under report. Suggestions regarding the selection and training of a new type of midwife are to be made as a result of this study.

An analysis was made of the health organization of cities during the economic depression. The results indicate that, by internal economies, health departments were able to compensate for small reductions made prior to 1933, but in that year there was considerable disorganization of staff and serious impairment of service in some places. By 1934 there was a slight general increase in appropriations.

HEALTH CONDITIONS IN 1935

An important duty of the Public Health Service is the prevention of the introduction and spread of disease from foreign countries into the United States; and in order to secure this protection, it is necessary to keep currently informed regarding the prevalence of communicable diseases, not only in the United States but throughout the world so far as possible.

WORLD HEALTH CONDITIONS

During 1935, 334,000 cases of cholera were recorded, as compared with 287,000 cases for the year 1934. Only a few scattered cases occurred in the Philippine Islands.

Forty-eight thousand cases of plague with 42,000 deaths were reported for the calendar year 1935. The numbers of cases and deaths were about half the number reported for the year 1934, but the disease was present in all parts of the world except Australia, and

plague-infected rodents were found in many countries, including the United States and the Hawaiian Islands.

Most of the countries of the world reported comparatively few cases of smallpox for the calendar year 1935. England and Wales reported only one case. Ireland, Belgium, Netherlands, Sweden, Austria, Estonia, and several other European countries did not report any smallpox in 1935. In India, where the virulent form of the disease prevails, 67,800 deaths from smallpox were registered.

Incomplete reports showed 87,000 recorded cases of typhus fever for the calendar year 1935, about 2,000 more cases than the same regions reported for 1934. In parts of South America and in Mexico the virulent form of typhus fever is prevalent.

Yellow fever was reported during 1935 in Bolivia and Colombia and in Brazil in the States of Amazonas, Bahia, Goyaz, Maranhão, Matto Grosso, Minas Geraes, Pará, Paraná, and São Paulo. In Africa, cases were reported in Dahomey, French Equatorial Africa, French Sudan, Gambia, Gold Coast, Ivory Coast, Niger Territory, Nigeria, Senegal, Sierra Leone, and Togo.

HEALTH CONDITIONS IN THE UNITED STATES

Reports collected by the Public Health Service indicate that health conditions in the United States remained good in 1935. The general death rate in 25 States¹ was 10.8 per 1,000 population, as compared with 10.9 in 1934, and the same rate as the average for the 5 years, 1931 to 1935, inclusive, the lowest rate recorded for any 5-year period.

The reports from 24 States² gave an infant mortality rate of 52 deaths under 1 year per 1,000 live births for the calendar year 1935—the lowest infant mortality rate recorded for these States. The average for the 5 years 1931 to 1935, inclusive, was 56 deaths under 1 year per 1,000 live births.

The maternal mortality, on the other hand, showed no significant decline in 1935. In 24 States, the rate was 5.3 deaths of mothers per 1,000 live births. The average for the 5 years 1931 to 1935 was 5.7 maternal deaths per 1,000 live births.

Neither cholera nor yellow fever appeared in the United States during the year 1935.

Three cases of plague occurred in the United States during the first 6 months of 1936, 1 in April in Sonoma County, Calif.; 1 in June in Monterey County, Calif.; and 1 in June in Beaver County, Utah. Plague infection was found in ground squirrels in California, Oregon, Montana, and Idaho, and fleas from ground squirrels from Nevada were found to be plague-infected. After the close of the fiscal year, in July and August 1936, plague infection was found in a marmot, in ground squirrels, and in prairie dogs from Utah.

A fatal case of plague was reported in Hamakua District, Hawaii Island, Territory of Hawaii, in March 1935. During the calendar year 1935, 20 plague-infected rats were found on the island of Hawaii

¹The States which furnished data for the computation of death rates are California, Connecticut, District of Columbia, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Dakota, Tennessee, Virginia, and Wisconsin—aggregate population, estimated, 83,358,000.

²The same States with the exception of Mississippi furnished data for computing infant mortality rates—aggregate population, 81,397,000.

and 6 on the island of Maui, and during the first 6 months of 1936, 8 plague-infected rats were found on the island of Hawaii.

A total of 10,839 cases of poliomyelitis was reported to the Public Health Service in 1935, as compared with 7,517 cases for 1934, and an average of 8,249 cases for the 5 years ended with 1934. During the year the disease was unusually prevalent in North Carolina, Virginia, the District of Columbia, and several of the Northeastern States.

Although nearly 8,000 cases of smallpox were reported in the United States in 1935, an increase of more than 2,500 over the number for the preceding year, the prevalence of this disease was less than that for any year prior to 1933 for which there are records. The annual average for the 5 years preceding 1935 was 20,400. The distribution of the cases was very uneven. The New England and Middle Atlantic States reported only 3 cases, while Montana and Wyoming together reported 1,060 cases. Eight States did not report any smallpox. These are Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New Jersey, Pennsylvania, and the District of Columbia.

New low death rates were recorded for both typhoid fever and diphtheria, and the tuberculosis death rate maintained the downward trend which has been one of the outstanding achievements in public health for several decades. Typhoid fever is no longer a major cause of sickness in this country.

Concomitant with the decrease in certain diseases which have been made the special object of public health efforts, there has been an increase in deaths from the chronic diseases, and these are now becoming the subject for increased attention. To bring about a reduction in disease prevalence is the primary object of public health work.

QUARANTINE AND IMMIGRATION ACTIVITIES

No importation of any of the quarantinable diseases into the United States or its possessions occurred during the fiscal year. One vessel arrived at Boston, Mass., with a case of smallpox on board. The patient was detained at quarantine, and necessary precautions were taken. Two cases of smallpox were detected on the Mexican border and refused entry.

Quarantine transactions.—During the year, quarantine officers of the Public Health Service inspected 15,981 vessels, carrying 733,495 passengers and 1,182,232 seamen. Of a total of 3,823 airplanes, carrying 37,352 persons, which arrived at airports of entry in the United States from foreign countries requiring quarantine inspection, only 2,281 airplanes, carrying 31,898 persons, of whom 5,537 were aliens, were inspected by medical officers of the Public Health Service prior to entry, owing to many arrivals at airports at which medical officers are not available.

Fumigations were made of 1,193 vessels either for the destruction of rats or because of the presence on board of some contagious disease. Examinations for plague infection were made of 2,971 of the 4,585 rats retrieved following fumigation.

The International Sanitary Convention for Aerial Navigation, The Hague, 1933, became effective in regard to the United States on

November 22, 1935. The provisions of the convention applicable to the aid of commerce between foreign countries and the United States have been placed in effect. The only noteworthy change in existing procedures resulted from the provisions of article 9, which substitute a journey log for the bill of health formerly required to be carried by aircraft.

The inauguration of aerial-transport service across the Pacific necessitated the issuance of special instructions to the quarantine stations at San Francisco, Honolulu, and Manila, in order to prevent the introduction of quarantinable disease into the United States and to prevent the introduction of mosquito vectors of malaria into the Territory of Hawaii, where such disease does not now exist, owing to the absence of such insect carriers.

Maritime commerce between the United States and Cuba has been aided by a mutual agreement between the chiefs of the quarantine services of the two countries providing for the recognition of de-ratization exemption certificates issued by either country to vessels which are maintained in a rat-free condition.

Medical inspection of aliens.—Medical officers at the various ports of entry in the United States examined 824,401 alien passengers and 722,756 alien seamen. Of these numbers, 15,106 passengers and 1,119 seamen were certified to the proper immigration officials as being afflicted with some mental or physical defect or disease.

A total of 38,619 applicants for immigration visas was examined by medical officers of the Public Health Service stationed in American consulates in foreign countries; 12,516 were examined in American consulates in the Western Hemisphere, and the remainder were examined in American consulates in the Eastern Hemisphere. Seventy-five of those examined in the Western Hemisphere and 545 of those examined in the Eastern Hemisphere 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 1,664 of those examined in the Western Hemisphere and 5,214 of those examined in the Eastern Hemisphere were reported as being afflicted with a disease or condition which was likely to affect their ability to earn a living. Only four 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 condition requiring deportation.

HOSPITAL RELIEF

Hospital and outpatient care was furnished to American seamen and other beneficiaries at 154 ports; 331,215 accredited persons applied for treatment and other medical service. The Coast Guard, for whose personnel of 10,748 the Public Health Service has sole medical responsibility, was served at the regular stations and 102 other places, and 21 medical and dental officers were assigned to Coast Guard ships and shore stations.

There were 102,573 more hospital days furnished all classes of patients during the fiscal year 1936 than in the fiscal year 1935.

Important new hospital facilities were completed and occupied at Stapleton. A new hospital-ward building at Memphis is under

construction, and funds have been allocated for complete new hospital plants at Boston and St. Louis.

Merchant seamen and dependents of coast guardsmen continued to avail themselves of medical-relief facilities in increasing numbers. In April 1936, the Veterans' Administration received an allocation of 75 more beds in marine hospitals. Patients from the Civilian Conservation Corps and Works Progress Administration were hospitalized in considerable numbers (see summary of services by class of beneficiary, p. 110), and it is expected that there will be the same demand for hospital beds for patients of the Civilian Conservation Corps and the Works Progress Administration in 1937.

In cooperation with the Civil Service Commission and the Immigration and Naturalization Service, medical officers of the Public Health Service were assigned as members of examining boards convening in various places in the United States for the purpose of giving oral, mental, and physical examinations to applicants for the position of border patrol inspector. Medical officers cooperated with the Department of Justice in giving more than 200 special agents in the Federal Bureau of Investigation physical examinations. These examinations are to be given every member of the corps and repeated periodically.

PREVENTION AND CONTROL OF VENEREAL DISEASES

The venereal diseases are beginning to receive the attention in public health work that their relative importance justifies. Syphilis ranks with cancer, tuberculosis, and pneumonia as a leading cause of death. The hampering, ostrich-like attitude toward these diseases is gradually being overcome. When they are brought out into the open, freed from the medieval concept of condign punishment for moral transgressions, and dealt with as are any other highly communicable diseases, the way is open to eradicate them just as we have stamped out other dangerous infections.

Activities directed to the control of these diseases were intensified during the year. Studies and investigations pertaining to their cause, treatment and prevention, and cooperative work with State departments of health were given a definite impetus through the provisions of the Social Security Act.

Of special importance was the study of serodiagnostic tests for syphilis, which included an evaluation of the ability of State, municipal, and private laboratories to perform such tests. The results of this study indicate that there is considerable variation in the efficiency of performance in different laboratories and that this variation is about equal in State, municipal, and private laboratories. The study further indicates the need for a periodic system of checking the performance of serodiagnostic tests for syphilis. In order to facilitate this the Public Health Service plans to extend each year, beginning with the ensuing fiscal year, a system of comparative examinations of the efficiency of test performance in State laboratories on both a serologic and clinical basis. A recommendation has been made to State laboratories that a similar system be extended to all laboratories within the boundaries of the several States.

The cooperative clinical studies of syphilis which have been so successfully conducted in recent years with five of the leading syphilis clinics of the country have been further prosecuted. Projected as well as retrospective studies have been undertaken and many phases of investigative work pertaining to syphilis are planned which are of importance both to the public health officer and the clinician.

Provisions have been made for the expansion of the work at the venereal disease research laboratory at Stapleton, Staten Island, N. Y., and cooperative assistance has been given to investigations carried on in some of the universities of the country. The scale of the informative and educational program has been greatly increased.

NARCOTIC FARMS AND MEDICAL AND PSYCHIATRIC CARE OF FEDERAL PRISONERS

The narcotic farms not only provide domiciliary care and treatment of drug addicts but serve as medical centers for the study of drug addiction, aiming toward a solution of this special problem confronting society. They not only fulfill the modern demands of society that the sick and afflicted shall be cared for and set in the way of strength and hope, but they provide facilities for research and the acquiring of more accurate and fundamental knowledge concerning the nature of drug addiction and related phenomena.

Since the opening of the United States narcotic farm at Lexington, Ky., in May 1935, 1,240 patients have been admitted. Of these, 960 were admitted during the fiscal year 1936 and 479 were discharged, leaving 761 patients in the institution at the close of the year. Of the voluntary patients discharged as cured none are known to have relapsed, but some of those discharged as having received maximum benefit have relapsed as well as some of the prisoners released on "conditional release" and parole.

Proposals were solicited for the construction of the initial buildings for the United States narcotic farm at Fort Worth, Tex., and it is anticipated that the contract will be awarded sometime during the early part of the ensuing fiscal year.

Plans were inaugurated during the year to furnish psychiatric diagnostic services to Federal courts for a period of 1 year as a research project to determine the wisdom and feasibility of establishing such services as a permanent activity of the Public Health Service. The first unit was established in Boston, Mass., in May 1936. Similar units will be established at other points throughout the country.

A survey was made during the year in cooperation with the National Committee for Mental Hygiene for determining the adequacy of measures, policies, and facilities for the care of the mentally ill in the metropolitan district of New York.

COOPERATIVE ACTIVITIES

When an agency of the Federal Government desires advice on medical, public health, or related subjects, it is entirely natural to turn to the Public Health Service. The Service, in turn, renders such assistance as lies within its resources of personnel and equipment. In the aggregate the amount of aid given in this way is

considerable, reaching each department and many subsidiary agencies of the Government. The amount of cooperative work performed in behalf of these agencies has increased to such an extent that additional personnel must be made available or the service must be radically curtailed.

The scope of the cooperative activities is well shown in the detailed account that follows:

1. *Department of State.*—Medical officers of the Public Health Service were detailed to the American consulates in Europe, Canada, and Cuba for the purpose of examining applicants for visas. These officers also furnish current information regarding the sanitary condition of ports and vessels.

2. *Treasury Department.*—The Public Health Service continued to furnish medical care, hospitalization, and advice as to environmental sanitation for the Coast Guard. In the District of Columbia emergency medical relief was provided for Treasury Department employees in strategically located clinics.

3. *War and Navy Departments.*—Medical care and hospitalization was provided for civilian employees and, upon request, for officers and enlisted men. Physical examinations are made of applicants for the Officers' Reserve Corps and the citizens' military training camps. Advice and assistance in environmental sanitation, as well as laboratory service, were supplied when needed.

4. *Department of Justice.*—The Service has cooperated with the Department of Justice and district attorneys in protecting the interests of the United States when violations of quarantine laws and property rights are concerned. A psychologist-statistician was detailed as technical director of the Attorney General's Survey of Release Procedures. Psychiatric and general medical services were provided for the General Prosecution Division in connection with the prosecution of offenders against the Federal laws. Medical, psychiatric, and other services were provided for the inmates of Federal penal and correctional institutions. Periodic physical examinations are performed and systematic lectures on first aid are given for the benefit of the agents of the Federal Bureau of Investigation.

5. *Post Office Department.*—A special investigation was made to determine the possibility of carbon-monoxide poisoning in the railway-mail compartments of certain gasoline-powered trains. Special physical examinations and first aid were provided upon occasion.

6. *Department of the Interior.*—Medical examinations were made of Filipino laborers destined for the Hawaiian Islands. Officers were detailed for duty in the west-coast hospital for mentally ill Alaskans, North American Indians, and other beneficiaries. Advice and assistance in solving problems of environmental sanitation were provided for the Office of Indian Affairs and the National Park Service. A number of officers supervised the facilities for medical care and hospitalization of the Office of Indian Affairs. At Hot Springs National Park a venereal disease clinic was maintained.

7. *Department of Agriculture.*—The Service assisted the Department in enforcing the plant and animal quarantine measures on vessels coming from foreign ports. Sanitary engineering advice was afforded the Forest Service and Bureau of Agricultural Engineering.

Large quantities of vaccine were provided for the Forest Service for protection of field employees against Rocky Mountain spotted fever.

8. *Department of Commerce.*—Quarantine procedure for aircraft coming from foreign countries was standardized. When requested by the Steamboat Inspection Service, applicants for licenses as ships' officers have been given physical examinations. Medical care was provided for lighthouse keepers and seamen from vessels of the lighthouse establishment, Coast and Geodetic Survey, and Bureau of Fisheries. Emergency medical relief was made available for employees of the Bureau of Standards and other employees of the Department of Commerce.

9. *Department of Labor.*—Medical officers stationed at United States ports of entry examined aliens and provided medical care for those detained. Applicants for the position of border-patrol inspector were examined as to acceptability by Service officers. Industrial hygiene programs in the States have received a notable impetus through joint interest and effort.

10. *Civil Service Commission.*—Physical examinations were made of employees of the Commission and applicants for positions, reinstatement, and retirement.

11. *United States Employees' Compensation Commission.*—Outpatient and hospital care has been provided for injured Federal employees. Through the detail of several medical officers, physical examinations have been made, special investigations conducted, and disputed claims considered.

12. *Federal Trade Commission.*—The frequent requests of this agency have necessitated an increasing amount of advice, research, expert testimony, and laboratory investigations.

13. *United States Veterans' Administration.*—When facilities of the Administration are not available, certain beneficiaries are provided with hospital and outpatient treatment and physical examinations by the Public Health Service. At the request of the Bureau of Pensions, physical examinations were made of applicants for military pensions.

14. *Resettlement Administration.*—Through the detail of a medical officer, the Service is aiding the Resettlement Administration in solving its numerous problems of public health, sanitation, and medical care. Quantities of Rocky Mountain spotted fever vaccine have been provided for the protection of migrant workers.

15. *Social Security Board.*—An experienced medical officer has been assigned to the Board as adviser in matters affecting the welfare of the blind.

It is apparent that the work of the Public Health Service closely touches all departments of the Government and many subsidiary bureaus, offices, sections, and independent establishments. In addition to agencies of the Federal Government, the Service has a constant and intimate relationship with State and city departments of health. The nature and scope of these activities will be discussed in greater detail in the section of the report devoted to the Division of Domestic Quarantine (States relations).

It has also been possible to cooperate productively with voluntary health organizations having a national scope, and with universities engaged in special public health research.

RECOMMENDATIONS

STATE AID UNDER SOCIAL SECURITY

The wisdom of the Congress in enacting the health provisions of the Social Security Act has been amply demonstrated by the activities inaugurated and results secured during the first year of its operation. It is recommended that continued appropriations authorized under the act be approved by the Congress.

Experience in the administration of the health provisions of the Social Security Act indicates that, on the whole, the provisions of the law are sound. Additional experience, however, may point out the desirability of amendments which will enable the objectives of the act to be accomplished more effectively.

RESEARCH

While the research work of the Public Health Service has been considerably expanded as a result of the approval by the Congress of a part of the funds authorized under the Social Security Act, the pressing needs for continuance and extension of the interest of the Federal Government in many unsolved problems of health and disease should be met by annual appropriations of at least \$2,000,000 authorized by the Social Security Act, in addition to the funds previously made available to the Public Health Service for research purposes. Additional studies are particularly important in connection with the chronic diseases, physiology and nutrition, and the venereal diseases.

NEW CONSTRUCTION

In order to coordinate all research activities of the Public Health Service with the National Institute of Health, funds for completion of the entire project at Bethesda are urgently needed. Of the original estimate of \$2,500,000, there has been appropriated \$1,363,000 for additional facilities. The balance, when appropriated, will be used to construct laboratory buildings to replace the existing National Institute of Health laboratories, and make it possible to transfer the existing site and buildings to the Navy in accordance with the joint agreement (June 18, 1935) of the two Departments concerned.

Among other building needs at this time the greatest are for—

(1) A suitable dispensary at Washington, D. C., to replace the present inadequate and unsatisfactory facilities for relief activities.

(2) The completion and rehabilitation of the hospital plant at Fort Stanton, N. Mex., including the construction of a recreation building and the necessary quarters for doctors, nurses, and attendants.

(3) Replacement of all existing frame structures at the Carville, La., leper hospital with fireproof construction, including also a nurses' home and quarters for unmarried attendants, as well as a building to furnish a suitable recreation center.

(4) Completion of the marine hospital at Stapleton, N. Y., to provide a total of 1,200 beds; and the provision of a building to house a cancer-investigations laboratory. Additional quarters for commis-

sioned and other personnel are required at the marine hospitals in Baltimore, Norfolk, Seattle, and Savannah.

(5) Erection of new hospitals in Miami, Fla., Los Angeles, Calif., and Portland, Maine.

WATER POLLUTION CONTROL

The pollution of our streams for many years has increased at a rate greater than the development of remedial measures. From the public health standpoint, critical conditions now exist in many places. The impetus given by emergency funds to the construction of sewage-treatment plants has afforded some relief and has demonstrated the desirability of continued Federal assistance for this purpose.

The Public Health Service has conducted important studies of water pollution but has not been able to deal adequately with this problem. The Conference of State and Territorial Health Officers has recommended that legislation be enacted which will provide for—

(1) Increased appropriations to the Public Health Service for research.

(2) Establishment of a division of stream-pollution control.

(3) Federal aid for the construction of sewage-treatment plants and for assisting State health departments in this matter.

(4) Interstate compacts for pollution abatement.

It is urged that the Congress give favorable consideration to these recommendations.

THOMAS PARRAN,
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 were continued during the year under the direction of Medical Director J. W. Schereschewsky.

BIOPHYSICAL STUDIES

X-ray investigations.—It was hoped that work with biological material, using an X-ray tube with interchangeable anodes and possessing certain special characteristics, could be begun early in the fiscal year. However, difficulties arising during assembly delayed progress, but the work should be under way early in the next fiscal year.

Spectroscopic investigations; absorption spectra of carcinogenic compounds.—The study, by a qualitative method of the ultraviolet absorption spectra, of carcinogenic compounds and their derivatives (most of them belonging to the anthracene group) has been continued in an attempt to relate certain characteristics of the spectra to the carcinogenic properties of the compounds. Although a considerable number of new compounds (prepared by Professor Fieser, of Harvard University, and his colleagues) were studied, the outcome of biological testing for carcinogenic activity (still in progress for a number of these compounds) must be awaited before the final study of the spectrographic records can be made.

It is felt, however, especially in view of the fact that compounds which do not belong to the anthracene group have been found to be carcinogenic, that too much should not be expected of a qualitative method. For further studies it is not only important to replace a qualitative by a quantitative method, but also to find ways of bringing out the finer structure of the absorption bands either by using absorbing solutions at low temperatures (e. g., that of liquid air) or by obtaining absorption spectra in the gaseous state.

Absorption spectra of blood and tissue extracts.—The detection by spectroscopic methods of carcinogenic substances present in tumor tissues or in the blood is of obvious interest in connection with studies in carcinogenesis, especially as other investigators (e. g., Chalmers) have reported, in tissue extracts, intense absorption in the ultraviolet region of the spectrum, which would mask the absorption bands of a carcinogenic agent such as dibenzanthracene. Accordingly, a study was made of the detection by spectroscopic methods of dibenzanthracene in tumors induced by the agent and in other body tissues and fluids. A method was developed by which a considerable proportion of the substances masking, by their absorption, the

spectrum of the carcinogenic compound could be removed from tissue extracts without, at the same time, removing the carcinogenic agent. The results of these studies were published in the American Journal of Cancer for February 1936.

The effects of injection into mice of dibenzanthracene, either dissolved or as a colloidal suspension in serum, were also studied. Under ordinary conditions, serum dissolves but small quantities of dibenzanthracene (e. g., horse serum dissolves 0.0015 mg per cc). Saturation of normal horse serum with cholesterol brings about somewhat more than a threefold increase in this amount. Dog serum from blood withdrawn 2 hours after a fatty meal will dissolve up to 0.14 mg of dibenzanthracene per cc. By adding dibenzanthracene or methylcholanthrene dissolved in ether to horse serum saturated with cholesterol, homogeneous suspensions containing 0.1 mg to the cc of either compound may be obtained.

These sera were injected intravenously or intraperitoneally into mice, and blood and tissue extracts were examined spectroscopically for the hydrocarbon. It was found that dibenzanthracene injected intravenously in solution in the serum disappeared from the blood in a few minutes, whereas, in the case of the colloidal suspension small amounts could be detected in the blood up to 4 days. The method of preparing these solutions and suspensions was published in the American Journal of Cancer for April 1936. Lung tumors in mice were obtained by the intravenous injection of these solutions and intra-abdominal tumors by their intraperitoneal injection.

Charcoal adsorption of dibenzanthracene.—So far the carcinogenic action of hydrocarbons has been studied only in the solid, the dissolved, or the dispersed state. Experiments with carcinogenic hydrocarbons in the adsorbed state may yield additional information as to their physicochemical and biological action. For this purpose activated pure charcoal was prepared on which dibenzanthracene was adsorbed; it was found possible to adsorb approximately 0.5 mg of this hydrocarbon upon 1 mg of charcoal. Biological experiments with this material are under way.

Effect of radon upon mice.—This investigation was undertaken to study the effect of radon on mice of high tumor strain. The lethal dose was found to be approximately 1.5 millicuries for mice of average weight. These experiments are still in progress.

Effects of X-rays upon the action of bacterial filtrates.—An investigation was begun to determine what effect, if any, was produced by concomitant X-radiation upon the action of bacterial filtrates in tumor-bearing mice. The animals were injected with the filtrate and then the whole animal irradiated with doses varying up to 600r. The method of irradiating the whole animal was abandoned because of harmful effects. Experiments are in progress in which the tumor alone is irradiated.

BIOLOGICAL STUDIES

Production of tumors in pure-strain mice by injections of dibenzanthracene serum solutions and suspensions.—Colloidal preparations of dibenzanthracene in horse serum and solutions of dibenzanthracene in dog serum were injected into pure-strain mice. The results thus far obtained show that intravenous injections of the colloid sus-

pensions of dibenzanthracene in horse serum into strain A, strain M, and strain C₃H mice produce lung tumors only in strain A mice. Subcutaneous injections of either the colloid suspension or of the solution produced tumors in mice of the C₃H strain. Intraperitoneal injection of the dog serum solution likewise produced intra-abdominal tumors in this strain of mice. Experiments are in progress to compare the relative carcinogenic activity of dibenzanthracene when dissolved in lard, in dog serum, or held in colloidal suspension in horse serum.

These solutions and suspensions in serum also permit a study of the influence of intravenous injection of these preparations upon a subsequent implantation of dibenzanthracene dissolved in lard.

Studies of the occurrence in mice of lung tumors following dibenzanthracene injections.—A survey of the literature concerning lung tumors in mice has confirmed the observation that both subcutaneous and intravenous injections of dibenzanthracene produce a high proportion of lung tumors in pure strain albino mice, but fail to do so in pure strain colored animals. Attention was directed to this finding in a paper entitled "Further Studies on the Production of Dibenzanthracene Tumors in Pure Strain and Stock Mice", which appeared in the Public Health Reports for September 6, 1935.

Transplantation of lung tumors.—No recorded instance of the successful transplantation of lung tumor has been found in the literature, although this has been tried by several investigators. During the past year 5 lung tumors have been transplanted serially in this laboratory. Microscopic sections of the original tumors and of each passage tumor have been prepared and reserved for future studies.

Effects of bacterial filtrates upon malignant growths.—A paper describing a technique for performing quantitative experiments with bacterial products known to affect certain types of tumor and entitled "The Reaction of Mice and of Various Mouse Tumors to the Injection of Bacterial Products" was published in the American Journal of Cancer for May 1936.

BIOCHEMICAL STUDIES

Studies of carcinogenic compounds.—The investigation of polycyclic hydrocarbons, which is being carried on jointly with Prof. L. F. Fieser and his colleagues, was continued during the fiscal year. In addition, simpler benzene derivatives are being tested for carcinogenic action in an attempt to find out which compounds are responsible for causing the so-called "aniline cancer" of the dye industry.

The results of the earlier experiments on this subject were described in a paper entitled "The Production of Tumors in Mice with Hydrocarbons", which appeared in the American Journal of Cancer for February 1936.

At the Washington meeting (March 1936) of the Federation of American Societies for Experimental Biology the results of further experiments were reported in a paper entitled "Isomers of Cholanthrene and Methylcholanthrene", in which the high carcinogenic activity of these two compounds was contrasted with the much-delayed action of an isomer of cholanthrene and the absence of carcinogenic activity in an isomer of methylcholanthrene. At the same meeting

another paper entitled "Development of Liver Tumors in Pure Strain Mice Following the Injection of 2-amino-5-azotoluene" was presented by title. The results reported in this paper confirm Yoshida's work of inducing primary liver tumors in rats and mice with this dye.

Relation of cholesterol to carcinogenesis.—During the latter part of the fiscal year the study of the possible relation of cholesterol to carcinogenesis was taken up.

Inhibiting action of certain coal-tar fractions.—In collaboration with Mr. Samuel Cabot, of Boston, Mass., the possible inhibiting action of certain coal-tar fractions upon the carcinogenic activity of benzpyrene painted at regular intervals upon the skin of a considerable number of mice is being studied. Prof. S. B. Wolbach, of Harvard University, is collaborating on the histological aspects of the experiment.

Collaboration with the Forsythe Dental Infirmary.—Prof. Percy Howe, director of the Forsythe Dental Infirmary, has produced lesions in animals deprived of vitamin A which bear superficially some resemblance to carcinoma. At his invitation experiments have been undertaken in collaboration with him and with Dr. Mark Elliot, of the same infirmary, to determine the effect of avitaminosis A on the production of tumors with benzpyrene.

Studies on chemical treatment of tumor cells.—A second report in this series entitled "The Effect of Disturbances in Fluid Exchange on Transplanted Mouse Tumors" was published in the American Journal of Cancer for September 1935. A third paper in the series called "Titration of Mouse Tumors" was presented at the meeting of the Biological Chemists in Detroit in April 1935 (*J. Biological Chemistry*, vol. 81, 1935, p. 109) and was subsequently published in the Public Health Reports (vol. 51, No. 21, May 22, 1936, pp. 668-676). A paper dealing with the same subject has been published independently by Schrek. The technique developed in this laboratory differs from Schrek's in that gelatin is used in the cell suspension.

Vital staining of tumor cells.—Two reports of experiments performed in collaboration with Dr. M. Belkin, of Harvard University, on the vital staining of tumor cells and entitled, respectively, "The Staining of Mouse Tumor Cells with Neutral Red *in Vitro*" and "The Staining with Vital Dyes of Mouse Tumor Cells Swollen in Salt Solution", have been completed and are being prepared for publication.

Action of bacterial products.—Attempts were made to obtain the active substance from filtrates of *B. coli* which, when injected, produce hemorrhage and recession in mouse transplantable tumors. Considerable progress was made in this direction, a stable product being finally obtained giving a strong Molisch and negative Bicuret reaction which produces hemorrhage in mouse tumors when injected intraperitoneally or intravenously in doses of 0.0003 mg. Preliminary reports on this subject entitled, respectively, "Separation of the Hemorrhage-Producing Fraction of *B. Coli* Filtrate" and "Properties of the Hemorrhage-Producing Fraction of *B. Coli* Filtrate" appeared in the Proceedings of the Society for Experimental Biology and Medicine (vol. 34, 1936, pp. 323-326). Like the original filtrate, the concentrated active substance, besides causing hemorrhage in tumors, also produced the Shwartzman reaction in rabbits. A report on this

result entitled "Production of the Shwartzman Reaction in Rabbits with a Purified Fraction of *B. coli* Filtrate" is now in press in the same journal.

Effects of other bacterial products.—Observations have been made concerning the effects of suspensions of killed culture of *B. proteus* and of other organisms and of their alcohol-insoluble fraction upon several varieties of transplantable and upon spontaneous mouse tumors. The results of this study entitled "Effect of Certain Bacterial Products Upon the Growth of Mouse Tumor" appeared in the Public Health Reports for January 17, 1936.

CYTOLOGICAL STUDIES

The attempt to convert normal into malignant cells by growing them in tissue culture in contact with a carcinogenic compound has been continued. Crystals of 1, 2, 5, 6-dibenzanthracene or of methylcholanthrene were placed in the plasma clot of a tube culture of mouse tissue. In some instances the crystals of carcinogenic compound were placed in direct contact with the explant; in others they were located at a distance. Cells were observed to migrate to a crystal, to lie against it, to divide and, eventually, to surround it. There was no evidence to show that the cells had undergone a change. Similar results have been reported by Gey and by Lewis.

Culture of mouse tumors.—Although both rat and human tumor cells may be maintained indefinitely in tissue culture, such does not appear to be the case with mouse tumor cells. Such cells liquefy the medium rapidly and degenerate after several passages. The problem of finding a tissue culture technique allowing the indefinite growth of mouse tumor cells was taken up. These experiments are still in progress.

Culture studies.—A comparison of the growth rates and characteristics of primary dibenzanthracene tumors was made. The work included comparisons between primary dibenzanthracene tumors and lung nodules from the same mouse, between primary and transplanted dibenzanthracene tumors, and between transplanted dibenzanthracene and transplanted lung tumors. These experiments are still in progress.

EPIDEMIOLOGY

The Office of Epidemiological Studies was continued under the direction of Medical Director J. P. Leake.

One of the fields of epidemiological pursuit is the evaluation of preventive measures. In the last annual report the beginning of a study on the possible value of a vaccine against poliomyelitis was mentioned. The probability that no positive decision could be derived from this study as to the value of the vaccine was anticipated; but, nevertheless, it was stated that the use of such a product was justifiable only under conditions which would give some hope of yielding trustworthy conclusions as to its efficacy. A report of the study has been published. This is believed to be the first publication of a thoroughly controlled study of an agent directed toward specific immunization in a general population. Though the results were as anticipated, the report was of positive value in pointing out the possible dangers and fallacies in attempts at the evaluation of such

agents. Largely on account of these studies, information was obtained of cases of poliomyelitis occurring elsewhere in the United States following the use of vaccines against this disease. Reports on these cases were being made by those responsible for such use, but the responsibility which the service had assumed in attempting to evaluate one of these vaccines justified the brief collation of such cases and the publication of a report on them, together, in view of the wide and favorable attention which the use of the vaccines was gaining.

The collating of this series of 12 cases following, by intervals of from 6 to 14 days, the administration of one or the other of two kinds of vaccine, has apparently stopped the extending use of such vaccines for the present. Though the data were less definite as to one of the vaccines than as to the other, increased caution in further human trials of such agents seems justified. This series of cases gave support to the conception that in man as well as in monkeys, the virus of poliomyelitis is transmitted along nerve fibers rather than by the blood stream.

At the request of the Section on Sanitary Engineering and with the cooperation of the health departments of the District of Columbia, Baltimore, Md., and Virginia, together with certain health departments in Pennsylvania, Asst. Surg. A. G. Gilliam made an epidemiological study of cases of typhoid fever occurring in the city of Washington during the winter of 1935-36. The data secured indicate the advisability of increased sanitary precautions in the oyster industry.

Consideration of epidemics of cerebrospinal fever (meningococcus meningitis) in South Carolina and Kentucky, which were studied by officers attached to this office during the spring of 1936, showed that this disease, even in epidemic form, may have a low fatality rate and that crowding tends to propagate the infection.

The attention of this Office is at present largely directed to infections of the central nervous system. In addition to the conditions which have been known for several years, such as poliomyelitis, the encephalitis of von Economo occurring chiefly in the cooler months, and post-infectious encephalomyelitis such as those cases occurring rarely after measles, chickenpox, or vaccination, other apparently specific infections of this general nature have recently been discovered. The St. Louis, or summer, form of encephalitis was reported in Public Health Bulletin No. 214. From an autopsy on a patient during the St. Louis epidemic of encephalitis, officers of the National Institute of Health isolated the virus of a newly recognized disease, lymphocytic choriomeningitis. In the summer of 1935 an epidemic of meningo-encephalitis at Windber, Pa., was studied. About 150 cases, chiefly in children and young adults, and 1 death occurred in a population of 11,000. The cases, with few exceptions, were mild, with headache and fever lasting 2 to 7 days, often with vomiting, and with an excess of cells in the spinal fluid. No association with water, milk, ice cream, or insects was found. The onsets were between mid-July and mid-September, chiefly during the last week of July and the first 5 days of August. The disease appeared to be different from these other infections of the central nervous system. There were no cases of poliomyelitis in the community. The-

cases reported as poliomyelitis among hospital personnel during the Los Angeles epidemic of 1934 have tentatively been regarded by this Office as cases of that disease. Reconsideration of the data is beginning to make this classification more doubtful, and it may be that they represent still a fourth previously unrecognized infection of the central nervous system, a sort of subacute or recurrent multiple neuritis.

The existence of conditions likely to be confused with nonparalytic poliomyelitis has emphasized the recommendation of the Public Health Service that, in reporting cases, distinction be made between frank paralytic poliomyelitis and nonparalytic or questionable cases, and that comparisons of incidence be based only on the frank cases. This recommendation has received favorable attention from several States and from the International Office of Public Health. In the absence of prompt investigation of each case, this recommended differentiation is somewhat difficult of control, especially when the reporting of nonparalytic or preparalytic cases is stimulated by the possible use of serum therapeutically.

HEART DISEASE

Studies of heart disease have continued under the direction of Medical Director A. M. Stimson. These studies have been conducted at the National Institute of Health in Washington and at a branch office located at the University of Pennsylvania in Philadelphia.

The studies in Washington have consisted of a combination of clinical observations carried out at various hospitals and clinics, and laboratory experiments at the Institute. Both have dealt almost exclusively with rheumatic fever and the associated heart involvement. Fifty-five cases of this disease, with control cases of scarlet fever, sore throat, and 50 normal children were studied. Detailed records were kept of clinical manifestations and specimens were taken periodically for testing. The principal object was to ascertain whether the generally accepted association between streptococci and rheumatic fever is specific, or whether during periods of activity of the disease there may not be a general heightened reactivity to foreign antigens. Since the season of activity is but recently ended, it is impossible to report at the present time on the outcome of these studies, but it is intended to issue a report within the next few months. Several investigators of prominence are extremely skeptical concerning the etiological role of streptococci, and conclusive evidence for or against the hypothesis has not yet been adduced. The question is of major significance to medicine and public health, and continued study is imperative.

Rheumatic fever is the largest single cause of disability and death from heart disease and must take rank with tuberculosis, syphilis, and cancer in importance, although this fact appears to be but little recognized by the profession and by public health authorities, chiefly because the disease is not reportable and vital statistics do not reflect its ravages. Animal experimentation has been continued at the laboratory in the effort to produce either rheumatic fever and heart disease or analogous conditions which might throw light on the subject in animals. Little success has attended these efforts, but it is

felt that all plausible hypotheses should be exhausted before the attempts are discontinued. It is apparent to epidemiologists that some intrinsic factor apart from an infectious agent is responsible for the selectivity of the disease. Our endeavors have therefore been in the direction of inducing physiological changes calculated to increase susceptibility. Several specimens of pericardial fluids from rheumatic cases were inoculated into different species of animals after supercentrifuging, in tests of the hypothesis advanced by some European scientists that the disease is due to a virus. The outcome was entirely negative, but we do not consider these few results as conclusive.

The studies at the Philadelphia branch office have been chiefly epidemiological and statistical in nature. There are two main objectives: One to secure more accurate and extensive data than are now available on the incidence and distribution of the etiological types of heart disease throughout the United States; the other to assemble, by intensive methods in one community, better epidemiological data on rheumatic fever (and heart disease). Unfortunately, official vital statistics do not furnish the information so essential to visualizing the magnitudes of various heart-disease problems and suggesting practical methods of control. Regarding the first objective, it can be stated now that replies from 1,072 hospitals, involving approximately 3,600,000 admissions, reveal 16,290 cases of rheumatic heart disease, 6,232 cases of rheumatic fever, and 2,491 cases of chorea. While, in general, cities in the northern part of the country show higher incidence, the disease should not be regarded as infrequent in any part of the country. While it is intended to continue these studies so as to include a 5-year period, thus detecting possible annual fluctuations, timely reports on important results of analysis of the data are anticipated. The survey of rheumatic fever in Philadelphia has also been planned on a 5-year basis. Preliminary data reveal the following figures for rheumatic fever, chorea, and subacute bacterial endocarditis combined: Annual admissions, 1,200, involving 1,000 individuals, and deaths about 200. The economic, racial, and familial aspects of rheumatic carditis are being studied. In addition to the two major objects described above, two minor activities are being carried on. One of these is a State-wide statistical study of mortality from rheumatic heart disease in Pennsylvania, conducted in cooperation with the Bureau of Vital Statistics and enlisting physicians through county medical societies in a program of reporting deaths from rheumatic heart disease. The response thus far has been most gratifying. The other project is a study of the social aspects of coronary occlusion in Philadelphia. The results thus far indicate that the disease is far more common in males than in females, in white persons than in Negroes, in Hebrews than in Gentiles, and among the professional and business classes than among wage earners. The average age at death is 60 years, but an appalling number of deaths occur, especially among white males, before the age of 50.

This office begins the new fiscal year with improved facilities. A medical specialist of high research attainments has been added to the staff, and a technician has been secured to perform the histological work in its own independent laboratory. An additional statistical employee at Philadelphia will help to speed up the analysis of the epidemiological data.

LEPROSY

Studies at the Leprosy Investigation Station, Honolulu, and the care and treatment of the patients in the adjoining Territorial Leprosy Receiving Hospital have been, with the exception of the first 6 weeks of the fiscal year, conducted under the direction of Surg. L. F. Badger.

During recent years there has been accumulating epidemiological evidence which suggests that there may exist some relation between the state of nutrition and the susceptibility to leprosy. To determine whether or not it is possible to demonstrate experimentally such a relation, the studies during the past year have dealt almost entirely with investigations relative to the relation of the state of nutrition to the susceptibility to and the progress of leprosy in laboratory animals.

Repeated experiments have definitely demonstrated that the incubation period can be shortened by depleting the rats of vitamin B₁ before inoculating them with the organisms of rat leprosy. Following subcutaneous inoculation of material containing the organisms of rat leprosy, all of the rats on the vitamin B₁ deficient diet will have developed palpable lesions from 2 to 4 weeks before all on the control diet have developed lesions. Two months following the instillation of rat leprosy organisms into the nose, the organisms have been found more frequently in the cervical lymph glands of rats maintained on the vitamin B₁ deficient diet than in the rats kept on the control diet. The examinations also suggest that the organisms are present in the glands of the deficient rats in much greater numbers than in the control rats. Examination of rats 2 months after intraperitoneal inoculation of the leprosy material revealed that more of the rats depleted of vitamin B₁ had definite leprosy lesions than the control rats. Fifteen weeks after the intraperitoneal inoculation, the disease was found to be more advanced in the vitamin B₁ deficient rats than in the control rats.

Another experiment which was in progress at the end of the year confirms the previous findings that the incubation period can be shortened by depleting rats of vitamin B₁ and also may prove to have epidemiological significance. The organisms of rat leprosy were planted on a culture media and kept at 37° C. for 4 weeks. At no time during this period was there evidence of growth on the media. At the end of 4 weeks the surface of the media was scraped, suspended in sterile saline, and inoculated into a number of rats on a normal diet. After 4 weeks on the normal diet, one-half of the rats were placed on a vitamin B₁ free diet. Eight weeks after the change in the diet, 45.0 percent of the rats on the deficient diet had palpable lesions, while none of the rats on the control diet had palpable lesions.

Whether or not this shortening of the incubation period is due to a specific vitamin B₁ deficiency is yet to be determined. In two experiments in which the incubation period was determined in rats depleted of vitamin B₂ as well as vitamin B₁, the incubation period was found to be shorter in the B₁ depleted rats.

Attempts to establish leprosy in animals other than the usual laboratory animals have been undertaken. In one species of animal promising results have been obtained.

It has been frequently stated that the disease known as rat leprosy does not occur in the wild rats in the Hawaiian Islands. During the past year this disease has been found in the islands and has been established in white rats in the laboratory.

Diphtheroid organisms have been frequently isolated from human cases of leprosy and are believed by some investigators to have a causal relation to the disease. Cultural studies of such diphtheroids have been in progress during the year. Attempts have also been undertaken to grow in culture media the organisms of human and rat leprosy. This work is still in progress.

MALARIA

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

Activities of the past year were divided between research, advice to State health departments and other agencies, and technical direction (for the Division of Domestic Quarantine) of malaria-control drainage activities of the Works Progress Administration. The accomplishments of the latter were submitted in a separate report to the Division of Domestic Quarantine.

Advice to State health departments and other agencies consisted in giving lectures to State boards of health personnel, aiding studies of malaria within the States under the State health departments, and in serving on the Tennessee Valley Authority advisory board for malaria control.

Research studies were carried out at all 6 field stations, namely, Columbia, S. C., Jacksonville, Fla., Memphis, Tenn., Panama, Canal Zone, Norfolk, Va., and Washington, D. C.

Columbia, S. C.—Cooperative work with the South Carolina State Hospital was continued during the fiscal year. The principal study was confined to attempts to perfect the culture of malaria sporozoites for the dual purpose of supplying infective malaria material to psychiatric hospitals where it is employed in the treatment of general paralysis, and for studies of the fate of the sporozoites after introduction into man. A technique has been developed which assures viability of sporozoites outside the mosquito for a period of at least 26 days. This permits shipment by mail to any part of the United States. The problem of sterilizing cultures has not yet been solved, although the invading organisms are, at worst, only minor pathogens, and all cultures can be safely administered by intravenous injection.

Many corollary studies on the effectiveness of the various species of malaria in infecting paretics have been carried out and strains of estivo-autumnal, benign tertian, and quartan malaria maintained. Researches on the effect of various treatments for malaria on the development of gametocytes, and the path followed by the sporozoite in man after it leaves the salivary gland of the mosquito have been initiated. Until this path is known, no direct experiments are possible to test readily a true prophylactic agent.

Memphis, Tenn.—The recent increase in antimosquito drainage and consequently the resultant necessity for adequate ditch maintenance has made it necessary to reduce the cost of ditch maintenance. Tests of various materials and methods of lining ditches have been

carried out. Although final results cannot as yet be reported, indications of possible success are already noted with such soil-stabilizing materials as emulsified asphalt and with covering material such as thin coats of concrete. Biological studies have been continued at Reelfoot Lake, principally on the effect of various lights as aids in trapping mosquitoes. In the course of these studies there were found quantities of *A. walkeri*, the presence of which had not been previously noted. Studies of dry dust vegetable larvicides, studies of pre-season broods of anophelines in floodwaters, and the use of ultraviolet light in mosquito traps have also been continued.

Panama, Canal Zone.—The malaria research work in cooperation with the Gorgas Memorial Laboratory was continued at the Panama station. The officer in charge of this work has had his detail prolonged for the purpose of completing his mosquito studies, analyzing the data, and compiling an annotated list of the anophelines of the entire Caribbean area. In addition, he has cooperated with the Yellow Fever Commission of the Rockefeller Foundation, accompanying the expedition into South America and studying the mosquitoes of endemic jungle yellow-fever areas. Descriptions of over 70 indigenous mosquitoes have been published.

Jacksonville, Fla.—At this station research on the distribution of malaria in the State was continued and a malaria-control unit within the health department was inaugurated. In addition, cooperation was given the Division of Foreign Quarantine in studies on preventing the introduction of mosquitoes from southern countries by airplane and with the Tennessee Valley Authority on special studies of shading in relation to anopheline production from impounded waters.

Savannah, Ga.—A new field malaria-research laboratory was organized during the year at Savannah. The purpose of this laboratory is to study the bionomics of *Anopheles*, with the end in view of disrupting or influencing the environment of the *Anopheles* by natural and self-perpetuating means. The artificial methods exploited to date, while effective in urban centers, are beyond the cost of rural communities affected with malaria. It is hoped that this study will bring to light natural, self-perpetuating, and inexpensive means of malaria control applicable to rural communities.

Norfolk, Va.—Cooperative work with the Virginia State Health Department in malaria-control activities was continued. In addition, experiments with ovicides, using the eggs of readily available *Aedes sollicitans*, were carried on. A study of mosquito prevalence and fauna in southeastern Virginia, comparing areas in which mosquito-control measures were prosecuted with like areas where no efforts at control were made, was continued.

Headquarters and thick-film laboratory, Washington, D. C.—In the thick-film laboratory there were examined during the year approximately 25,000 blood specimens taken in the field by local, State, and Public Health Service field workers. Of this number of slides, approximately 1,950, or 8 percent, were positive for malaria plasmodia. Laboratory cooperation was extended to State and Tennessee Valley Authority laboratories in checking examinations made in these laboratories and instructing their personnel in thick-film technique. During the year a mimeographed article on thick-film technique was revised. Much time was given to the technical supervision of Works

Progress Administration malaria-control drainage projects. Some time was also given to the investigation of sporadic malaria epidemics and to the preparation of exhibits.

NUTRITION

The Office of Nutrition Investigations continued under the direction of Passed Asst. Surg. W. H. Sebrell.

The experiment to determine the effect of long administration of traces of sodium fluoride in the drinking water on the teeth of dogs was completed. The changes in the dogs' teeth closely resembled human mottled enamel. No gross changes in other bony structures were seen. Additional rat tests were made on several different waters in order to determine the value of special filtration processes in removing fluorine. These experiments are in progress at the close of the fiscal year.

Experiments on the effect of several different deficient diets on the incubation period of rat leprosy, in collaboration with Surg. L. F. Badger, were continued. Attempts to transmit human leprosy to rats on deficient diets were continued.

Tests on canned mackerel, lima beans, and several liver extracts were completed during the fiscal year. The results indicate that canned mackerel is a good source of the pellagra-preventive vitamin and that certain liver extracts may be of considerable value in the treatment of pellagra.

At the close of the fiscal year experiments are in progress to determine what relation, if any, exists between lactoflavin and pellagra; on the effect of lactoflavin on nutritional cataracts; and on the effect of lactoflavin on the symptoms of so-called rat pellagra.

There is in progress an experiment on the effect of small amounts of cystine amine fed to rats on a cystine-deficient diet.

The preparation of numerous fractions from yeast, which has been in progress for the past few years, was continued in an effort to secure a material of high pellagra-preventive potency. Although many fractions were prepared, none suitable for large-scale use in human pellagra has been secured.

A test of the pellagra-preventive value of an extract rich in the chick-pellagra factor is in progress.

Studies were started on the ascorbic acid (vitamin C) content of plants grown in various nutrient solutions and on the distribution of ascorbic acid in the various portions of the plant as affected by such factors as age, sunlight, temperature, and moisture. These studies are now being actively pursued.

ROCKY MOUNTAIN SPOTTED FEVER

The manufacture of Rocky Mountain spotted fever vaccine and the study of Rocky Mountain spotted fever and other tick-transmitted diseases of man and animals and of certain insect-borne diseases have been carried on at the Rocky Mountain Laboratory at Hamilton, Mont., under the supervision of Director R. R. Parker.

Construction of a new building for rearing experimental animals and of quarters was begun in April 1936.

The largest quantity of spotted fever vaccine produced in 1 year was prepared during the fiscal year. The gross amount manufactured was 506.8 liters, of which 360.8 liters were for use during the current season. Of the latter amount, 274.2 liters, enough for the immunization of about 60,000 persons, was of sufficient protective value to be used for human administration.

Funds for vaccine production for the Civilian Conservation Corps were again provided. Enough vaccine was supplied for the personnel in 48 camps located in the more dangerous endemic areas. The vaccine was also furnished to the Resettlement Administration and to other Federal agencies for administration to field employees.

The greater part of the 1936 supply was distributed to physicians in 23 States, principally in the northern Rocky Mountain States.

The situation as regards bulk production of vaccine has much improved for two reasons: First, improved tick-rearing technique, and, second, the finding that vaccine stored under proper conditions retains its potency over a considerable period. It is now possible to rear from 1,000,000 to 1,500,000 infected adult ticks a year—more, in fact, than can be made into vaccine under present conditions.

Epidemiology.—In the West an unusual number of late season cases were reported during the summer and in September of 1935. This was probably due to a prolonged period of tick prevalence, resulting from meteorological conditions which permitted a part of what would normally have been the 1936 crop of ticks to appear as active adults in the late summer and early fall of 1935. There has been a marked decrease in incidence in many of the Western States during the 1936 season and the total number of cases for the year will probably be well below the 1935 figures.

Two cases of coincident Rocky Mountain spotted fever and tularaemia infection, confirmed by laboratory tests, one tick apparently transmitting both disease agents in each instance, have been reported from Wyoming, both cases terminating fatally.

TULARAEMIA

In comparison with the past 2 years, tick-borne tularaemia of man and animals has been much less prevalent in the Rocky Mountain region during 1936.

SYLVATIC PLAGUE

In July 1935, *Bacillus pestis* was demonstrated in Richardson ground squirrels on Blacktail Creek, about 10 miles south of Dillon, Beaverhead County, Mont. Data collected in the field indicated that sylvatic plague had probably entered Montana from Idaho in 1933 or 1934, crossing the Continental Divide near Monida and possibly near Horse Prairie. It was further ascertained that epizootics in ground squirrels had occurred in many parts of the southern portions of Beaverhead and Madison Counties during 1934 and 1935, and it appeared likely that the infection had spread eastward up the Centennial Valley, from near Monida, and thence northward up the Blacktail, Ruby, and Madison Valleys. At Dillon, ground squirrels were dying on the outskirts of the city, and dead rodents were being brought into the residential sections by dogs and cats. During

the season of 1936 virulent strains of *B. pestis* have been isolated from ground squirrels in Madison County and again in Beaverhead County.

Observations made in cooperation with the Biological Survey and records obtained by the laboratory staff have shown that *Pulex irritans*, a known vector of plague, is prevalent on coyotes (*Canis latrans*) throughout the Rocky Mountain region, occurs frequently on dogs, may infest prairie dogs (*Cynomys ludovicianus*) almost to the exclusion of other species, and occurs on deer (*Odocoileus* sp.) in western Oregon. These data suggest that observations are desirable as to the importance of this flea as an agent in the geographic spread of sylvatic plague.

Ecological studies relating to sylvatic plague in southwestern Montana are being made from a temporary field laboratory near Dillon.

EXPERIMENTAL TICK STUDIES

A filter-passing virus was isolated in the summer of 1935 from *D. andersoni* collected near Nine Mile, Mont., and during early 1936 was again demonstrated in several lots of ticks of the species *D. occidentalis* from southwestern Oregon. The evidence suggests that this virus is the causative agent of disease in wild animals. Whether or not man is susceptible has not yet been demonstrated. Columbian ground squirrels and chipmunks have been shown susceptible; also white rats, guinea pigs, and *Macacus rhesus* monkeys. As thus far observed, the infection is nonfatal except in guinea pigs. There is no apparent relationship between this virus and any known tick-borne disease.

A Gram-negative, bipolar bacillus has been isolated from specimens of *D. occidentalis* collected near San Juan, San Benito County, and in Grimes Canyon, near Fillmore, Ventura County, Calif., and also from *H. leporis-palustris* received from near Salmo, British Columbia. This organism is presumably transmitted to animals serving as natural tick hosts. Guinea pigs may be infected by spleen vaccination, and in them it produces a typical fatal infection characterized by a greatly enlarged spleen, perisplenitis, and adhesions to the abdominal wall.

A new species of tick, *Ornithodoros parkeri*, has been described.

O. hermsi, the transmitting agent of relapsing fever in California, has been found to occur in the vicinity of Moscow, Idaho.

Larval ticks of the species *O. talaje*, the hosts of which have not heretofore been known, have been collected in Arizona from kangaroo rats and their burrows.

Studies of the life history, habits, and host relationships of *D. occidentalis* have been continued in California and Oregon.

Reciprocal cross-immunity has been demonstrated between boutonneuse fever and Sao Paulo exanthematic typhus.

A new division of station work has been organized for research on biological equipment. Its function is to devise and make technical equipment necessary for the highly specialized work being conducted at this laboratory, which cannot be secured from commercial sources.

In view of the recent evidence indicative of a widespread occurrence of sylvatic plague in the Pacific Coast and other Western States,

much time has been devoted to the classification of the extensive station collection of fleas which has been built up incident to the field studies made during the past 10 years. A knowledge of the species of fleas present and of their geographic and host distribution is essential in the study of this disease in nature.

CHILD HYGIENE

The activities of this office continued until June 8, 1936, under the direction of Surg. Estella Ford Warner. On that date Passed Asst. Surg. Carroll E. Palmer assumed direction of the office.

Studies of physical growth and development.—During the year four reports were completed. The purpose of one study, based on records of the financial status of approximately 6,000 families and on 5-year records of height and weight of children in these families, was to investigate the influence of economic changes during the depression on the growth of children. Results of the analysis were largely negative except for the finding that young children (6 to 10 years of age) from families that had *become* relatively poor during the depression failed to grow in weight quite as rapidly as children from families whose incomes had not changed markedly during the depression. These results supplement and substantiate the results of other studies from this office which indicate that, so far as physical size and growth are concerned, the depression probably has not affected seriously a considerable number of American children. (Height and Weight of Children of the Depression Poor. Health and Depression Studies No. 2, Pub. Health Repts., vol. 50, pp. 335-347, 1935.)

Data for three papers were derived from a survey made during the years 1923-24 of approximately 30,000 native-born white children in various urban communities throughout the United States. These reports show (a) that children with physical defects (principally carious teeth, defective tonsils and adenoids, goiter, enlarged cervical and submaxillary glands, and defective vision) are, on the average, slightly shorter, lighter in weight, less stocky, and have smaller vital capacity than children for whom no defects were recorded; (b) no consistent differences in rates of growth of the defective and non-defective groups; (c) no geographic differences in the relationship of the presence or absence of defects and physical size and growth; (d) evidence that physical defects are associated with clinical impressions of nutritional impairment. (Relation of Physical Defects to the Physical Growth of Children of 21 States. Physical Measurement Study No. 3. Pub. Health Repts., vol. 51, pp. 831-841, 1936. Relation of Physical Defects to the Physical Growth of Children in Different Geographic Regions of the United States. Physical Measurement Study No. 4. Am. J. Hyg., vol. 23, pp. 205-215, 1936. Relation of Physical Defects to Nutritional Impairment, Based on the Examination of 30,000 Children of 21 States. Physical Measurement Study No. 5. In press. Am. J. Med. Sci.)

Studies of fatal accidents in childhood.—Four reports direct the attention of public-health officials to recent Census Bureau statistics on accidental deaths of children under 15 years of age. Automobile accidents, burns, drowning, falls, poisonings, and mechanical suffoca-

tion are the most frequent causes of accidental fatalities. In 1930, in the death registration area, over 22,000 children were reported as dying from accidental causes. Less than half this number of deaths was reported from the combined causes of measles, scarlet fever, and diphtheria. Considering all fatal accidents, mechanical suffocation leads at under 1 year, burns at 1 and 2 years, burns and automobile accidents at 3, and automobile accidents at 4 to 15 years. Analyses of time changes (1925-32) in relative mortality from automobile accidents, burns, and mechanical suffocation of infants under 1 year, point to significant trends and variations in different geographic localities. (Mortality from Automobile Accidents Among Children in Different Geographic Regions of the United States, 1930. Studies on the Fatal Accidents of Childhood No. 1. Time Changes in the Relative Mortality from Automobile Accidents Among Children in Different Geographic Regions of the United States, 1925-32. Studies on the Fatal Accidents of Childhood No. 2. Time Changes in the Relative Mortality from Accidental Burns Among Children in Different Geographic Regions of the United States, 1925-32. Studies on the Fatal Accidents of Childhood No. 3. Time Changes in the Mortality from Accidental Mechanical Suffocation Among Infants under One Year Old in Different Geographic Regions of the United States, 1925-32. Studies on the Fatal Accidents of Childhood No. 4.) (In press. Pub. Health Repts.)

Survey of midwife practice.—A limited but intensive study of the rural midwife in Brunswick County, Va., was begun in 1934 and brought to a close during the present fiscal year. From the observations made it is evident that the practice of midwifery in this community, which is representative of a rather large group of similar communities, must continue though a large number of midwives now practicing are physically and mentally unfit to do so. A definite plan for training young women in the neighborhood of each of the older women is urgently needed to meet the social need of midwifery. Suggestions regarding the selection and training of a new type of midwife are made. In addition to the formal report of the study (The Rural Midwife: Her Social and Economic Background and Her Practices as Observed in Brunswick County, Va. Pub. Health Rept., vol. 50, pp. 1807-1915, 1935), a mimeographed report was prepared for distribution.

Hearing studies.—Analysis of records obtained during an extensive investigation of auditory impairment of Washington (D. C.) school children was continued and the first report of the study was completed. The results reported indicate clearly the inadequacy of the present method of testing the hearing of school children by means of the 4-A audiometer. (Audiometric Studies of School Children. I. The Consistency and Significance of Tests Made with a 4-A Audiometer.)

DENTAL STUDIES

The dental studies reported were directed by Passed Asst. Dental Surg. H. Trendley Dean.

The study of 11 cities begun during the preceding year for the purpose of determining whether or not there was a quantitative

relation between the fluoride concentration of the common water supply and the clinical effect, was completed during September 1935. The results of this study were published in the *American Journal of Public Health* for June 1936; certain detailed phases of the study were reported in the *Public Health Reports* for December 6, 1935. Based upon the findings of this study, a study was begun in December 1935 to determine definitely the minimal threshold of toxicity of public health significance. Reliable information on this basic part of the problem is essential if the further development of this disease is to be prevented by removing the toxic amounts of fluorides present in the water by chemical means.

Monthly water samples are being received from four cities where the fluoride content of the common water supply is between one and two parts per million. As these four cities have the requisites for quantitative evaluation, at the end of the year the mean annual fluoride content of the water supply will be correlated with the actual mottled enamel index of the community. Two of these cities were surveyed during the year. The chemical part of this study, as in the past, is being carried on by the Division of Chemistry, National Institute of Health.

During the year 3,136 children were examined in connection with mottled enamel surveys in South Carolina, Indiana, Ohio, Texas, New Mexico, Louisiana, and Kansas. At present there are about 335 reported or surveyed endemic areas in the United States distributed among 25 different States. Eighty-nine percent of these endemic areas are located west of the Mississippi River and 28 percent are in Texas. New areas of endemicity have been confirmed by surveys during the year in the States of Indiana, Ohio, and Louisiana, States hitherto considered free.

DERMATOSES INVESTIGATIONS

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

There has been a marked increase of the work of this Office over the previous year, and there has been considerable demand from industries, labor organizations, physicians, lawyers, and the public in general for investigations, information, and advice regarding industrial and contact dermatoses. During the year, studies in 14 factories were made of skin hazards in the manufacturing processes involved. These factories employ a total of approximately 7,000 workers, and of this number about one-third were actually examined for the occurrences of skin hazards. Special studies of outbreaks of dermatitis were made in 5 plants upon the request of the managers. In one of these plants a study was begun of the skin hazards involved in the manufacture and distribution of two new products—one, an artificial silk and the other a rubber compound.

Dermatitis incidental to the manufacture of phenol formaldehyde resins, skin irritations following exposure to soda ash, and an outbreak of dermatitis found to be caused by an excess amount of accelerator used in the rubber insulation of cables were among the problems met in the course of work in these industrial plants. Recommendations for the prevention of further occurrences were made.

In a published report attention was called for the first time in the United States to a skin and health hazard from contact with chlorinated naphthalenes and chlorinated diphenyls.

INDUSTRIAL HYGIENE AND SANITATION

The work of the Office of Industrial Hygiene and Sanitation was continued under the direction of Senior Surg. R. R. Sayers.

DUST STUDIES

Health of anthracite coal miners.—A final report of the study of the effect of dust exposure on the health of miners in the anthracite coal fields of Pennsylvania was published as Bulletin No. 221, Anthracosilicosis Among Hard Coal Miners.

Asbestos textile study.—An investigation was made of the dust hazard incident to the asbestos textile industry in North Carolina, in which 517 persons were examined.

This study was conducted in essentially the same manner as that of previous dust studies of this nature, and included medical examination, X-ray of the chest, and laboratory examinations, particularly of the urine for silica and of the sputum for tubercle bacilli and asbestos bodies. Of the 517 persons examined, 46 (8.9 percent) were diagnosed as having asbestosis. This incidence may be modified, owing to the fact that a great proportion of the persons examined had been working in the asbestos industry a comparatively short time.

STUDIES OF SICKNESS AMONG INDUSTRIAL WORKERS

Incidence of illness among industrial workers.—Reports from 33 industrial sick-benefit associations providing sickness insurance for about 158,000 male industrial workers were analyzed, and the reports presented quarterly in the Public Health Reports.

Occupational morbidity and mortality study.—The field work for a study of the effects of particular trades and occupations on the health of workmen was completed early in June 1936, and the work of tabulating and analyzing the data has been started. This work is being carried on from funds allotted by the Works Progress Administration. The study includes a survey of occupational environment in most of the plants from which sickness data were obtained for the purpose of affording morbidity and mortality rates for groups exposed to specific poisons and other potential health hazards in industry. A study along similar lines covering approximately 100,000 automobile workers is also being carried on.

WORK IN INDUSTRIAL HYGIENE IN THE STATES

Development of industrial hygiene in State health departments.—For many years the State and Provincial Health Authorities of North America have sustained interest in industrial hygiene through the committee on industrial hygiene of this association. The passage of the Social Security Act at once made available the necessary funds for the extension of this phase of public health work in the various

States. Accordingly, the Public Health Service, in cooperation with the Industrial Hygiene Committee of the State and Provincial health authorities, inaugurated a program designed for the purpose of assisting States in establishing active industrial hygiene units in the health departments of various industrial States. With the inauguration of industrial hygiene activities in State health departments some 24,000,000 gainful workers will be given service in this field by health agencies.

Training of personnel.—One of the serious problems which confronted the Public Health Service in connection with the establishment of industrial hygiene units in State departments of health was the shortage of trained personnel. The Public Health Service conducted a seminar for physicians and engineers from State health departments. Thirty-four medical and engineering officers from the industrial hygiene bureaus of 16 States attended.

SPECIFIC INDUSTRIAL POISONS

Mercury study.—The analysis of the data collected during the study of 529 employees of the fur-cutting industry is almost completed, and results will be submitted for publication at an early date. Forty-three cases of chronic mercurial poisoning were found. The most definite cardinal symptom found among the 43 cases was a fine intentional tremor. Other symptoms in the order of their frequency were psychic disturbances, abnormal knee jerk, dermatographia, excessive perspiration or abnormal blushing, digestive disturbances, and gingivitis.

STUDIES IN ILLUMINATION AND ATMOSPHERIC POLLUTION

Atmospheric pollution of American cities for the year 1931-33.—The report of this study has been completed and published. The report gives a general picture of air conditions as they existed throughout the whole country at the time of the survey, and forms a basis for further work on the reduction of air pollution and smoke abatement.

SPECTROGRAPHIC WORK

The following samples were analyzed: 520 quantitative analyses run on urine samples for mercury; 2 samples of blood (dog) and 2 samples feces (dog) analyzed for lead; 1 sample of blood examined for met- and sulph-hemaglobin, by the absorption spectrum method; 15 samples of blood examined for carbon monoxide by the absorption spectrum method; 1 sample of urine analyzed for lead.

The problem of a good technique for the quantitative spectrographic determination of lead in urine is now being carried out. A method was devised of treating urine for subsequent spectrographic determination of mercury. The urine is treated in the cold with chlorine gas and the treatment is repeated until a homogeneous liquid is obtained. When large amounts of iron are present a zinc or copper salt is added to the sample and mixed sulphides are precipitated in acid solution with hydrogen sulphide. This precipitate containing the mercury is redissolved in chlorine water and this sample is analyzed spectrographically.

GENERAL CHEMICAL WORK

Analyses.—The following inorganic materials used for animal experiments were analyzed: Titanium oxide, manganese silicate, calcium silicate, calcium carbonate, lead silicate, copper silicate, barium silicate, and potassium silicate. One sample of dried lung tissue was analyzed for silica and ash; a new absorbent for hydrogen cyanide gas was identified as aldehyde ammonia; six cleaning fluids were analyzed for carbon tetrachloride by fractionation and determination of the chlorine content of the various fractions. Material sent in for analysis was identified as vermiculite, and five samples of phosphates and rock slag analyzed.

Miscellaneous activities.—During the March (1936) floods two members of this Office were detailed for duty in connection with rehabilitation and general sanitation measures for the flooded areas. Two of the engineers assigned to the Wilkes-Barre area were requested to conduct a sanitary survey of the most congested flood areas in that district. The study covered more than 5,000 families, with a population of about 24,000 persons.

MILK INVESTIGATIONS

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

Studies of thermal resistance of test organism.—Studies were continued during the year on the thermal resistance of the *E. coli* test organism (strain 11-B) using full-scale pasteurization equipment. This work has as its objective the development of a nonpathogenic criterion organism for use in testing the efficiency of pasteurization machinery and the testing of devices and processes for the bactericidal treatment of dairy and milk-plant containers and equipment.

Previous research work at 145° F. and 160° F. on the effect of variations in the pH of the buffered distilled water used as the medium for the tests have indicated that the thermal resistance of the organism is practically constant throughout the pH range 6.9–7.5. On either side of this pH range there is a decrease in the thermal resistance of the organism. The midpoint of this range, pH 7.2, was therefore chosen as the pH value at which future work would be done.

Variation in time required for 99.99-percent reduction of test organism.—Although the experimental conditions in the thermal resistance runs were kept constant, the time required for a 99.99-percent reduction of the test organism varied considerably for the individual tests made at each of the temperatures studied. Accordingly, efforts were directed toward determining which of the various factors might be responsible for the irregular results obtained. Investigation of the various items in the test procedure indicated that none of the procedure following the addition of the inoculum to the pasteurizer was responsible for the irregularities. These results therefore eliminated from consideration such factors as mixing of the culture in the pasteurizer, taking of samples, technique of plating, and counting and incubation of plates. The distilled water used in the pasteurizer and the culture of the test organism were subjected to investigation, but no evidence was obtained which would indicate conclusively that

either one of these items alone was the responsible factor. It is possible that there are natural variations in the thermal resistance of individual cells together with variations in the proportions of these cells in the culture. If this is true, there will naturally be variations in the time required for 99.99-percent reduction, even though all other factors in the experiments are kept constant.

Single-cell isolations from test organism.—On the assumption that our test organism had possibly become contaminated with other organisms that did not show up in staining the culture or in colony formation on the plates, or possibly that the culture might contain more than one strain of *E. coli*, and that our fluctuating results could be thus explained, it was considered advisable to isolate single cells from some of the stock cultures of the test organism. The single cell isolations were made by Barber's method. Five of the single cells isolated grew and were confirmed as being *E. coli*.

Thermal resistance of cultures from single cells.—Cultures from one of the single cell isolations (3U) were used for a group of thermal resistance runs at temperatures of 140°, 145°, 150°, 155°, and 160° F.

At the conclusion of this group of runs a new group of thermal resistance runs were made to see if duplication of results was possible.

The variations in the time required for 99.99-percent reduction of the test organism in the individual runs were somewhat less than occurred in the runs made prior to the use of cultures from single-cell isolations, but still seem rather large. Even when considering the mean times for 99.99-percent reduction, which are the means of six runs, it is evident that the two groups of results in general do not show very close agreement.

Time required for 99.99-percent reduction of test organism in whole milk.—A group of thermal resistance runs was made at 5° F. intervals from 140° to 160° F., inclusive, in which the test procedure was the same in all respects as the preceding two groups of runs, except that whole milk was the medium used in the pasteurizers instead of buffered distilled water. The raw milk used was heated to at least 180° F. and held at that temperature for 30 minutes before the inoculum of the test organism was added. The pH of the milk during the tests was 6.7 to 6.8, and no buffers were added.

Studies of the bactericidal treatment of milk cans by heat.—These studies were started because of the increasing use of dry-heat and moist heat sterilizing cabinets in the dairy industry and the consequent need for an effective and practical temperature and holding time combination for use in operating these cabinets.

Previous work had shown that a temperature slightly above 160° F. for 10 minutes would produce a 99.99-percent reduction of the test organism under what were considered to be practically dry-heat conditions. Later experiments on the moisture content of the cabinet indicated that the small amount of moisture remaining in the cans from the inoculum of the test organism about doubled the original moisture content of the cabinet.

A series of runs was made at 150° F. under the same conditions as prevailed in previous tests except that provision was made for increasing the moisture content of the air in the cabinet. The moisture

content of the air in the cabinet for these runs averaged 20.5 grams per cubic foot during the holding period, which was about twice the moisture content during the holding period under what were considered dry-heat conditions. The mean reduction in the count of the test organism for this series of runs was 99.969 percent, as compared with 99.935 percent for this same temperature when no provision was made for increasing the moisture content of the air in the cabinet.

Survey of milk-borne disease outbreaks for the year 1935.—During the fiscal year a questionnaire was sent to all State and local health departments in order to compile information as to milk-borne disease outbreaks which occurred during the year 1935. The following number of outbreaks were reported for the diseases listed: Typhoid fever, 16; para-typhoid fever, 2; scarlet fever, 2; septic sore throat, 9; miscellaneous, 14.

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: District of Columbia, Illinois, Indiana, Minnesota, Missouri, North Carolina, North Dakota, Oklahoma, and Wyoming.

STUDIES OF PUBLIC HEALTH METHODS

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

Three main lines of investigation were pursued in the year just completed: (1) Studies of administrative problems in public health organizations, (2) determination of the influence of health education measures on the knowledge and practices of people, and (3) inquiries into certain features of illness and medical service.

Public health officials in general view their responsibilities in terms of diseases which are transmissible. Some attempt, as a rule, is also made to elevate the level of individual health by educational measures, but there is no direct attack on general illness. The social and economic consequences arising from chronic disabling illness are much greater than those arising from the more acute conditions. As yet, however, no local health program makes provisions for these disorders.

An analysis was made of the experience of the health department, from the standpoints of survival and growth, in 811 counties. These counties represent the entire number of counties having health department service at any time during the period 1908-34. The study was based on the records of personnel and budget of each county for every year that organized health service was maintained. Of the 811 counties which established health department service, 541 were maintaining the service at the close of the study period (1934) and 270 had terminated it prior to that time.

During the fiscal year under consideration an initial step was taken with a view to developing techniques for measuring the effect of educational measures commonly pursued by health departments. The subjects for study were groups of midwives in several Virginia and North Carolina counties where different methods had been

established by State and local health authorities for controlling midwife practice. These systems varied from practically no control to a certification after the midwife had successfully pursued a course of instruction. Essentially the same technique for educational measurement developed in the general scholastic field was adapted to the education of midwives. At the close of the fiscal year the work had progressed to the point of perfecting the method of study. The feasibility of the procedure, however, has been demonstrated. The studies are to be continued during the coming fiscal year. After a sufficient number of midwives representing various backgrounds of training, experience, and systems of supervision have been studied, it should be possible to draw conclusions regarding the best methods for training and supervision.

Data regarding disability rates gathered in Puerto Rico in 1935 were analyzed. Using bed illness as a criterion of disability, it was found that in Puerto Rico the total bed-illness rate was 418 per 1,000 population, while in 5 representative rural counties of the continental United States the corresponding rate was 322. The median duration of bed illness in Puerto Rico was found to be 10.1 days, while the median duration in the particular surveyed section of the United States was 6.7 days. Four percent of the bed illnesses revealed by the survey in Puerto Rico, as compared with 2 percent of those in the five counties of the continental United States, resulted in death. Malaria, hookworm, nutritional disorders, diarrheal conditions, and tuberculosis continue to be outstanding public health problems on the island.

According to the family canvass in Puerto Rico, 47 percent of illness (exclusive of birth conditions) had no attendant, 39 percent were seen by a municipal physician, 11 percent by a private physician, and the remainder had some other attendant. A licensed midwife, rather than a physician, is the attendant usually present at delivery. Comparatively little prenatal care is received by the mothers in Puerto Rico.

A major project of this Office involves the portrayal of health facilities in 107 counties which contain the areas covered by the National Health Inventory. Under the term "facilities" are included physicians, dentists, hospitals, dispensaries, health departments, voluntary health agencies, and other organizations which contribute in any appreciable way toward the promotion or conservation of human health. These data covering the plan of administration, finances, and services of each agency will be related to findings regarding illness and care to be disclosed by the canvas of approximately 750,000 selected families living in the same areas.

STATISTICAL INVESTIGATIONS

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

HEALTH INVENTORY

This project, a study of health and health facilities on a national scale made possible by an allotment of \$3,450,000 from emergency relief funds, was under the direction of Principal Statistician G. St.

J. Perrott. Mr. Clark Tibbitts was in immediate charge of the field activities. During the latter half of February 1936, when employment was at its peak, a field staff of over 5,000 persons was engaged in collecting data. The central office, situated in Detroit, Mich., began the work of coding and tabulation in January 1936, and a staff of more than 1,000 persons, 90 percent from relief rolls, will have employment there for the remainder of the year. The four phases of the study are (1) chronic disease survey, (2) communicable disease survey, (3) occupational morbidity and mortality study (a project of the Office of Industrial Hygiene), and (4) health facilities study (a project of the Office of Public Health Methods).

Chronic-disease survey.—This study is a survey of disabling illness, physical impairments, and medical care among 865,000 families in 90 cities and 23 rural counties throughout the United States. The survey is the first attempt to obtain, on a national scale, information on the chronic diseases which are a major cause of unemployment, disability, and death among persons of mature age, and are becoming recognized as a public health problem.

The major objectives of the survey are to determine (1) the incidence of serious disabling illness for a 12-month period in a sample population of about 3,500,000 persons, the duration of disability, and the medical and nursing service associated therewith; (2) the prevalence of chronic diseases, orthopedic defects, and of blindness and deafness among such persons and a measurement of the severity of these conditions; (3) the relation between disease and certain environmental factors such as income, education, and housing conditions; and (4) the extent of medical and public health facilities and the degree of utilization of such facilities by the general public.

Among the problems of immediate national interest on which the survey will provide information are (1) illness as a cause of unemployment; the vocationally handicapped, (2) illness and medical care among certain groups of the population—the aged, youths, persons on relief, (3) crippled children, (4) the nature and extent of invalidity and the proportion of cases institutionalized, (5) facilities available for medical care and the use made of these facilities, (6) accidents as a cause of disability, (7) illness and occupation, and (8) illness and housing.

Communicable disease survey.—The communicable disease survey is a study of the incidence and fatality of 13 diseases, chiefly among persons less than 25 years of age. These diseases are measles, German measles, whooping cough, chickenpox, mumps, diphtheria, scarlet fever, smallpox, typhoid fever, infantile paralysis, meningitis, encephalitis, and acute rheumatic fever. Hitherto the only large mass of information in this field has been in terms merely of the gross numbers of cases and deaths from each disease. Since this survey covered about 250,000 families, it will provide for the first time adequate data to present both cases and deaths in their economic and social setting, and to state incidence in terms of the population at risk as well as in terms of the total population. That is, the incidence of these diseases at various ages in the population with no history of a previous attack will be studied in relation to familial exposure to a case, to school attendance, and to various social and

economic indexes, such as income, occupational class, rental or value of home, number of persons per room, and the education of the housewife.

Data have been collected relative to the duration of the protection accorded by smallpox vaccinations, and diphtheria, scarlet fever, and typhoid fever immunizations.

A special study of acute rheumatic fever will deal with such questions as the relation between this disease and prior attacks of other communicable diseases, and the familial spread of the disease.

Official reports of the number of cases of communicable disease are known to be a vast understatement. The extent to which cases of the above 13 diseases actually are reported to city health departments and the types of cases that are most frequently missed will be determined by the communicable disease survey.

Occupational morbidity and mortality survey.—This survey is a study of the amount of lost time due to illness among industrial workers and the relation of illness to occupation, and the hazards of the occupational environment. Transcription of the records of industrial sick benefit associations in some 400 corporations produced a total of 550,000 schedules suitable for analysis. The data represent the largest amount of statistical material on disabling sickness among industrial workers that has ever been collected in the history of the country, and also afford an extensive survey on occupational shifting during the depression.

The field work consisted principally of transcription of personnel and sickness records of corporations providing some form of sickness benefits (usually cash benefits) to employees disabled by sickness or nonindustrial accidents. From personnel records the occupation and changes in occupation were obtained for each employee during the study period, 1930 to 1934, inclusive. The chronological record of disabling illnesses was included in the schedule so as to permit the computation of sickness and death rates according to occupation and by nature of disease. The study is not confined to so-called occupational diseases but covers all diseases recorded. The use of control groups will make it possible to ascertain the diseases, especially the more common ones, that occurred with excessive frequency in any given occupation.

Field work was completed early in June 1936, and it is expected that the work of tabulating and analyzing the data will be completed by June 1937.

Health facilities study.—This survey includes a census of hospitals in cooperation with the census of business, a survey of hospital outpatient departments, and a survey of public health facilities. The data obtained in the hospital census included name and location, income, expenses, personnel, pay rolls, plant assets, endowment funds, and indebtedness. The health-facilities data included type of agency, population served, income, expense, personnel, and services rendered. Some 10,000 reports on hospitals have been transcribed from records collected by the American Medical Association and the American College of Surgeons. The hospital census will produce about 4,000 schedules and the out patient department census some 600 schedules. Field workers obtained 2,800 schedules in the health agencies study of governmental and nongovernmental health organizations such as

city, county, or State health departments, welfare department health services, nursing associations, tuberculosis associations, etc. This study covered agencies in about 100 counties throughout the country.

MISCELLANEOUS

Some further papers have been published during the fiscal year on the causes of illness and the extent and kind of medical care in the 9,000 families canvassed in the study which was made in cooperation with the committee on the costs of medical care. Two of these papers (Public Health Reports Oct. 11, 1935, and Milbank Quarterly, October 1935) had to do with the incidence of illness. Three others (Public Health Reports, Apr. 17, and July 10, 1936, and American Journal of Public Health, November 1935) dealt with the frequency of vaccinations and immunizations among persons of various ages and in different income levels in the surveyed families living in various parts of the country. These studies on the frequency of smallpox vaccinations and of typhoid immunizations constitute the first data on the use of immunizing procedures in a considerable group of families scattered throughout the United States.

Papers on the changes in incidence and fatality of smallpox in recent decades (Public Health Reports, Apr. 3, 1936) the health of the worker (Annals of the American Academy of Political and Social Science, March 1936) were also published. Two further papers on health during the depression were published (Public Health Reports, Aug. 16, 1935, and Jan. 24, 1936).

The usual 4-week summaries of the prevalence of communicable diseases and the usual semiannual and annual summaries of mortality were prepared. Beginning with the calendar year 1936 the mortality summary was issued quarterly. These provisional summaries, which are made possible by the cooperation of about 30 State health departments, provide the first available data on mortality from specific causes in the various parts of the country.

STREAM POLLUTION INVESTIGATIONS

Research studies in stream pollution and natural purification, including the allied fields of sewage treatment and water purification, have been continued at the headquarters laboratory maintained at Cincinnati, Ohio, under the direction of Sanitary Engineer J. K. Hoskins.

Sewage treatment studies.—Studies of the activated sludge process of sewage treatment have been continued with the object of determining those factors which, by affecting the biological balance, reduce the efficiency of purification. An experimental activated sludge-plant unit is maintained in operation for the production of normal activated sludge as well as a large number of small laboratory units which can be operated under carefully controlled conditions.

The functioning agent in the removal of solid, colloidal, and dissolved impurities from sewage by the activated sludge process appears to be a gelatinous matrix which makes up a large portion of the body of the sludge. Considerable attention has, therefore, been

devoted to studies of the formation, composition, and properties of this active principle.

Using organisms with sludge-producing and purification characteristics in pure culture, combined chemical and bacteriological studies have been made (1) on the rate of production of active sludge, (2) on the rate and extent of oxidation of sewage pollutional materials, and (3) on the rate and extent of total purification of sewage. Total purification as used here in reference to the pollutional material in sewage includes oxidation, adsorption, and the material synthesized into new active sludge.

Similar observations, under identical conditions, have been made of the oxidation, total purification, and synthesis accomplished by normal activated sludge. These results make possible comparisons of the efficiencies of the two types of sludge and provide a basis for further studies to determine the factors which control the efficiency of this method of sewage treatment.

In general, it can be said that in the presence of a good sludge, either pure culture or natural, both oxidation and adsorption of the pollutional material in sewage takes place at a very rapid rate. The rate of oxidation very greatly exceeds that which has ever before been demonstrated under any biological set-up.

A method of determining the rate of oxidation of sewage materials by activated sludge has been developed. A correlation between the settling qualities and the ash content of activated sludge has also been established.

The use of very small amounts of chlorine has been shown to be effective in the control of sludge bulking when this condition results from excessive fungus growths extending outward from the body of the sludge particles. A report on the development of this method of treatment and its practical application in full-scale municipal plants has been published.

Study of stream oxidation.—Experiments were begun last year on the physical and chemical changes occurring in deposits of sewage sludge under conditions approaching those of natural streams, using for the purpose a specially constructed recirculation channel permitting observations of these changes to be carried out over extended periods of time. These experiments have been continued and amplified to include some parallel observations on the oxidation of sewage when diluted in a stream water and carried by the stream very largely in solution and suspension.

The results of the experiments made with sewage indicated that when aerobic conditions were maintained in the streams, with a reserve supply of dissolved oxygen constantly present, the oxidation of organic matter proceeded at a rate closely approximating that which is observable at the same temperature in the ordinary laboratory dilution test for biochemical oxygen demand. For sewage sludge deposits the corresponding rate of oxidation observed with dissolved oxygen present in the overlying stream was measurably lower, approaching more nearly the rate of anaerobic decomposition established by Fair and Moore from their experiments in artificial sludge digestion. This result appeared to indicate that the aerobic oxidation of a sewage sludge deposit in a flowing stream is confined very largely to the surface layer of the deposit and that the greater

part of the total oxidation is accomplished through the anaerobic decomposition of organic matter in the subsurface layers, with subsequent direct oxidation of the products of this decomposition as they are gradually leached out into the overlying streams and thus brought into immediate contact with dissolved oxygen.

In the course of these experiments it was noted that the rate of absorption of atmospheric oxygen by a flowing stream containing sewage was markedly lower than that of a similar stream of tap water containing no sewage. This observed difference was considerable even with sewage concentrations as low as 1 or 2 percent, which would be well within the ranges of concentration found in many sewage-polluted streams. The effect of sewage sludge deposits on the rate of re-aeration was much less than that of sewage, though still measurably great.

Quantitative measurements of rates of atmospheric re-aeration have been made with streams of water containing various concentrations of sewage, ranging from 0.5 to 50 percent, and likewise with different concentrations of sludge deposit. The results of these experiments have shown a definite relation existing between the concentration of sewage or sludge in the streams and its retarding effect on the re-aeration rate, though the effect is disproportionately great with very low concentrations, suggesting the influence of film-forming substances or those which may modify the surface tension of water exposed to the atmosphere. Experiments with oil films, fatty acids, and other substances altering the surface tension have shown that all of these substances exert a markedly retarding effect on the absorption of atmospheric oxygen by a moving stream of water. Colloidal material also has been found to be measurably effective, though to a much less extent than film-forming elements.

During the past year the results of a previous extensive series of experimental observations on the effects of variations in the temperature, depth, and velocity of flow of streams of de-aerated tap water on their rates of atmospheric re-aeration have been compiled and published in the third major report issued from this study (*Sewage Works Journal*, March 1936). These observations dealt only with the effect of the physical conditions above noted and had no reference to the more complex effects of sewage constituents now under investigation.

Test for chloramine used in water purification.—The use of chloramine for the disinfection of water supplies has become widespread. Because no specific test for small amounts of chloramine in water was available a method of measuring chloramine in the concentrations used in water purification was developed.

NATIONAL INSTITUTE OF HEALTH

The National Institute of Health continued under the administration of Director G. W. McCoy and Assistant Director R. E. Dyer.

It is regretted that it is necessary to report the death, in line of duty, of Bacteriologist Anna M. Pabst, who died on December 25, 1935, from virulent meningococcus infection acquired accidentally a few days before, while carrying out a series of experiments.

DIVISION OF PATHOLOGY AND BACTERIOLOGY

Lymphocytic choriomeningitis.—The virus isolated and described by Surgeon Charles Armstrong has been established as the cause of a type of meningitis occasionally occurring in man. Protection tests indicate that immunity to this virus is rather common among some groups of our population and suggest that infection of man may occur in the absence of meningeal symptoms, just as usually happens in monkeys and mice inoculated by routes other than into the central nervous system. The results of the study on the cultivation of the virus in the chorio-allantoic membrane and in the brain of the chick embryo were embodied in a paper published in the Public Health Reports (Jan. 10, 1936, vol. 51, no. 2, p. 29). The virus was readily propagated through eight passages.

Intranasal chemical prophylaxis of certain infectious diseases.—It has been found that certain chemicals, notably sodium aluminum sulphate and picric acid, or a combination of the two, when instilled into the nostrils of experimental animals have the property of preventing infection after subsequent introduction of the virus of epidemic encephalitis (St. Louis type) and that of poliomyelitis. Whether such a procedure offers a practicable method of controlling the infections in man under natural conditions remains to be determined.

Typhus-Rocky Mountain spotted fever.—Investigations were carried on at the National Institute of Health and in the field laboratory at Mobile, Ala., and comprised the following:

(1) Cultivation of the viruses of typhus and spotted fever in the chick embryo. It was found that spotted fever virus was easily maintained in the chick embryo with some indication of an increase in virulence. It was found difficult to maintain endemic typhus virus in the chick embryo beyond seven passage generations.

(2) Preparation of vaccines against typhus and spotted fever from chick embryo cultures. No definite results were secured.

(3) The determination of the ability of dog fleas to transmit typhus in nature. The results to date are inconclusive.

(4) Study on the pathology of typhus and spotted fever. The results of this study were being prepared for publication at the close of the fiscal year.

(5) Determination of the susceptibility of various species of wild rodents to endemic typhus. It was determined that the opossum, one species of wood rat, and two species of wild mice are susceptible.

(6) Attempts are being made to isolate endemic typhus virus from wild rodents and their parasites trapped at rural typhus foci.

Assistance was given to health officers and to practicing physicians in the diagnosis of typhus, and especially of spotted fever. The total number of reported cases of both typhus and spotted fever was approximately the same as in the preceding year, with both diseases being reported from a somewhat increased area.

Intestinal infections.—At Chicago, Ill., studies were continued on amebic dysentery, with the object of learning more of its prevalence, usual mode of spread, and especially the significance of healthy carriers. The studies on diarrheal diseases of the southwestern part of

the country which were carried on in the summer of 1935 are being continued by a research unit with headquarters at Albuquerque, N. Mex. The investigations have proceeded only far enough to show that the problem is a large one and that the usual types of the organism causing bacillary dysentery are responsible for a large proportion of the cases.

Mycological studies.—Since the organization of this work late in the fiscal year, about 200 cultures of pathogenic fungi have been obtained from various sources and arranged in a collection to be maintained (with others to be added) for comparative study and investigation. Routine diagnostic and identification work has been begun.

Bacterial variants and mutants.—In a general way the results obtained during the preceding years have been confirmed. Attempts were made to develop an experimental procedure which would obviate the irregularity in the occurrence of the apparent mutants, but no definite results can be reported. It was established that the rate of growth retardation and of killing of the bacteria by radium is proportional to the intensity of the rays' emanation, but the same has not been established for the frequency of the occurrence of mutants. Studies of the effect of radium emanation upon the various processes of bacterial metabolism have been initiated.

Brucellosis.—Surveys to determine the prevalence of brucellosis, particularly in atypical and chronic forms, are in progress at San Antonio, Tex., and in Mecklenburg County, N. C. These areas were chosen largely because of the knowledge available as to prevalence of contagious abortion of cattle in the vicinities. As is generally known, infections of man often originate from the use of raw milk from cattle infected with members of the *Brucella* group.

Classification of streptococci.—Studies on the classification of the hemolytic streptococci which have been conducted through a number of years are nearing completion. A system of classification has been worked out based on sensitivity to three races of bacteriophage and fermentation reactions in lactose, salicin, mannite, trehalose, and sorbitol broths.

Relapsing fever.—Investigations have demonstrated the survival of virulent infection for 5 years in naturally infected adult ticks of the species *Ornithodoros turicata* collected in Texas and deprived of food throughout that time.

Rat-bite fever.—Investigations have demonstrated rat-bite fever spirochetes in 65 naturally infected white mice, *Mus musculus*, which were bought presumably healthy, but were found to be infected with this spirochete.

Tularaemia.—This disease was reported by State health officers from 35 States and the District of Columbia, a total of 780 cases being reported as compared with 881 in 1934. The disease was recognized during the year for the first time in Central Europe in a resident of Austria, who had skinned a wild hare caught in that country.

Pathology.—The material studied includes 1,303 surgical, 267 post-mortem, and 2,106 experimental specimens, comprising diagnostic service to marine hospitals and other agencies and studies on the pathology of tularaemia, typhus, spotted fever, tumors, leprosy, lymphogranuloma inguinale, anaerobe toxins, drugs, heavy metals, streptococcus fibrinolysins, tuberculosis vaccines, dietary deficiencies, and central nervous system virus diseases, and on technical methods.

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

Gas-gangrene antitoxins.—The standardization of gas-gangrene antitoxin (*Histolyticus*) was undertaken in collaboration with other countries under the direction of the Permanent Standards Commission, Health Organization, League of Nations. A dried standard antitoxin and a dried standard toxin have been prepared and the potency of these determined in terms of the international standard adopted at the September (1935) meeting of the commission. The work on the standardization of the four more important antitoxins of the gas-gangrene group (*Perfringens*, *Vibrio septique*, *Oedematiens*, and *Histolyticus*) has been completed and the standard toxins and antitoxins are available to the biological establishments.

Meningococcus meningitis.—Due to the unusually high incidence of this disease during the past year, routine observations occupied much of the time of the workers on this problem. Research was directed chiefly toward developing a more satisfactory method of testing serums for their therapeutic value. Last year it was shown that a generalized infection can be readily produced in mice with meningococcus cultures that are sufficiently virulent, and that protection against such infection is given by many polyvalent anti-meningococcic serums. During the present year practical use has been made of the fact that the virulence of meningococci can be greatly emphasized by suspension in mucin. This has made it possible to produce infection in mice with very much smaller numbers of meningococci, thus allowing more satisfactory estimation of the protective action of the immune-serum studies.

Storage of meningococcus cultures in neutral glycerine at -15° C. has been found to be a good method of prolonging virulence as well as viability. This fact has been of special value in improving the mouse protection method for testing serums.

The neutralization of meningococcus toxins by antitoxins has not proved practicable in small laboratory animals. Studies on the neutralization of toxins with antitoxins by means of skin tests in human beings were begun.

Hemolytic streptococcus.—The study of the antigenic properties of the various strains of the hemolytic streptococcus has continued. Particular attention has been given to the elimination of the allergic substance in the streptococcus toxin-broth and to the modification of the erythrotoxic toxin so as to do away with the unpleasant reactions not infrequently accompanying its use for active immunization against scarlet fever.

Typhoid vaccine.—There have been a number of disappointing developments in connection with typhoid vaccination in recent years which have made necessary a restudy of the vaccines in use. With a view to utilizing and extending some of the newer work in connection with the properties of antigens, studies have been made of the antigenic components of the several strains of typhoid organisms now employed by commercial producers with a view to selecting for general use the most promising from a purely immunological point of view.

Staphylococcus preparations.—Studies on staphylococcus products were continued. The standard staphylococcus antitoxin is now

being distributed to biological manufacturing firms and interested workers. Commercial staphylococcus products are assayed to determine sterility, potency, and innocuity. Tests performed during the year indicate that further investigations are advisable before definite governmental requirements are set for staphylococcus toxoid.

Arsenical preparations.—Studies on the therapeutic efficiency of various arsphenamines against experimental syphilis in rabbits were continued. The results obtained support the previously noted observation that different brands of arsphenamine examined at the institute are remarkably uniform in therapeutic activity.

Licensed establishments.—At the close of the fiscal year 54 establishments, 11 of which were foreign, held licenses to engage in the interstate sale of biologic products. The licenses covered 157 different preparations.

DIVISION OF PHARMACOLOGY

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

Cancer research.—Work with a strain of spontaneous mammary carcinoma in mice showed that if the animals are fed a diet deficient in the amino acid lysine, tumor growth, as a rule, is arrested. If, after a period of arrested tumor growth, the diet is supplemented with an adequate amount of lysine, the tumors grow very rapidly, indicating that lysine is an important factor for the growth of this neoplasm. Similarly, tumor growth can be arrested by maintaining the animals on a diet low in organic sulphur. Treatment of such animals with glutathione results in fairly rapid tumor growth. This is the first experimental evidence concerning the significance of glutathione in malignant growth. Work with other amino acids is in progress.

A reliable method was devised for the quantitative estimation of vitamin C in neoplasms by means of the ultraviolet absorption spectrum of this substance. The claim made in the literature that neoplasms contain a reducing substance of unknown chemical nature could not be verified. It would seem that this new spectrometric method is of considerable usefulness for the quantitative estimation of vitamin C in biological material.

Research on the effect of arsenicals on tumor nuclease was completed.

Work has been continued on a study of the Walker 256 rat mammary carcinoma in tissue culture in the hope of analyzing the reason for the erratic growth which was obtained in earlier cultures. It was determined that a variation of pH within the range pH 6.8 to 8.2 had no decided influence in causing the tumor cells to outgrow the stroma cells in culture. Furthermore, it was shown that addition of a little Walker tumor extract to the culture medium generally caused a striking growth of the tumor cells, which proliferation could not be duplicated in embryo juice and horse serum alone. Even with this tumor extract, however, attempts to grow and reisolate the epithelial cell of the tumor in tissue culture have not been successful.

In view of the results obtained by the use of Walker tumor extract on cultures of Walker cells, the action of this extract was studied on cultures of rat mammary gland. In this study no proliferation of

the mammary gland cells was noted, but many of the fibroblasts in the culture showed a great increase in the quantity of chromatin granules in the nucleus, to such an extent that some of the cells in fixed preparations closely simulated epithelial cells from the Walker tumor. These cultures, when injected into rats, however, have so far given no growths.

Chemistry of cell growth and cell division.—A systematic study was made of the nucleic acid of *Amoeba proteus* during the various developmental stages. This nucleic acid is confined to the idiochromatin. A technique was developed for the study of the influence of chemicals, applied during late interkinesis, on the division of the cell nucleus. It was found that several organic sulfur compounds exert an inhibitory effect. A technique was devised permitting the application of the nitroprusside test for SH groups to single cells.

Toxic anemias.—The effects on hematopoiesis of diets deficient in certain essential amino acids were studied. An experimental hyperchromic macrocytic anemia has been produced by feeding deaminized casein. Studies on the nature of this anemia revealed that it was due to some as yet unidentified toxic factor produced in the process of deamination of the protein. The study of the effects of deaminized amino acids on hematopoiesis is in progress.

Vitamins B₁, B₂.—Further studies were made on the differentiation of vitamin B₁ and B₂, with special reference to the effects of reducing and oxidizing agents. The observations led to the preparation of a potent water soluble concentrate with a B₁ and B₂ potency of about 500 and 200 times that of dried brewers' yeast, respectively.

Chemotherapy.—Further studies showed sulphoxylate consistently to cure mice infected with the Institute strain of pneumococcus I. No consistent effect was found on 30 virulent strains, types IV to XXXII. The curative effect of sulphoxylate is destroyed by oxidation, further evidence linking the action to reducing effect. Action on the organisms *in vitro* was shown in that exposure to high concentrations of sulphoxylate could render organisms avirulent in a few hours. This effect was most marked on the Institute strain. Mice cured from infection with the Institute strain become immune to other virulent type I infections. The action of sulphoxylate is specific. Studies of a large series of other compounds showed them to be inactive, either alone or in combination with sulphoxylate. Further attempts to increase the action of the drug, to make it generally effective, are in progress.

Sulphoxylate was found rapidly to form toxoid *in vitro* with toxins of *Vibrio septique* and *B. histolyticus*.

Work is being done on urinary antiseptics. Safe and effective ways of acidifying the urine are being developed.

DIVISION OF CHEMISTRY

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

Sugar researches.—These studies, while of a fundamental nature from a purely chemical point of view, have also been conducted with an aim to possible application, directly or indirectly, in the fields of medicine and the related biological sciences. Thus studies on oxidations in the sugar group have not only proved fruitful in providing

a new method of wide application for the determination of structure and configuration but have also, from a physiological point of view, afforded the most direct and convincing experimental proof of the susceptibility to cleavage of the hexose molecule in the center of the chain to produce optically active glyceraldehyde, as postulated by physiologists in the case of d-glucose. Likewise, the study of the seven-carbon sugar, d-mannoheptulose, from the avocado pear, yielded interesting results both from the purely chemical point of view and of possible applications. Experiments on rabbits have shown that this sugar is metabolized, its tolerance being very high.

Studies were carried out on the rearrangement of sugar acetates by aluminum chloride, with special reference to celtribiose and its derivatives. Experimental evidence has been obtained for the formulation of celtribiose as d-glucoside-d-altrose. Results have been obtained which are expected to aid in developing a method for preparing d-ribose, which is of importance in certain biological investigations, much more economically than has been possible heretofore.

The open chain aldehydo-d-arabinose acetate was combined with the l-isomer and the racemic compound prepared for the first time; d-gulose dibenzyl mercaptal and d-altrose dibenzyl mercaptal were isolated. The latter, together with the known mercaptals of galactose, glucose, and mannose, made available a series to study with regard to the rules of superposition in straight chain compounds free of any other optically active component. Very careful measurements of the rotations in pure pyridine were made, but the results are as yet incomplete.

Compounds prepared and studied included the following: Pure α - and β -methyl d-galactosides, acetobromoglucose, α - and β -methyl l-rhamnosides; a series of compounds of aldehydo-d- α -galaheptose hexaacetate; gulose calcium chloride; acetochloro-celtribiose, several heptaacetates of celtribiose, celtribiose α - and β -octaacetates; α - and β -d-arabinose triacetates, α - and β -benzyl d-arabinosides, α - and β -benzyl d-arabinoside triacetates; α -bromo-d-mannoheptulose pentaacetate, α -methyl d-mannoheptuloside pentaacetate.

Enzyme researches.—In connection with the previously reported work on the concentration of invertase, it was found that comparatively very little is known of the true nature of the substrates on which invertase can act. This led to a study of derivatives of gamma fructose. The results obtained prove that gamma methyl and benzylfructosides exist in at least three distinct forms instead of the two, which present theory calls for, and suggest that the chemical constitutions now assigned to sucrose and other substrates acted upon by the enzyme invertase need correction.

Chemico-bacteriological studies.—One of the aims of these studies is to enable the bacteriologist to utilize the advances in the sugar researches for better identification of bacteria. The sugar of the avocado pear, d-mannoheptulose, has been chosen for the initial experiments. Although this work has progressed for only a short time, the preliminary results are encouraging. Two micro-organisms, obtained from soils under avocado trees in Florida, have been found capable of utilizing this sugar. One of these has the general characteristics of the colon group and the other those of the para-typhoid group.

Cooperative work.—In continuation of studies relating to the human dental lesion known as mottled enamel, samples of water from various localities were received for mineral analyses, including the determination of the fluoride content.

There was a continuation of the cooperation with the Division of Pharmacology in the study of the phosphoric acid esters of choline. Quantities of crystalline tetraacetyl- β (β -chloroethyl) d-glucoside were prepared and derivatives were obtained from the latter which will facilitate the preparation of choline d-glucoside desired for pharmacological studies. Assistance was also rendered in connection with a pharmacological study of certain bile acid compounds.

The cooperation with the Division of Pathology and Bacteriology in the chemical control of the arsphenamines and in supplying standard solutions for various purposes was continued. Assistance was also rendered in the chemical control of various preparations of scarlet-fever toxin.

Likewise the cooperation with the section of nutrition in supplying standard solutions and in making chemical analyses from time to time, as requested, was continued.

Assistance was rendered to Senior Surg. L. L. Williams, Jr., in connection with the testing of a petroleum oxidate as an insecticidal agent and in the study of certain larvicidal agents and oil emulsions. Hydrogen-ion standards were prepared for general use by workers of the Institute and other branches of the Service.

Analytical work.—About 243 various analyses of miscellaneous material and 43 mineral analyses of waters were carried out; there were examined 10 samples of urine for toxic metals; and several toxicological examinations were made on miscellaneous material.

DIVISION OF ZOOLOGY

The work of the Division of Zoology was continued, and on April 1 was reorganized under the direction of Prof. Maurice C. Hall.

Reorganization.—Certain lines of work—surveys of ectoparasites and the work on catalogs—were discontinued. Studies of trichinosis and oxyuriasis were undertaken.

Oxyuriasis.—Studies were begun of the incidence of pinworm infestation under hospital, institutional, and home conditions. Diagnostic methods have received special attention, the methods in use being given comparative tests, and new techniques and equipment being devised. Various therapeutic procedures are being investigated. Other studies are designed to obtain more precise information as to the life history and biology of the parasite.

Trichinae.—Studies were begun on the incidence of trichinosis, including clinical, subclinical, and zoological cases, through an examination of diaphragms from cadavers from five hospitals, utilizing all previous techniques and refining these techniques to obtain more certain and accurate information; an examination of 57 diaphragms has shown 7 with trichinae, an indicated incidence of 12.3 percent. Diagnostic methods are being investigated to establish a more rapid and sound procedure. Studies of the life history and biology of the parasite were begun.

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Routine diagnostic examinations.—A total of 425 specimens were examined for Government hospitals, State health departments, physicians, etc.

Survey of ectoparasites.—Charts were completed showing the results of the flea surveys in typhus-fever control work at Savannah, Ga., and Dothan and Mobile, Ala.

MISCELLANEOUS

During the fiscal year 4 National Institute of Health Bulletins, 10 Public Health Bulletins, 76 articles for the Public Health Reports, and a large number of articles for outside journals were reviewed and approved for publication.

A meeting of the National Advisory Health Council was held on June 26-27, 1936, when the work of the various divisions of the Public Health Service, with particular reference to research, was presented to the Council for its consideration and recommendation as to future lines of endeavor. In general, the program presented to the Council met with its approval and favorable commendation.

DIVISION OF DOMESTIC (INTERSTATE) QUARANTINE

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

COOPERATION WITH STATES ON PUBLIC HEALTH ADMINISTRATION

Upon passage of the appropriation authorized by the Social Security Act, the Public Health Service began operations under title VI of the act on February 1, 1936. For the last 5 months of the fiscal year 1936 the appropriation for grants-in-aid to the States amounted to \$3,333,000 of which \$2,451,140.79 was actually paid to the 51 States and Territories, in accordance with budgets submitted to and approved by the Surgeon General, as required by the act. The balance of \$881,859.21 which was unbudgeted and therefore not paid to the States was carried forward to be added to the appropriation for 1937.

The payments by States were as follows:

Alabama	\$96,254.83	Montana	\$18,400.08
Alaska	10,112.55	Nebraska	24,616.16
Arizona	22,589.16	Nevada	10,992.98
Arkansas	51,470.90	New Hampshire	6,955.00
California	54,844.12	New Jersey	48,121.25
Colorado	29,362.44	New Mexico	34,303.34
Connecticut	29,150.70	New York	218,351.86
Delaware	7,514.24	North Carolina	115,686.64
District of Columbia	20,795.14	North Dakota	20,784.56
Florida	47,999.16	Ohio	65,130.40
Georgia	85,052.08	Oklahoma	44,620.83
Hawaii	22,728.39	Oregon	27,933.75
Idaho	21,192.64	Pennsylvania	61,588.33
Illinois	68,410.83	Rhode Island	17,165.00
Indiana	23,971.25	South Carolina	69,500.58
Iowa	57,957.20	South Dakota	26,518.58
Kansas	33,017.77	Tennessee	97,881.73
Kentucky	89,288.75	Texas	64,089.48
Louisiana	43,575.83	Utah	20,970.50
Maine	21,043.33	Vermont	9,954.66
Maryland	42,116.82	Virginia	78,761.83
Massachusetts	59,820.62	Washington	38,547.50
Michigan	96,855.91	West Virginia	52,702.66
Minnesota	52,806.95	Wisconsin	60,077.41
Mississippi	73,126.23	Wyoming	11,610.66
Missouri	44,817.18		

The distribution of funds to the States, as prescribed by the act, took into consideration four primary factors:

1. Population;
2. Special health problems;
3. Economic need; and
4. Training of public health personnel.

On the basis of population, 57½ percent of the total was allocated to the States, 50 percent of which was made available through matching with existing funds for public health work and 50 percent by matching with new appropriations from State and local sources.

The funds for special health problems represented 10 percent of the total, and were paid to the States under the same matching requirements as described for the population allotments. It is well known that certain public health hazards are much more acute in some States than in others. For illustration, industrial hazards affect a very large proportion of the population in the great industrial States, whereas the industrial hazard in the agricultural States is comparatively small. In like manner malaria and the intestinal infections are concentrated very largely in the subtropical climates, and plague infection has secured a firm hold in the States of the Pacific slope. The act, therefore, takes into account the need for giving a special differential in the way of funds to those States having such health problems superimposed upon the normal load.

It is a well-recognized fact, also, that there is a wide range of variation in the economic status of the States. To compensate in a small way for this difference, 20 percent of the entire appropriation was set aside to meet the special considerations arising from economic need. The smallest amount paid to any State was at the rate of \$7,843 per year. The distribution of the remainder of the economic need fund was based on the per-capita income of the States.

On the whole, the funds paid to the States were used for strengthening existing State and local health organizations and in extending the benefits of local full-time health service to many localities which had hitherto been unable to finance this service wholly from their own resources. As an immediate result of Social Security aid approximately 175 new local health organizations were brought into existence before the close of the fiscal year.

Deficiencies in State health organizations have also received a large measure of attention. Through the use of Social Security funds, 19 States which did not already have such service set up central facilities for the promotion and supervision of local health administration; 33 State health departments strengthened their public health engineering forces; 11 added new units for the investigation and promotion of industrial hygiene; preventable disease control groups were materially strengthened in 24 States; in 27 States the laboratory facilities were augmented; 19 States made needed improvements to the personnel and equipment for vital statistics; public health nursing was strengthened either directly or indirectly in practically all the States; 11 States provided special measures for syphilis control and 13 for the control of tuberculosis. A strong impetus has been given to dental hygiene in State health programs; and in certain localities where special hazards exist, emphasis has been placed upon hookworm control, typhus, trachoma, psittacosis, cancer, mental hygiene, and rodent plague.

It is obvious that the great extension of health service made possible through the foregoing program must necessarily call for a great increase in public health workers. The State and Territorial health officers, in conference with the Surgeon General in June 1935, adopted certain qualification standards to govern the eligibility of persons for employment in the several phases of health service. It is readily apparent to everyone that if health service is to go forward in its most effective way, the persons to whom it is to be entrusted must be carefully selected and properly trained. Above all things it is

desired to place this work into the hands of competent persons rather than simply persons who want or need employment.

There was, therefore, one portion of the fund for grants-in-aid to the States which was designated for the specific purpose of affording the means of technical training for doctors, nurses, engineers, and others who were to be employed in carrying out the work planned under the greatly expanded public health program throughout the States. The sum allotted for this purpose was at the rate of \$1,000,000 per year, or, for the 5 months, \$416,666. A portion of this money was devoted to the subsidizing of eight training centers, occupying strategic locations, for the purpose of enabling the training centers to secure the additional teaching staff necessary to organize and conduct the desired courses. The great majority of this fund, however, was used by the States to pay a living stipend to trainees, together with tuition and travel expense while in training.

The Public Health Service, in cooperation with the Industrial Hygiene Committee of the State and Provincial Health Authorities, inaugurated a program designed for the purpose of establishing active industrial hygiene units in the health departments of various States. This program has been and still is carried on by the Office of Industrial Hygiene and Sanitation of the Division of Scientific Research, in cooperation with the Domestic Quarantine Division, as part of the latter Division's activities in the work of States' relationships.

To date 17 States have established industrial hygiene units in their departments of health. Prior to the passage of the Social Security Act, \$37,788 was being spent for industrial hygiene activities. The new budgets for industrial hygiene in those 17 States call for an expenditure of approximately \$330,357. Even this increases the expenditure per worker to only 14 mills.

With the inauguration of these activities in State departments of health, some 24 million gainful workers will have available services in this field by the health agencies.

COOPERATION WITH STATES IN PREVENTING THE SPREAD OF EPIDEMIC DISEASES

PLAGUE-SUPPRESSIVE MEASURES IN WESTERN STATES

During the fiscal year plague infection of ground squirrels was found more widespread in California than in a number of years, and foci of infection have been definitely located in 4 other States. The most eastern focus thus far discovered is that located in Bonneville County, Idaho, only a few miles from the Wyoming boundary. There are many rumors of fatal epizootics among wild rodents in these and other States which must still be investigated. It is possible that sylvatic plague may not be present on the eastern slope of the Rocky Mountains. This wide dissemination of plague throughout the western part of the United States has greatly increased the activities of the plague suppressive measures of the Public Health Service, as many States have requested investigation of epizootics reported among rodents within their borders, and the use of the laboratory facilities of the laboratory in San Francisco has been made available to all States desiring such service. Cooperation of the Public Health Serv-

ice in controlling local epizootics has also been a service requested by various States.

California.—The activities of the Public Health Service in California which have consisted in providing personnel and supplies for maintaining a ground-squirrel free zone about the San Francisco Bay cities, in cooperation with the local authorities, was turned over to the State Board of Health of California February 1, 1936. The State is now conducting this work in the same manner and with the same personnel that the Public Health Service has successfully used for many years.

Since June 30, 1936, there has been positive evidence of plague existing in six counties of California. Two human cases, both of which recovered, have been reported—one in Santa Rosa, Sonoma County in April, and the other in Monterey County in June. No plague-infected rodents have yet been discovered in either county this year. The case from Sonoma County is of particular interest because this is the first evidence of plague infection existing in California north of San Francisco Bay and west of the Sacramento River. *Citellus douglasii* are the most prevalent species of ground squirrels found in this region, and there has never been any positive evidence that plague has occurred among them. Plague infection among ground squirrels has been reported in 4 counties by the California State Board of Health, as follows: In July 1935, 1 in Lassen County; in March 1936, 1 in Ventura County; and in June 1936, 5 in Lassen County, 11 in Modoc County, and 50 in Santa Cruz County. The infected ground squirrels found in Ventura and Santa Cruz Counties this year were the first evidence of infection in these localities since 1928.

Oregon.—Plague-infected ground squirrels were found in Lake County, Oreg., last year; and in July 1936, 7 infected rodents, 6 *Citellus oregonus* and 1 *Citellus columbianus*, were found by the field laboratory of the Public Health Service in Wallowa County in the northeast corner of the State, and 1 infected ground squirrel was located by Dr. Frederick D. Stricker, State health officer, during the same month, in Grant County. It is probable that sylvatic plague exists the entire width of the eastern part of Oregon.

Montana.—In July 1935 the personnel of the Rocky Mountain Laboratory, at Hamilton, found 3 plague-infected *Citellus richardsoni* near Dillon in Beaverhead County, Mont. Infected ground squirrels were located in the same region in June 1936, and an infected animal has been reported found in Madison County during the same month.

Nevada.—There are rumors of fatal epizootics occurring in several localities in Humboldt and Elko Counties, Nev., since 1927. The Public Health Service mobile laboratory, operating in Elko County in May, collected fleas from 50 *Citellus elegans* on a sheep ranch near Lamaille, which produced typical plague in guinea pigs. No positively infected ground squirrels have yet been found, but the infection must be present among the animals of this region.

Idaho.—During June 1936 the Federal laboratory truck was operated in conjunction with a similar mobile laboratory provided by the Department of Public Welfare of Idaho. Plague was first discovered in ground squirrels in Bonneville County, Idaho, about 23

miles southeast of Idaho Falls, by inoculating a guinea pig with fleas taken from 123 *Citellus armatus*, shot June 9 and 12, 1936. On June 23 infected ground squirrels were secured in this region, and a few days later plague was again determined by inoculating material from five *Citellus armatus* and also fleas taken from the same species of ground squirrels.

MOBILE FIELD LABORATORY

The mobile laboratory, placed in the field last year to locate sylvatic plague foci, has been continued in operation throughout the year. During July and August it operated in 16 counties of Oregon; from September to March, inclusive, in 28 counties in California; from April to May 19, in 9 counties in Nevada; and for the remainder of the fiscal year it operated with the mobile laboratory of the State of Idaho. No evidence of plague was discovered in California, and the results in the other States have been mentioned above.

Summary of examinations for plague made by the field laboratory

State	Number of ground squirrels examined	Number of other animals examined
Oregon.....	1, 773	37
California.....	1, 343	369
Nevada.....	3, 437	22
Idaho.....	2, 017	60
Total.....	8, 570	488

During the year 14 species of ground squirrels were encountered, and plague was found in 4 species, *Citellus oregonus*, *Citellus columbianus*, *Citellus elegans*, and *Citellus armatus*. In California, *Citellus beecheyi beecheyi* has been the reservoir of plague for years, and in Montana, *Citellus richardsoni* is infected.

As requests for investigation of regions where ground squirrels are suffering from fatal epizootics have greatly exceeded the capacity of one mobile laboratory, especially as these areas cover an enormous expanse of territory in the Western States, it was decided to place three additional mobile laboratories in the field. Three 1½-ton panel trucks were delivered for this purpose on the last day of the fiscal year. They will be placed in operation early in July. Although the work of the field laboratories does not include the eradication of infected rodents, they are of great value in locating regions where the local authorities may take such steps as appear feasible for protecting inhabited areas. Sylvatic plague has now gained a foothold of such vast extent that complete eradication of the infection is impossible with our present knowledge.

USE OF FLEAS FOR LOCATING PLAGUE FOCI

In addition to the usual autopsy on animals and submitting suspicious animal tissue to the laboratory in San Francisco for diag-

nosis, the personnel of the field laboratory collect fleas from the animals they examine and send them to San Francisco for guinea-pig inoculation. Although this method of locating plague had been in use only 2 months before the end of the fiscal year, two foci of infection have been discovered by this means—Elko County, Nev., and Bonneville County, Idaho. After plague had been demonstrated in the latter locality through the agency of fleas, the area was again visited by both the Public Health Service and Idaho mobile laboratories, both of which found infected ground squirrels. This method of determining the presence of plague will probably be found of value in urban epidemics as well as in locating sylvatic plague.

FLEA INVESTIGATION

Little is known at present regarding the species of fleas and other parasites present on rodents in Western States, or the part played by the different parasites in the transmission of plague. In order to gain some knowledge of this subject, parasites of all kinds are being collected from nearly all animals shot by the crew of the mobile laboratory, for classification, inoculation to determine the presence of plague, or biological studies. During the past year 47,666 fleas taken from 2,937 ground squirrels and 2,020 fleas taken from other animals have been classified at the laboratory in San Francisco with the help of the National Institute of Health. Nineteen species of fleas have been obtained from 14 species of ground squirrels, and 20 species of fleas have been found on other wild animals. This work will be continued during the next year, and arrangements have been made to conduct more extensive biological studies by the construction of special ground-squirrel pens and increasing the personnel of the laboratory in San Francisco.

Since December 1935 a flea survey of rats trapped in San Francisco has been conducted. Thus far over 7,000 fleas taken from about 800 rats have been collected and classified.

MEASURES TAKEN IN SAN FRANCISCO

Activities in San Francisco are carried out in cooperation with the city health department and consist in investigating all complaints of rat infestation by householders, the trapping of rats, autopsy examination of all rats caught by trappers or shipped to the laboratory from other San Francisco Bay points, and consultations with the city health authorities regarding ratproofing of buildings or other means of rat abatement.

PUBLIC HEALTH SERVICE LABORATORY, SAN FRANCISCO

During the past year more specimens have been submitted for laboratory examination than in any year since the laboratory was established. The work has increased to such an extent that the services of another technician have been greatly needed. Arrangements have been made to employ an additional laboratory worker the 1st of July.

The condensed table below shows the work at the laboratory:

Examination of rodents for plague:	
Rats caught San Francisco examined.....	23,761
Rats caught Oakland examined.....	2,602
Rats from fumigated ships examined.....	136
Ground squirrels from Alameda County examined.....	116
Serological examinations:	
Wassermann reactions, blood.....	8,398
Wassermann reactions, spinal fluid.....	408
Kahn tests, blood.....	8,398
Kahn tests, spinal fluid.....	408
Agglutination tests.....	1
Bacteriological examinations:	
Bacteriological examinations, water.....	519
Bacteriological examinations, diphtheria cultures.....	1,151
Bacteriological examinations, typhoid.....	2
Bacteriological examinations, meningococcus.....	1
Animal inoculation tests, tuberculosis.....	43
Animal inoculation tests, tularaemia.....	1
Animal inoculation tests, diphtheria virulence.....	1
Animal inoculation tests, plague.....	78

PLAGUE-SUPPRESSIVE MEASURES, ISLAND OF MAUI, TERRITORY OF HAWAII

Plague control measures were continued in cooperation with the Territorial board of health. No human case was reported during the year, but three 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 two infected rats were taken on July 31, 1935, and August 1, 1935, from a focus in a gulch, and the third was found on September 13, 1935, in another focus by mass inoculation, using pieces of liver from seven rats which had been trapped on that day from four small fields included in a district of about one-fourth square mile.

ERADICATIVE MEASURES IN THE OPEN COUNTRY

As a result of cage and field experiments carried on during the preceding fiscal year, an intensive campaign was conducted during the entire year, using methods adopted and found effective. In addition to trapping, these consisted of (1) clearing heavily rat-infested areas by cutting out the rat's natural food supply, consisting of various kinds of wild beans, berries, seeds, and fruit; (2) burning the brush and other material cut down; (3) killing rats in the burrows exposed by the above measures by applying carbon bisulphide and igniting it; (4) applying poison bait to cleared areas; (5) applying calcium cyanide to rock walls and rock piles; and (6) clearing algaroba forests of underbrush to prevent rats from building nests in the trees.

The effectiveness of these measures was amply demonstrated by the reduced rat catch in the old plague zone where the work was first carried out. The records show that the rate of catch in this area in former years was from 8 to 10 rats per 100 traps per day, and that there was no reduction during the intensive poisoning campaign carried on in 1933 and part of 1934. When the above-mentioned measures were instituted, however, there began a gradual drop in the rate of catch from month to month, and after 13 months' operation the

rate was down to 0.67 rat per 100 traps per day. During the latter part of the fiscal year work was being carried out in a belt around the old plague zone and in various outlying places in order to increase the size of the practically rat-free zone and in order to determine whether the disease had worked its way to some more or less remote region.

RATPROOFING OF BUILDINGS

Inspections and reinspections were made, by the two sanitary inspectors, of buildings and premises in the old plague zone and in all built-up areas between the plague zone and the Port of Kahului, and property owners were notified of corrections required. In addition to this, wrecking crews were used wherever property owners failed to make the necessary changes. The work of these crews consisted practically entirely of ratproofing by removing floors too close to the ground, lattice work obstructing light under buildings, and vines and other material of any kind which might harbor or aid in harboring rats. The work of the wrecking crews was an important part of the program, particularly in the town of Kahului, and excellent results were obtained.

During the year, the two docks at Kahului were ratproofed by filling in with concrete enough spaces between pier pilings to prevent rats from finding their way to the rock fill under the pier floors. This work was carried out by the Territorial Board of Harbor Commissioners at the request of this Office.

Regulations were prepared during the latter part of the fiscal year for adoption by the Territorial Board of Health, providing for the ratproofing of all buildings and authorizing other plague-eradivative measures.

PERSONNEL

The full-time organization at the close of the fiscal year consisted of the sanitary engineer in charge, 2 laboratory technicians, 2 sanitary inspectors, 1 clerk-stenographer, 1 field foreman, 1 assistant field foreman, 24 rat trappers, 5 foreman laborers, and 114 laborers. This does not include labor furnished by the various plantations and ranches for work on company-owned property, which, in many cases, was made available at times when the men were not needed for their regular duties. In the case of the sugar plantations, most of the labor was furnished in the fall of the year, when harvesting and grinding was over and the mills were closed. The companies propose to make it a permanent policy to use excess labor not needed for repair work in the mills for an annual clean-up and ratproofing period in the camps and towns.

COOPERATING AGENCIES

The various agencies which contributed financially toward the work are shown in the table listing expenditures. There was an excellent spirit of cooperation by the various plantation and ranch managers during the entire year and a great deal of work was accomplished by the use of company labor which could not otherwise have been carried out. Although much remains to be done in many

of the company camps, a marked general improvement was made during the fiscal year from a plague-control standpoint, and it is believed that the efficiency of the sanitary inspectors of these companies has been definitely increased as a result of supervision by this Office.

In December 1935, funds were made available by the Agricultural Adjustment Administration for a rat-abatement project on various islands, the allotment for Maui being \$35,000. This fund is being administered by this Office and to date has been used entirely for hiring labor. By the end of the fiscal year \$15,707.02 had been expended, leaving a balance of \$19,292.98 for future use.

It should be noted here that of the total expenditures by all agencies, aggregating \$175,815.49, approximately 94 percent was spent for labor and salaries and that more than 43 percent was strictly local money.

MISCELLANEOUS

In November 1935 plans were prepared in this office for new headquarters buildings. The buildings were completed in December 1935 and were paid for by the quarantine tax fund commission of the Maui Chamber of Commerce. They consist of three units, as follows: (1) Laboratory and office; (2) animal room, storage room, and garage; and (3) fuel house. These new buildings offer excellent facilities for carrying on routine laboratory work and replace old frame structures which had been abandoned as a jail. They are located in a fenced enclosure in a pasture just outside of the limits of the town of Kahului.

Expenditures by various agencies, plague campaign, island of Maui, fiscal year ended June 30, 1936

Federal Emergency Relief Administration.....	\$69,395.43
Maui Agricultural Co.....	43,656.00
Agricultural Adjustment Administration.....	15,707.02
Territorial Board of Health.....	15,052.83
U. S. Public Health Service (P. S. E. D. fund).....	14,000.40
Hawaiian Commercial & Sugar Co.....	8,059.72
Quarantine Tax Fund Commission.....	5,750.20
Maui Pineapple Co.....	2,564.18
Board of Harbor Commissioners.....	889.71
Haleakala Ranch & Dairy Co.....	650.00
Libby, McNeill, & Libby.....	90.00
Total.....	175,815.49

Summary of data fiscal year ended June 30, 1936

Classification of rodents trapped and killed:

	Number
R. hawaiiensis.....	38,023
R. alexandrinus.....	12,792
R. rattus.....	5,880
R. norvegicus.....	0
M. Musculus.....	37,815
Mongoose.....	314
Rats trapped in Port of Kahului.....	1,879
Rats trapped, total.....	54,906
Rats killed by shooting, etc.....	1,489
Rats found dead.....	300
Rat-trap days, total.....	1,348,654

Rats per 100 traps per day (all districts)-----	4.06
Rats per 100 traps per day (Kahului)-----	2.59
Man-hours, rat harbor elimination-----	411,699
Acres of land cleared-----	2,646
Burrows treated with carbon bisulphide-----	180,769
Packages of poison placed-----	378,499
Inspections of buildings and premises-----	1,209
Reinspections of buildings and premises-----	2,304
Noncompliance notices issued (major changes)-----	55
Outhouses condemned and abolished-----	441
Dwellings condemned and abolished-----	51
Pig pens condemned and abolished-----	107
Cesspools condemned and abolished-----	86
Wood floors condemned and abolished-----	731
Dwellings built or ratproofed-----	92
Outhouses built or ratproofed-----	388
Yards cleared of rat harborages-----	2,648
Houses connected to sewer-----	361
Rats received at laboratory-----	56,695
Total rodents received at laboratory-----	94,824
Rats examined macroscopically-----	55,514
Rats examined microscopically-----	22
Mass inoculations made-----	478
Single inoculations made-----	6
Cases of human plague-----	0
Cases of rodent plague-----	3

Date of last case of human plague: Sept. 18, 1932.
Date of last case of rodent plague: Sept. 13, 1935.

TRACHOMA PREVENTION

Trachoma-prevention work as an activity of the Public Health Service had its origin in 1913. It was never intended, however, that this work should be carried on permanently as a function of the Public Health Service, but only until such time as it might be taken over by the States concerned. There was a general understanding at the beginning of the fiscal year 1936 among the States in which this work was being carried on that they themselves would be expected to take over the financing and management of the trachoma-prevention work upon the passage of the Social Security Act. This was a logical development as a result of a long period of demonstration in this field of service, whereby a corps of doctors, nurses, and others technically trained in trachoma-prevention work were made available to the States for continuation of the program.

In accordance with the foregoing policy, the central office of the trachoma-prevention activities was discontinued by the Public Health Service on April 30, 1936.

A brief description of the work as conducted by the Public Health Service in the different States during the fiscal year 1936 is as follows:

Kentucky.—The trachoma field hospital at Richmond, Ky., continued to draw severe cases of trachoma from the eastern part of the State. It is felt that the severity of the pathological lesions in these Kentucky cases precludes the possibility of treating these patients in clinics, where they could be seen only once or twice a week, such as is done in a nearby State.

During the year this field hospital continued to cooperate with the trachoma research unit of the Washington University Medical School.

The United States Public Health Service severed its relationship with this trachoma-control project on June 30, 1936, when the Kentucky State Board of Health became entirely responsible for its future development.

Missouri.—The trachoma-control unit at Rolla, Mo., continued to serve a useful purpose in locating and treating trachoma sufferers in the southern half of this State. Also, the education of the public in the rural regions was given due emphasis, as it is felt that proper habits of personal hygiene in endemic trachoma will, in the end, be the biggest factor in the eradication of this disease. During the year a 16-mm film dealing with trachoma was prepared and shown in the scientific exhibits at the May meeting of the American Medical Association. Another exhibit was prepared dealing with the histology of trachoma and with the clinical photography of eye diseases and was set up with the scientific exhibits at the American Medical Association meeting in the spring of 1936.

This trachoma-control unit was taken over by the Missouri State Board of Health on February 1, 1936.

Tennessee.—During the first 3 months of the fiscal year 1936 the small trachoma-control unit at Gainesboro did not hospitalize any patients. Work in central and western Tennessee was continued from this point, however, with the idea in mind of ascertaining the prevalence of trachoma in that part of Tennessee.

In September 1935 the Tennessee trachoma clinician went on an extended leave for post-graduate study. From that time until the spring of 1936 the trachoma survey in the western part of the State was continued by a trachoma field nurse under the supervision of the State department of health. A considerable number of trachoma cases was located in the northwestern corner of the State, in a group of three or four counties.

In March 1936 the Tennessee State Department of Health sent a physician to Rolla, Mo., for training in trachoma work. In May 1936 the trachoma work was started again in Tennessee, under the complete supervision and control of the State.

General.—Property belonging to the United States Public Health Service at the several stations where trachoma activities were being carried on was turned over to the various State health departments by the medical officer in charge of the work, this officer receiving a receipt from the State health officer for the property.

Statistical data are presented in the following table:

Dispensary and hospital relief, operations, etc.

Activity	Richmond, Ky., July 1, 1935, to June 30, 1936	Rolla, Mo., July 1, 1935, to Jan. 31, 1936	Gaines- boro, Tenn., July 1, 1935, to Sept. 30, 1935	Total
<i>Dispensary relief</i>				
Number examined.....	659	1,540	265	2,464
Old cases of trachoma.....	285	834	109	1,228
New cases of trachoma.....	167	149	8	324
Total attendance.....	659	1,540	265	2,464
Average daily attendance.....	1.8	7.1	2.8	3.9

Dispensary and hospital relief, operations, etc.—Continued

Activity	Richmond, Ky., July 1, 1935, to June 30, 1936	Rolla, Mo., July 1, 1935, to Jan. 31, 1936	Gaines- boro, Tenn., July 1, 1935, to Sept. 30, 1935	Total
<i>Combined dispensary and field-clinic data</i>				
Total number of new individual trachoma cases discovered.....	248	227	46	521
Pannus in new cases.....	229	194	40	463
Entropion in new cases.....	41	37	-----	78
Corneal opacities in new cases.....	134	62	-----	196
Vision 20/200 or worse, both eyes.....	61	52	-----	113
Vision 20/200 or worse, 1 eye.....	53	34	-----	87
Ulcers arising in all cases, old and new.....	22	5	-----	27
<i>Hospital relief</i>				
Hospital capacity.....	34	32	0	66
Cases admitted during the year (total).....	289	185	0	474
Number cases first admission.....	172	131	0	303
Days relief furnished.....	8,691	5,610	0	14,301
Rations furnished.....	10,933	6,701	0	17,634
Cost of rations.....	\$3,170.53	\$1,709.00	0	\$4,939.53
Average cost of rations furnished.....	\$0.29	\$0.26	0	\$0.275
Per-diem cost.....	\$1.78	\$1.64	0	\$1.75
Average stay in hospital, days.....	30	30	0	30
<i>Field work</i>				
<i>Field clinics:</i>				
Number of clinics held.....	6	6	18	30
Number of persons examined.....	745	603	292	1,640
Trachoma cases seen, old trachoma.....	94	133	35	262
New trachoma cases seen.....	81	78	38	197
Suspicious cases seen.....	0	68	75	143
Treatments given at clinics.....	0	0	134	134
<i>Field nurses activities:</i>				
Public health talks given.....	0	14	2	16
People (estimated) in audiences.....	0	546	105	651
Homes visited.....	995	541	320	1,856
People examined in homes (new).....	2,418	389	442	3,249
Suspicious cases in homes.....	222	105	78	405
Number pupils examined in schools.....	1,210	1,074	71	2,355
Suspicious cases in schools.....	33	124	2	159
Number treatment clinics, nurse only.....	0	0	0	0
Number treatments by nurse.....	0	0	31	31
<i>Operations</i>				
General anesthesia.....	0	0	0	0
Local anesthesia.....	125	125	2	252
Grattage.....	92	42	0	134
Entropion.....	22	42	2	66
Canthoplasty.....	9	3	0	12
Cautery puncture.....	2	10	0	12
Electric epilation.....	0	11	0	11
Enucleation.....	0	0	0	0
Ectropion.....	0	0	0	0
Chalazion.....	0	1	0	1
Milk injections.....	31	2	0	33
Pterygium.....	0	3	0	3
Ulcers cauterized.....	0	0	0	0
Saemisch incision.....	0	2	0	2
Tarsetomy.....	0	6	0	6
Paracentesis (corneae).....	0	3	0	3
Dacryocystectomy.....	0	2	0	2

SUPERVISION OF WATER SUPPLIES USED BY COMMON CARRIERS

One of the important measures for prevention of the transmission of disease from one State to another is the supervision and control of the sanitary quality of water used by common carriers in interstate traffic. During the fiscal year 1936 the companies engaged in common-carrier service reported 2,150 water supplies from which they desired to obtain water for drinking and culinary purposes on their equipment. Of these 1,746 were public water supplies.

Through the cooperation of the State health departments, 89 per cent of the reported supplies were inspected and certified according to their sanitary quality. Forty-six supplies were prohibited for use after inspection; 61 supplies were inspected in States having no engineering division in the State health department; 1,805 inspection reports were reviewed, and 3,477 certificates prepared. The 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 1931 to 1935, inclusive

Carrier	Percent of completed certifications in—				
	1931	1932	1933	1934	1935
Railroad.....	92.8	95.1	94	95	89
Vessel.....	95.9	97.2	97	93	95
Airplane.....	85.8	97.4	93	85	91

STATUS OF WORK BY STATES

Table 2 summarizes and shows the status of the work by States during the calendar year 1935.

TABLE 2.—Source and certification status of water supplies used by interstate carriers during the calendar year 1935, by States

State	Source classification				Certification status				Percent of sources acted upon	Number of certificates issued
	Public ¹	Private ²	Company	Total	Satisfactory	Provisional	Prohibited	Action pending		
Alabama.....	36	1	0	37	36	0	0	1	97	78
Arizona.....	21	5	8	34	15	18	1	0	100	41
Arkansas.....	36	1	6	43	26	7	1	9	79	49
California.....	58	10	23	91	67	13	0	11	88	283
Colorado.....	25	1	5	31	28	3	0	0	100	49
Connecticut.....	16	0	0	16	14	2	0	0	100	53
Delaware.....	8	0	0	8	8	0	0	0	100	14
District of Columbia.....	1	0	1	2	2	0	0	0	100	7
Florida.....	34	8	8	50	45	3	1	1	98	112
Georgia.....	43	0	4	47	41	5	1	0	100	111
Hawaii.....	3	0	0	3	0	0	0	3		
Idaho.....	16	1	7	24	19	0	1	4	83	23
Illinois.....	60	4	6	70	49	16	5	0	100	151
Indiana.....	48	4	3	55	29	24	1	1	98	94
Iowa.....	47	0	5	52	16	10	2	24	51	42
Kansas.....	68	0	6	74	65	7	2	0	100	101
Kentucky.....	34	1	5	40	25	14	0	1	98	62
Louisiana.....	25	6	6	37	32	3	2	0	100	103
Maine.....	25	1	4	30	27	3	0	0	100	59
Maryland.....	18	3	2	23	21	1	1	0	100	85
Massachusetts.....	43	0	0	43	43	0	0	0	100	149
Michigan.....	57	2	9	68	66	2	0	0	100	132
Minnesota.....	45	3	16	64	6	2	1	55	14	9
Mississippi.....	30	2	3	35	34	1	0	0	100	53
Missouri.....	52	0	5	57	44	10	2	1	98	105
Montana.....	19	0	7	26	24	2	0	0	100	31
Nebraska.....	27	0	5	32	0	2	0	30	06	15
Nevada.....	13	0	10	23	21	1	0	1	96	25
New Hampshire.....	15	0	0	15	14	0	1	0	100	18
New Jersey.....	38	3	3	44	40	0	0	4	91	82
New Mexico.....	13	1	10	24	24	0	0	0	100	29
New York.....	89	4	9	102	95	5	2	0	100	239
North Carolina.....	45	1	0	46	39	4	1	2	96	74
North Dakota.....	20	6	14	40	10	8	3	19	52	24
Ohio.....	54	3	5	62	52	5	5	0	100	138
Oklahoma.....	33	0	3	36	18	4	1	13	64	36

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.

TABLE 2.—Source and certification status of water supplies used by interstate carriers during the calendar year 1935, by States—Continued

State	Source classification				Certification status				Percent of sources acted upon	Number of certificates issued
	Public	Private	Company	Total	Satisfactory	Provisional	Prohibited	Action pending		
Oregon.....	31	0	4	35	29	4	2	0	100	103
Pennsylvania.....	116	5	10	131	94	0	0	37	72	126
Puerto Rico.....	2	1	0	3	0	1	2	0	100	12
Rhode Island.....	2	0	0	2	2	0	0	0	100	35
South Carolina.....	28	0	1	29	29	0	0	0	100	66
South Dakota.....	21	0	7	28	6	3	1	18	36	13
Tennessee.....	27	1	3	31	30	1	0	0	100	50
Texas.....	98	25	33	156	64	91	1	0	100	298
Utah.....	11	0	4	15	10	4	1	0	100	31
Vermont.....	10	0	1	11	11	0	0	0	100	17
Virginia.....	46	3	4	53	50	2	1	0	100	145
Washington.....	41	0	4	45	42	3	0	0	100	198
West Virginia.....	36	2	9	47	41	4	2	0	100	60
Wisconsin.....	49	6	8	63	55	6	2	0	100	94
Wyoming.....	13	0	4	17	14	2	0	1	94	23
Total.....	1,746	114	290	2,150	1,572	296	46	236	89	3,948

SUPERVISION OF WATER SUPPLY SYSTEMS ON VESSELS

Operating companies reported 1,743 vessels on active status in 1935. Of the vessels on active status, 46.8 percent were inspected and certified, and temporary certificates were issued to 37.3 percent pending inspection. "Not approved" certificates were issued to two vessels.

A total of 1,232 samples of water from drinking water supplies on interstate vessels operating on the Great Lakes and the inland rivers was examined by laboratories of city health departments at various points.

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 1935

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.....	646	37.1	48	588	0	636	98.5	36.5
2.....	99	5.7	67	0	0	67	67.7	3.8
3.....	410	23.5	370	40	0	410	100.0	23.5
4.....	141	8.1	117	1	1	119	84.4	6.8
5 and 6.....	447	25.6	214	22	1	237	53.0	13.6
Total.....	1,743	-----	816	651	2	1,469	-----	84.2

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

Shipbuilding companies submitted 10 plans for new vessel water systems. Of these, two were not approved.

Twenty-five cases of typhoid fever were reported among crews and passengers on vessels during the year. Of these eight occurred on vessels amenable to the Interstate Quarantine Regulations. For the third consecutive year no cases of typhoid fever were reported on commercial vessels operating on the Great Lakes.

RAILWAY SANITATION

One hundred and fifty-seven inspections of coachyards, terminals, and watering points and 344 inspections of dining cars and commissaries were made. In three of the States inspection of watering points is now carried on by the State department of health. During the year special attention was paid to milk supplies used on dining cars and to the sanitation of dining cars and commissaries.

SHELLFISH SANITATION

Cooperation has been given to the shellfish-producing States in connection with their sanitary control work and particularly to the studies of growing and storage areas. During the year it was necessary to withdraw approval of control measures in two States and to caution the third. Withdrawal of approval in one State was only temporary.

The publication and distribution of the list of shellfish dealers certified by the producing States has continued. The publication of these lists of certified dealers is the key to the sanitary control maintained within the States, since the presence or absence of shippers' names in the list has much to do with the maintenance of their market. According to information received by the Public Health Service, there were 2,456 certificates issued by approved producing States during the year. Six growing areas and 457 shucking plants were inspected in order to determine the efficiency of State control.

RECIPROCITY WITH CANADA

Reciprocity with the Department of Pensions and National Health of Canada in connection with inspection and certification of drinking and culinary water supplies used by international carriers, the certification of international shellfish shippers, and the inspection of dining cars operating internationally was continued. The Canadian authorities were supplied with 11 reports on water supplies located in the United States used by the United States carriers operating in Canada and with 65 certificates covering water supplies in the United States used by Canadian carriers. They in turn supplied the Public Health Service with 47 certificates on Canadian water supplies used by United States carriers operating in Canada.

Copies of all certificates issued shellfish shippers by the producing States under Public Health Service approval were supplied the Canadian authorities and 47 certificates on Canadian shippers were supplied to the Public Health Service.

COOPERATIVE WORK WITH STATES AND OTHER AGENCIES RELATIVE TO STREAM SANITATION

During the year the Office of Stream Sanitation cooperated with the States of Wisconsin and Georgia relative to stream-pollution problems in those States and with the Tennessee Valley Authority in outlining a program of stream-pollution studies. This Office cooperated with and acted in an advisory capacity with the Water Pollution Committee

of the Cincinnati Chamber of Commerce, the Ohio Valley Improvement Association, and the Ohio Valley Regional Planning Commission in connection with proposed steps necessary for the abatement of pollution in the Ohio River watershed.

COOPERATION WITH STATES IN CONNECTION WITH FLOOD EMERGENCY

Engineers were assigned to Massachusetts, Pennsylvania, and West Virginia in connection with emergency work made necessary by the disastrous floods. Thirteen engineers were assigned to this work for a period up to 14 days.

STATISTICAL COMPILATION

Table 4 shows the time expended by the field personnel of the Engineering Section and the type of work performed 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		Days
Interstate quarantine:		Other Government agencies:	
Office.....	1, 587	Office.....	204
Field:		Field.....	202
Water.....	707	Miscellaneous activities:	
Shellfish.....	239	Office.....	23
Other.....	25	Field.....	80
National Park Service:		Technical meetings.....	} 190
Office.....	296	Conferences.....	
Field.....	120	Committee meetings.....	
Bureau of Indian Affairs:		Leave.....	258
Office.....	230		
Field.....	223	Total days.....	4, 653
District of Columbia, mosquito control:			
Office.....	156		
Field.....	113		

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		Number
First inspections:		Major conferences:	
Passenger.....	19	With shipping officials.....	50
Freight.....	42	With others.....	7
Water boats.....	5	Water examinations made:	
Reinspections:		U. S. Public Health Service	
Passenger.....	284	laboratories.....	14
Freight.....	518	Other laboratories.....	1, 208
Water boats.....	28	Typhoid-fever cases reported:	
Certificates issued:		U. S. Public Health Service	
Regular, favorable.....	907	hospitals.....	25
Regular, not approved.....	2	U. S. Public Health Service	
Temporary, favorable.....	696	quarantine stations.....	0
Plans for vessel water systems examined:		Health departments.....	0
Approval granted.....	8		
Approval withheld.....	2		

B. RAILROAD SANITATION SUPERVISION

Inspections:	Number	Water examinations:	Number
Sources of water supply.....	61	U. S. Public Health Service	
Coach yards.....	65	laboratories.....	60
Terminals.....	31	Other laboratories.....	864
Watering points.....	61	Major conferences:	
Dining cars.....	293	With railroad officials.....	55
Commissaries.....	51	With others.....	94
Certificates:			
Data reports reviewed.....	1, 805		
Certificates prepared.....	3, 477		

C. SHELLFISH SANITATION SUPERVISION

Inspections:	Number	Laboratory examinations:	Number
Areas.....	6	U. S. Public Health Service	
Plants.....	457	laboratories.....	0
State certificates:		Other laboratories.....	0
Approved.....	2, 456	Conferences.....	96
Not approved.....	0		
Approval withdrawn.....	9		
Canceled.....	421		

D. MISCELLANEOUS COOPERATION WITH GOVERNMENTAL AGENCIES

Public Health Service (other divisions):	Number	Bureau of Prisons:	Number
Surveys.....	6	Surveys.....	10
Conferences.....	17	Conferences.....	10
National Park Service:		Water examinations.....	5
Surveys.....	41	Others:	
Conferences.....	87	Surveys.....	66
Water examinations.....	386	Conferences.....	44
Bureau of Indian Affairs:		Water examinations.....	11
Surveys.....	86		
Conferences.....	56		
Water examinations.....	27		

COOPERATION WITH OTHER FEDERAL AGENCIES ON PUBLIC HEALTH ENGINEERING WORK

Cooperative public health engineering work with other divisions of the Public Health Service and with other Federal agencies has occupied 34 percent of the time of the field engineers, totaling 1,544 engineer days; 416 days were devoted to the Park Service, 453 days to the Office of Indian Affairs, and 269 days in connection with mosquito control in the District of Columbia.

National Resources Committee.—An engineer officer of the Public Health Service has served throughout the year as a member of the water resources committee of the National Resources Committee. Assistance was rendered this committee by both engineer and medical officers in connection with various phases of water conservation.

Cooperation was given to the regional water consultant in assembling data on pollution conditions in the Ohio Valley.

Public Health Service, Hospital Division.—Advice was given relative to sewage treatment at one marine hospital and to water problems at another.

Public Health Service, Mental Hygiene Division.—An engineer was assigned to the United States Narcotic Farm for a temporary period in connection with operation of sewage-disposal plant and the training of personnel necessary for satisfactory operation of the plant.

Interior Department, National Park Service.—Eastern division: Inspections were made of sanitary conditions in the various areas and recommendations made relative to water supplies, sewage disposal, and garbage disposal, including the preparation of plans for 12 of the areas. In addition, general supervision of swimming pools in the National Capital was provided. Western district: 15 inspections of the same nature as described for the eastern division were made of the national parks and national monuments. Twenty-three plans for sewage-disposal plants, water-treatment plants, and garbage incinerators were prepared, and over 200 plans were prepared by the Park Service checked and approved. The district engineer at San Francisco continued as chairman of the building code committee of the National Park Service and under his direction a revised code was completed.

Interior Department, Office of Indian Affairs.—Sanitary inspections followed by recommendations were made of 75 agencies. Thirty plans for water treatment or sewage disposal were prepared, and 43 plans for water and sewage prepared by the Indian Service were checked and reviewed.

Department of Justice, Bureau of Prisons.—Sanitary surveys were reported, and recommendations were made at seven penal institutions with design for sewage disposal at one. Advice and assistance were given in connection with construction of the water-treatment plant for McNeil Island penitentiary and assistance was rendered in connection with operation of this plant and the training of the operator.

Treasury Department, Procurement Division.—Inspections of water supply and sewage disposal were made of two border inspection stations and plans for sewage disposal were prepared for two stations.

War Department, United States Engineers.—Assistance was rendered the Office of the Chief Engineer in connection with the assembling and reviewing of data relative to discharge of sewage from Federal establishments in the United States. A survey of a proposed camp site at Conchas Dam, New Mexico, together with recommendations relative to water supply, sewage and garbage disposal, and camp hospital, was made.

Assistance was rendered in finding a suitable water supply at one of the dams and locks on the Kentucky River. The installation of a small vessel water-treatment plant designed for the U. S. S. *Peary* was supervised.

Department of Commerce, Lighthouse Service.—Inspections of eight lighthouse stations on the Great Lake in connection with water supply and sewage disposal were made. Money was made available by the Lighthouse Service for the installation of a small experimental plant to determine satisfactory methods for treating small volumes of water suitable for lighthouse stations. Inspections of water-treatment plants installed on four lighthouse tenders on the Great Lakes indicate continuing satisfactory operation.

Civilian Conservation Corps.—Technical advice relative to sewage disposal has been supplied when requested.

Resettlement Administration.—Frequent conferences have been held with representatives of the Resettlement Administration in Washington and advice given pertaining to water supplies and sewage disposal. An engineer officer was a member of a commission of 11 appointed to investigate conditions at Matanuska colony project in Alaska. Sur-

veys have been made for water supply and sewage disposal at two administration projects.

Department of Agriculture, Bureau of Entomology and Plant Quarantine.—Advice was given in connection with the sanitation of the temporary white-pine blister-rust-control camps in California and Idaho and inspections were made of 23 of these camps.

A small amount of service was also rendered the Forestry Service and the Bureau of Public Roads, of the Department of Agriculture, Bureau of Air Commerce of the Department of Commerce, and the Coast Guard of the Treasury Department.

WORKS PROGRESS ADMINISTRATION PROJECTS

MALARIA-CONTROL DRAINAGE

Technical supervision of Emergency Relief Administration and Works Progress Administration malaria-control drainage projects was continued throughout the year. This work was carried out in cooperation with the State health departments of the 16 States which comprise the malaria belt. The plan was inaugurated under the Civil Works program, and operation has continued along essentially the same lines under the Emergency Relief and Works Progress programs, which replaced the Civil Works program about the middle of the fiscal year.

As has been set forth in previous reports, the control measures were concentrated in areas where the effects of the infection were particularly noticeable, in villages and towns and in industries. While the death rate from malaria is not high in comparison with the death rates from other diseases, the high morbidity rate makes malaria a major public health problem in the South.

During the year the technical supervisors assigned to the State health departments by the Public Health Service directed malaria-control drainage projects of the Emergency Relief Administration and Works Progress Administration which accomplished the construction of an estimated total of 6,000 miles of average-sized ditch. An average of approximately 17,000 men were employed on this work throughout the year. This brings the total ditch construction of the Civil Works, Emergency Relief, and Works Progress programs to an estimated total of 22,000 miles, resulting in the drainage of approximately 340,000 acres of malaria-mosquito breeding areas and furnishing protection from malaria to about 14,000,000 people. At the time of change of operations from the Emergency Relief Administration to the Works Progress Administration there was, owing to change of administration, a decrease in the number of laborers working and, consequently, a smaller amount of ditch construction. During this period the technical supervisors devoted their efforts to making selections and engineering surveys of future projects.

The effectiveness of the malaria-control drainage work was most noticeable during the malaria seasons of 1934-35. Despite the fact that these years were "epidemic" years, reports from various State health departments indicated that malaria did not increase or was not present in former malarious areas in which malaria-control drainage projects were prosecuted. However, in malarious areas, and in some areas which had been malaria free for a number of years past, in which

no control measures were carried on, the prevalence of malaria reached epidemic proportions. Malaria was generally prevalent in the United States in epidemic proportions during the summers of 1934-35 to a greater extent than any other period during the last 20 years. Malaria in this country is not static, but cyclic. The underlying factors controlling this cyclic occurrence are not well understood. However, it is believed that had the malaria-control drainage projects not been as extensive and so well selected and supervised, the epidemic condition described above would have reached far greater proportions.

COMMUNITY SANITATION PROGRAM

Authorization, effective July 1, 1935, was granted by the Works Progress Administration to continue the emergency relief community sanitation program inaugurated under the Civil Works Administration in November 1933 and continued under the Federal Emergency Relief Administration. Project applications were submitted to the Works Progress Administration by the various State health departments covering the work which it was proposed to carry on under the Works Progress Administration program.

There was, of necessity, some time required for the transfer of the activities from the Emergency Relief Administration to the Works Progress Administration set-up, and consequently some delay in getting the program under way. Some time was required by the Works Progress Administration in effecting administrative changes and for the approval of the new project applications which had been submitted from the various States. In a few States actual construction work was begun in the latter part of August, but in a large majority of the States the actual execution of the projects did not start until October 1935. In a few instances actual construction was started in January 1936.

Project applications were submitted for community sanitation projects from 41 States, and these were approved by the Works Progress Administration in Washington. Technical supervision of the Works Progress Administration community sanitation program was effected through the State health department of each State, with the State health officer acting as the agent of the Public Health Service. An administrative allotment of Works Progress Administration funds was made available to the Public Health Service for the technical supervision of the Works Progress Administration community sanitation program, and technical supervisory personnel appointed on the recommendation of the State health officer in each State was assigned to the State health department to assist the State health officer in the supervision of this work. Allocations of technical supervisory personnel were made to each State on the basis of the existing needs and in relation to the number of laborers which it was expected would be assigned to the work projects by the State works progress administrator. As the program progressed, adjustments were made from time to time in the original number of technical supervisory personnel furnished to the States in order to maintain the cost of supervision more in line with the labor cost. In Michigan, Minnesota, and Massachusetts no funds were released by the State works progress administrator for the prosecution of the work, and the community

sanitation programs were discontinued in those States on November 15, 1935, April 30, 1936, and June 30, 1936, respectively.

The work carried out under the program consisted of the installation of sanitary privies for the elimination of existing insanitary methods of excreta disposal in those areas where sewer systems were impracticable and the construction of septic tanks on public property, particularly at schools. Calculated on a 10-month basis, community sanitation projects were in operation in an average of 911 counties in 38 States, with an average of 17,358 relief laborers employed. For the period September 12, 1935, through June 30, 1936, 344,250 sanitary privies were installed in accordance with standard plans and specifications approved by the Public Health Service and the various State health departments. Since the time the programs were in operation in the 38 States averages less than 7 months, it is believed that very creditable results have been accomplished. The excellent cooperation accorded the community sanitation program by the Works Progress Administration in Washington and in the States generally has contributed in a large measure to the accomplishments.

This Office endeavored to assist the State health departments in every way possible in the execution of the Works Progress Administration community sanitation program and has furnished standard plans and specifications for the construction of sanitary privies, literature on this subject, and suggestions relative to the conduct of the program when requested or deemed advisable. A representative of the Service has acted as liaison officer between the Service and the Works Progress Administration. This arrangement has been quite helpful in adjusting difficulties and solving various problems which arose concerning the program during the fiscal year. Under the plan as agreed upon at the start of the Works Progress Administration program it was necessary for community sanitation, malaria-control drainage, and mine-sealing projects to be cleared by the Public Health Service before such projects would be approved by the Works Progress Administration, and a representative of this Office was assigned to this duty by the Service. This system of clearance of projects is regarded as an excellent arrangement and has made it possible to eliminate a number of projects which were not considered suitable or desirable for operation as Works Progress Administration community sanitation or as public health projects.

The accompanying table shows the number of counties operating, the number of laborers employed, and number of privies installed under the Works Progress Administration community sanitation program, by States, as of June 30, 1936. There is also presented a table showing the number of privies constructed under the Works Progress Administration, Civil Works Administration, and Federal Emergency Relief Administration, and the total for the three emergency relief programs is also attached. These data were compiled from reports submitted to the Service by the various State health departments. It will be noted that as of June 30, 1936, 905,533 sanitary privies had been installed, thereby eliminating an equal number of insanitary conditions which constituted a constant danger to the health of the citizens of the communities in which these insanitary conditions existed.

Progress made in the execution of Works Progress Administration community sanitation projects as of June 30, 1936

State	Number of counties operating	Number of laborers employed	Number of privies built	Period covered by report	Number of privies constructed under W. P. A. July 1, 1935-June 30, 1936
Alabama.....	14	174	74	June 15 to June 30.....	2,277
Arizona.....	14	180	260	do.....	3,527
Arkansas.....	74	1,176	969	do.....	17,074
California.....	35	690	567	June 13 to June 27.....	7,972
Colorado.....	25	265	337	June 15 to June 30.....	3,713
Delaware.....	1	26	24	do.....	301
Florida.....	5	54	62	June 13 to July 3.....	548
Georgia.....	45	462	1,030	June 1 to June 30.....	7,787
Idaho.....	26	272	267	June 15 to June 30.....	4,195
Illinois.....	46	855	731	June 18 to July 2.....	5,711
Indiana.....	86	1,579	3,395	June 1 to June 30.....	24,030
Iowa.....	13	135	61	June 22 to June 30.....	931
Kansas.....	55	480	407	June 13 to July 4.....	5,448
Kentucky.....	67	710	981	June 19 to July 2.....	14,780
Louisiana.....	16	250	280	June 15 to June 30.....	2,589
Maryland.....	18	174	554	May 23 to July 4.....	2,282
Massachusetts ¹.....				.....	0
Michigan ².....				.....	0
Minnesota ³.....				.....	0
Mississippi.....	58	602	804	June 15 to June 30.....	16,349
Missouri.....	1	9	25	May 23 to June 30.....	27
Montana.....	17	179	186	June 15 to June 30.....	2,277
Nebraska.....	8	70	58	June 17 to June 30.....	370
New Jersey.....	10	149	155	June 15 to June 30.....	596
New Mexico.....	7	51	97	June 1 to June 30.....	4,645
North Carolina.....	36	426	1,331	June 13 to July 4.....	14,916
North Dakota.....	31	402	614	do.....	3,939
Ohio.....	84	1,598	2,239	June 13 to June 29.....	24,330
Oklahoma.....	40	520	250	June 15 to June 30.....	40,066
Oregon.....	20	206	278	do.....	3,499
Pennsylvania:					
Regular.....	42	571	912	do.....	2,642
Flood.....				Mar. 24 ⁴ to June 30.....	806
South Carolina.....	46	762	997	June 18 to July 2.....	15,011
South Dakota.....	14	142	251	June 6 to June 27.....	1,044
Tennessee.....	64	1,529	1,962	June 15 to June 30.....	22,365
Texas.....	44	869	440	do.....	7,915
Utah.....	22	369	381	do.....	8,808
Virginia.....	56	769	1,744	do.....	20,495
Washington.....	15	230	180	do.....	1,269
West Virginia.....	55	1,680	2,728	June 13 to June 28.....	39,219
Wisconsin.....	18	275	166	do.....	907
Wyoming.....	15	126	104	June 15 to June 30.....	584
Total (41 States) for period.....	1,256	19,366	25,891	.....	344,250
Total as of June 15, 1936.....	1,159	18,599	22,014	.....	318,359
Gain during period June 15 to 30.....	+97	+767	+3,877	.....	+25,891

¹ No labor assigned. Discontinued June 30, 1936.

² No labor assigned. Discontinued Nov. 15, 1935.

³ No labor assigned. Discontinued Apr. 30, 1936.

⁴ Last report under flood-sanitation program.

Number of new privies reported installed in each State from week ending Dec. 16, 1933, to June 30, 1936, under Civil Works Administration, Emergency Relief Administration, and Works Progress Administration programs

State	Date of last re-report	Number of privies constructed under W. P. A. program	Number of privies constructed under C. W. A. and E. R. A. programs	Number of privies constructed to June 30, 1936, under C. W. A., E. R. A., and W. P. A. programs
<i>1936</i>				
Alabama	June 30	2,277	3,256	5,533
Arizona	June 30	3,527	250	3,777
Arkansas	June 30	17,074	27,548	44,622
California	June 27	7,972	1,872	9,844
Colorado	June 30	3,713	-----	3,713
Delaware	June 30	301	168	469
Florida	July 3	548	9,187	9,735
Georgia	June 30	7,787	19,687	27,474
Idaho	June 30	4,195	-----	4,195
Illinois	July 2	5,717	2,801	8,518
Indiana	June 30	24,030	25,228	49,258
Iowa	June 30	931	376	1,307
Kansas	July 4	5,448	8,037	13,485
Kentucky	July 2	14,780	18,006	32,786
Louisiana	June 29	2,589	41,773	44,362
Maryland	July 4	2,282	6,481	8,763
Massachusetts ¹	-----	-----	-----	0
Michigan ²	-----	-----	3,016	3,016
Minnesota ³	-----	-----	-----	0
Mississippi	June 29	16,349	23,227	39,576
Missouri	June 30	27	5,321	5,348
Montana	June 30	2,277	124	2,401
Nebraska	June 30	370	-----	370
New Jersey	June 30	596	-----	596
New Mexico	June 30	4,645	409	5,054
North Carolina	July 4	14,916	62,089	77,005
North Dakota	July 4	3,939	443	4,382
Ohio	June 28	24,330	15,671	40,001
Oklahoma	June 30	40,066	26,534	66,600
Oregon	June 30	3,499	-----	3,499
Pennsylvania:				
Regular	June 30	2,642	963	3,605
Flood	June 30	806	-----	806
South Carolina	July 2	15,011	39,621	54,632
South Dakota	June 27	1,044	-----	1,044
Tennessee	June 30	22,365	43,778	66,143
Texas	June 30	7,915	70,370	78,285
Utah	June 30	8,808	2,052	10,860
Virginia	June 30	29,495	26,330	55,825
Washington	June 30	1,269	796	2,065
West Virginia	June 28	39,219	75,869	115,088
Wisconsin	June 28	907	-----	907
Wyoming	June 30	584	-----	584
Total (41 States)	-----	344,250	561,283	905,533

¹ Discontinued June 30, 1936.

² Discontinued Nov. 15, 1935.

³ Discontinued Apr. 30, 1936.

SEALING ABANDONED BITUMINOUS MINES

This project originated under the Civil Works Administration and has for its object the air sealing of abandoned bituminous-coal mines in order to prevent the formation of sulphuric acid and its discharge in mine drainage, thereby affecting public water supplies.

The project was gotten under way in December and January in 7 States. Projects were set up in 124 counties, of which number work has been carried on in 88. Over 3,000 men have been supplied by the Works Progress Administration for this work. At the close of the year 522 mines, with 5,699 openings, had been closed or were in the process of being closed.

The technical supervision of this work was carried on under the immediate direction of the State department of health, the Public Health Service maintaining advisory service. Supervisory personnel is furnished through funds made available to the Treasury Department.

PLUMBING INSPECTION OF FEDERAL BUILDINGS

This project consists of inspection of plumbing of Federal buildings in New York City, N. Y., and Detroit, Mich., for the purpose of determining whether the existence of defective plumbing may be a possible health hazard and to develop satisfactory methods for carrying on inspection work of this type.

The project includes the inspection of 812 buildings, with 17,400,000 square feet of floor area, in New York City, and 92 buildings, with 969,000 square feet of floor area, in Detroit. This is exclusive of buildings under the control of the Navy Department.

The training school for nonrelief supervisory force was held in New York in May. This was followed by actual inspection work in the field. At the close of the year less than one-third of the personnel required had been allocated by the Works Progress Administration.

The inspection work completed at the close of the year totaled 1,041,000 square feet of floor space in New York City and 162,000 square feet of floor space in buildings in Detroit.

ANNUAL CONFERENCE OF THE SURGEON GENERAL WITH THE STATE AND TERRITORIAL HEALTH OFFICERS

In accordance with the act of July 1, 1902, the Thirty-fourth Annual Conference of the Surgeon General with the State and Territorial Health Officers was held April 13 and 14, 1936, in the Public Health Service Building at Washington. Delegates from 41 States and Territories were present. On the first day special emphasis was placed upon discussion of measures for the control of venereal diseases and State programs for industrial hygiene. The second day was given to reports of committees having to do with the regulations to govern allotments and payments to States under title VI of the Social Security Act, recommendations on qualifications of public health personnel, records and report forms to be used in recording and reporting health-department activities, proposed stream-pollution legislation, and the sanitary control of shellfish shipped in interstate traffic.

DIVISION OF FOREIGN AND INSULAR QUARANTINE AND IMMIGRATION

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

The various quarantinable diseases continued to prevail in many parts of the world. Cholera was confined to southern Asia and the adjacent islands, while typhus fever was reported from all the great divisions of the earth. Smallpox and plague also had widespread distribution. The bubonic plague reported in Argentina, Brazil, Bolivia, Ecuador, and Peru was of particular interest from a quarantine standpoint because of the increased tonnage of grain (rat-attractive cargo) imported into the United States from South America during the year. Yellow fever was reported in Brazil, Bolivia, and Colombia, and in Senegal, Gambia, Sierra Leone, Ivory Coast, Gold Coast, Togo, Dahomey, Nigeria, Niger Territory, French Sudan, and French Equatorial Africa. The occurrence of yellow fever in South America presents a quarantine hazard of considerable magnitude in connection with the rapid airplane transportation from these countries direct to continental United States ports located in our large southern territory infectible with yellow fever.

No quarantinable disease was imported into the United States or its dependencies during the year. One vessel arrived at Boston, Mass., with a case of smallpox on board. The patient was detained at quarantine until all of the necessary precautions had been taken by the quarantine officers to prevent the introduction and spread of this disease in the United States. During the quarantine inspection of arriving persons at a Mexican border support of entry, a case of smallpox was detected in an alien, who was accordingly refused entry into the United States. Another alien making clandestine border crossing was picked up by the border patrol, and when taken as a prisoner to El Paso he was found to have smallpox and was returned to Mexico under custody of the Mexican health authorities.

During the year 15,981 vessels arriving from foreign countries, carrying 1,915,727 persons, were inspected by medical officers of the United States Public Health Service prior to entry at United States ports in order to prevent the introduction of quarantinable diseases. Of these vessels 7,247 required rat-infestation inspection by quarantine officers, of which number 1,887 were issued international standard certificates of deratization exemption, and 1,193 were fumigated and issued international standard certificates of deratization. A total of 4,585 rats was retrieved on vessels following fumigation, of which number 2,971 were examined for plague infection. Of the arriving vessels 1,693 presented international standard certificates of deratization issued by foreign countries, of which only 116 were not accepted, and 2,474 vessels presented foreign certificates of deratization exemption, of which only 145 were refused. The decreasing ratio of vessels fumigated to those exempted from fumigation has been markedly evi-

dent in recent years. This reveals the effect of Public Health Service efforts to have ratproofing principles incorporated in the construction of vessels engaged in maritime commerce.

It was necessary for the Department to assess penalties aggregating only \$460 during the year for violations of the quarantine laws of the United States by masters of vessels arriving from foreign ports.

Of 3,823 aircraft, carrying 37,352 persons, arriving at United States ports from foreign countries, 2,281, carrying 31,898 persons, were accorded quarantine inspection at the first port of entry in the United States. Of 8,645,193 persons accorded quarantine inspection upon arrival at United States ports of entry along the Mexican border 8,588,044 were passed without treatment, and 57,149 were required to undergo quarantine treatment such as vaccination and delousing.

The International Sanitary Convention for Aerial Navigation of The Hague, 1933, became effective with regard to the United States on November 22, 1935. The provisions of the Convention applicable to air commerce between foreign countries and the United States have been placed in effect. The only noteworthy change in existing procedures resulted from the provisions of article 9, which substitute a journey log for the bill of health formerly required to be carried by aircraft. The promulgation of this Convention facilitates the application of measures for protecting the United States against the introduction of quarantinable disease through air commerce. During the year the number of countries participating in this Convention for Aerial Navigation was increased by the ratification of Austria, Belgium, Italy (with its colonies), and Poland; by the adherence of Turkey, and by the accession, through the Australian Government, of the territories of Papua and Norfolk Island and the mandated territory of New Guinea. The International Office of Public Health reports that the internal regulations of several countries have been brought into line with the provisions of the Convention, and the practice followed by the responsible authorities in other countries has been adapted to those provisions, thus eliminating to a large extent the previously existing lack of uniformity in practice. The number of countries at present participating in the Convention shows clearly the interest which is being manifested all over the world in the unification of the rules applicable to aerial traffic from the point of view of sanitary defense.

With the inauguration of aerial transport service across the Pacific, linking up with air lines already established in the Orient from Shanghai and the interior of China, via Manila to the East Indies and Straits Settlements, exposing to infection our Pacific coast, as well as Hawaii and the Philippine Islands, particularly with reference to cholera and smallpox from endemic and epidemic foci in the Orient, it became necessary to issue special instructions regarding aerial quarantine activities to the quarantine stations at San Francisco, Honolulu, and Manila. In addition, the Service is extending its effort to prevent the introduction of mosquito vectors of malaria into the Territory of Hawaii, where malaria does not now exist, owing to the absence of such insect carriers. To this end all aircraft are required to be inspected and fumigated both upon departure for and arrival at Honolulu. Officials of the Pan American Airways have

expressed a desire to cooperate by screening their planes and using a spray fumigant mosquitocide on planes while in flight between ports.

Scientific investigation at the New Orleans quarantine station has been effective in developing a nonflammable mosquitocide which, in laboratory tests, produced a 100 percent mosquito kill following 5 minutes' exposure to as little as 5 cc of a carbon tetrachloride and pyrethrum extract mixture finely sprayed in 1,000 cubic feet of space. As this mosquitocide mixture is nonflammable and in the concentrations used apparently harmless to human beings, it appears to be the most ideal mosquitocide yet developed for use on aircraft in flight to prevent the transportation of mosquito vectors of human disease.

In conformity with the provisions of article 6 of the Sanitary Convention of Washington, 1905, and articles 56 and 57 of the International Sanitary Convention of Paris, 1926, an informal agreement was reached in August 1935, between the United States Public Health Service and the chief of the quarantine service of the Republic of Cuba, providing for reciprocal recognition of international standard form certificates of deratization exemption when issued by the competent authority of either country to vessels which are maintained in a rat-free condition. This agreement is of distinct aid to vessels plying in trade between Cuban and United States ports, as it lessens the number of fumigations they might otherwise be required to undergo.

In May 1936 the attention of the Quarantine Commission for Aerial Navigation of the International Office of Public Health was invited to the failure of the International Sanitary Convention of Paris, 1926, and the International Sanitary Convention for Aerial Navigation, The Hague, 1933, adequately to provide for the sanitary supervision of postal packages mailed in international commerce which contain material infectious to man. Several examples were cited of instances of such nature which had recently arisen in the United States and in which the actual or potential public health menace involved was obvious. While the Universal Postal Union Convention of Cairo, 1934, prohibits the importation into any country of articles whose circulation is forbidden under the laws of that country, the International Sanitary Conventions of Paris and The Hague prohibit adequate sanitary supervision of such postal packages containing such material. It was recommended to the Commission that the situation arising from the obvious contradiction between the texts of the Sanitary Conventions and the Postal Convention be remedied by the adoption of a general resolution involving a rather liberal interpretation of the wording of the pertinent provisions of the several international conventions. The Commission, however, expressed itself as believing that such matters could be adequately handled by the prohibition of the circulation of such materials on national territory. It stated, however, that the question would remain on the agenda for further consideration should occasion arise.

During the year the fumigation of ships has been increased in efficiency by requiring the use of calcium cyanide dust for injection into concealed rat harboragees as a supplement to hydrocyanic acid gas fumigations. The value of this procedure was developed through experimental work performed at the New Orleans quarantine station.

The safety of cyanide fumigations has been enhanced by requiring the use of prewarning gases prior to fumigation of loaded vessels which are so constructed or so loaded as to preclude thorough preliminary search for stowaways. Postwarning gases are also required to be used following cyanide fumigations when possible danger might result from the slow liberation of the fumigant absorbed by bulky materials such as bedding and clothing.

To promote the usefulness of international standard form certificates of deratization and deratization exemption, the Public Health Service has inaugurated the use of a graphic chart showing a longitudinal section of a vessel upon which is recorded by symbol and number the status of rat life and rat harborage aboard a vessel. The use of this chart was presented for discussion at the Third Pan American Conference of National Directors of Health, in April 1936 and to the Permanent Committee of the International Office of Public Health in Paris, and much interest was manifested in its international applicability.

During the year there was completed the rehabilitation of the Reedy Island (Del.) and the Savannah (Ga.) quarantine stations. Important additional facilities at Rosebank, at the New York (N. Y.) quarantine station, and bulkheading and other shore protective construction at the Port Townsend (Wash.) quarantine station were also completed. Construction was commenced of the new Tampa Bay (Fla.) quarantine station, at Gadsden Point. A site was acquired for the new Narragansett Bay (R. I.) quarantine station, at Newport.

Construction of floating equipment during the year was comparatively limited, the only vessel constructed being a 50-foot boat, the *W. H. Hutton*, for the Miami Quarantine Station. This vessel is Diesel-driven and is unique in that it is the first all-welded, hand-puddled, wrought-iron vessel ever to be constructed in the United States.

Medical inspection of aliens.—During the fiscal year 824,401 alien immigrants were examined and 722,756 alien seamen were inspected at United States ports of entry by medical officers of the United States Public Health Service in accordance with the provisions of the immigration laws, the examination of 53,793 alien passengers and 281,224 alien seamen for immigration purposes having been performed at quarantine stations in conjunction with quarantine inspections. Of these persons, 1,338 alien immigrants and 627 alien seamen were certified to be afflicted with one or more of the physical or mental defects or diseases requiring exclusion, and 13,768 alien immigrants and 492 alien seamen were certified to be afflicted with conditions likely to affect their ability to earn a living.

During the year 38,619 applicants for immigration visas were examined by medical officers in American consulates in foreign countries. Of this number, 620 were reported by the medical officers to the American consuls as being afflicted with one or more physical or mental defects or diseases requiring exclusion, and 6,878 were reported as afflicted with a condition likely to affect their ability to earn a living. Only four of the aliens to whom visas had been issued following satisfactory examinations in American consulates in foreign countries were certified upon arrival at a United States port as being afflicted with a defect or disease requiring exclusion.



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TRANSACTIONS AT MARITIME QUARANTINE STATIONS

TABLE 1.—Summary of transactions at maritime stations for the fiscal year 1936

Station	Vessels inspected	Vessels granted free pratique	Vessels fumigated		De-ratification exemption certificates issued	Passengers inspected	Crew inspected	Bills of health and port sanitary statements issued	Amount of bills rendered for quarantine services
			Cyanide	Sulphur					
Aberdeen, Wash.....	8	8	0	0	0	1	299	386	\$80.00
Angel Island, Calif. (San Francisco).....	447	292	49	0	114	25,786	49,527	0	11,551.01
Astoria, Oreg.....	30	27	5	0	0	52	1,901	927	358.47
Baltimore, Md.....	525	455	72	0	152	161	17,434	0	12,261.00
Beaufort, S. C.....	0	0	0	0	0	0	0	0	0
Boca Grande, Fla.....	14	14	0	0	3	11	506	0	165.00
Boston, Mass.....	822	689	70	0	63	28,321	56,985	0	17,176.00
Brunswick, Ga.....	6	6	0	0	0	0	162	60	60.00
Carrabelle, Fla.....	31	31	0	0	0	0	303	7	155.00
Charleston, S. C.....	147	146	5	0	5	938	6,332	0	1,944.82
Corpus Christi, Tex. ¹	74	74	0	0	0	2	2,412	569	780.00
Eastport, Maine.....	2	2	0	0	2	0	39	5	15.00
Eureka, Calif.....	4	4	0	0	0	3	138	28	40.00
Fall River, Mass.....	2	2	0	0	0	0	60	30	20.00
Fernandina, Fla. (Cumberland Sound).....	3	3	0	1	0	0	97	43	96.69
Fort Monroe, Va.....	280	260	3	13	24	8,209	23,084	1,042	4,050.31
Freeport, Tex.....									
Galveston, Tex.....	638	613	8	0	81	1,943	21,824	0	8,091.31
Georgetown, S. C.....	0	0	0	0	1	0	0	0	0
Gulfport, Miss.....	18	18	2	0	2	22	483	95	247.57
Jacksonville, Fla. (St. Johns River).....	124	93	32	0	14	42	2,624	696	3,267.59
Key West, Fla.....	181	177	4	0	6	10,655	10,564	27	2,300.52
Lewes, Del. (Delaware Breakwater).....	0	0	0	0	0	0	0	0	0
Los Angeles, Calif.....	1,409	1,118	78	0	215	24,208	77,105	7,582	26,169.57
Marcus Hook, Pa.....	689	601	49	0	103	1,218	24,109	4,483	10,817.34
Marshfield, Oreg. (Coos Bay).....	16	16	0	1	0	0	603	71	165.00
Miami, Fla.....	927	927	40	0	6	40,024	28,457	0	8,257.00
Mobile, Ala.....	169	156	12	0	39	162	5,176	0	2,564.66
New Bedford, Mass.....	3	2	0	1	0	32	44	5	16.44
New London, Conn.....	13	13	0	0	0	25	378	9	135.00
New Orleans, La.....	1,241	1,161	61	0	181	11,240	46,073	4,821	20,247.24
Newport, R. I.....	3	3	0	0	0	20	115	37	20.00
New York, N. Y. ²	3,408	2,934	218	0	628	427,959	502,579	18,819	69,431.76
Ogdensburg, N. Y.....	0	0	0	0	0	0	0	0	0
Panama City, Fla.....	13	13	2	0	3	31	155	411	165.34
Pensacola, Fla.....	45	29	5	0	9	10	1,263	830	813.12
Plymouth, Mass.....	8	6	0	0	0	46	232	0	90.00
Port Everglades, Fla.....	124	124	0	0	5	378	4,950	0	1,308.00
Port Isabel, Tex.....	4	3	0	0	0	0	114	4	40.00
Portland, Maine.....	115	108	0	0	1	84	3,412	64	1,180.00
Portland, Oreg.....	8	6	10	0	13	13	310	2,739	1,293.60
Port San Luis, Calif. (San Luis Obispo).....	60	60	0	0	13	2	2,304	0	1,045.00
Port Townsend, Wash. ³	50	45	34	0	5	0	3,416	3,210	4,690.85
Providence, R. I.....	36	34	0	0	7	0	1,132	59	500.00
Sabine, Tex.....	407	365	1	0	49	128	13,952	0	4,181.33
San Diego, Calif. (Point Loma).....	554	553	3	0	50	15,024	40,732	241	3,791.15
Savannah, Ga.....	101	91	8	0	5	90	2,977	0	1,464.55
Searsport, Maine.....	13	13	0	0	0	0	0	15	115.00
South Bend, Wash.....	17	17	0	0	1	0	745	63	170.00
Southport, N. C. (Cape Fear).....	50	47	0	3	2	27	1,447	0	639.97
Tampa, Fla.....	298	254	20	0	33	468	6,124	1,564	3,258.51
Vineyard Haven, Mass.....	0	0	0	0	0	0	0	0	0
West Palm Beach, Fla.....	109	109	0	0	0	149	576	0	545.00
Total.....	13,249	11,722	791	19	1,835	597,484	963,263	48,943	225,775.72
Alaska:									
Ketchikan.....	0	0	0	0	0	0	0	0	0
Wrangell.....	0	0	0	0	0	0	0	0	0
Total.....	0	0	0	0	0	0	0	0	0

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

TABLE 1.—Summary of transactions at maritime stations for the fiscal year 1936—
Continued

Station	Vessels inspected	Vessels granted free pratique	Vessels fumigated		De-ratization exemption certificates issued	Passengers inspected	Crew inspected	Bills of health and port sanitary statements issued	Amount of bills rendered for quarantine services
			Cyanide	Sulphur					
Hawaii:									
Ahukini.....	1	1	0	0	0	0	38	41	\$15.00
Hilo.....	10	10	0	0	0	223	732	190	141.00
Honolulu.....	172	161	12	0	3	36,746	43,128	695	4,072.39
Kahului.....	3	3	0	0	0	0	200	160	25.00
Port Allen.....	5	5	0	0	0	1	177	106	55.00
Labaina.....	0	0	0	0	0	0	0	56	0
Mahukona.....	0	0	0	0	0	0	0	38	0
Total.....	191	180	12	0	3	36,970	44,275	1,286	4,308.39
Philippines:									
Cavite.....	2	2	0	0	0	0	74	6	0
Cebu.....	103	0	5	90	5	1,213	6,878	451	0
Davao.....	86	2	0	0	0	913	4,823	144	0
Iloilo.....	118	0	0	80	1	607	6,251	207	0
Jolo.....	26	0	0	0	0	696	891	78	0
Legaspi.....	60	4	0	0	0	17	2,695	104	0
Manila.....	1,089	189	61	103	8	75,982	101,421	1,283	0
Olongapo.....	0	0	0	0	0	0	0	0	0
Zamboanga.....	42	0	0	15	0	565	1,565	105	0
Total.....	1,526	197	66	288	14	79,993	124,598	2,378	0
Puerto Rico:									
Aguadilla.....	4	4	0	0	0	7	85	111	35.00
Arecibo.....	0	0	0	0	0	0	0	45	0
Arroyo.....	1	1	0	0	0	0	7	75	5.00
Central Aguirre.....	3	3	0	0	0	37	212	54	40.00
Fajardo.....	1	1	0	0	0	1	6	349	5.00
Guanica.....	40	40	0	0	1	240	648	62	255.00
Humacao.....	1	1	0	0	0	0	6	69	5.00
Mayaguez.....	47	45	0	0	2	376	1,251	238	365.00
Ponce.....	62	55	0	0	3	272	1,601	264	503.00
San Juan.....	436	393	6	0	25	12,412	28,965	735	5,956.40
Total.....	595	543	6	0	31	13,345	32,781	2,002	7,169.40
Virgin Islands:									
Christiansted.....	4	4	0	0	0	0	22	296	20.00
Frederiksted.....	38	38	0	0	0	2,698	2,770	83	595.00
St. Thomas.....	378	283	0	11	4	3,005	14,523	428	4,731.50
Total.....	420	325	0	11	4	5,703	17,315	807	5,346.50
Total, all stations.....	15,981	12,967	875	318	1,887	733,495	1,182,232	55,416	\$242,600.01

TABLE 2.—Statement of quarantine services rendered at maritime quarantine stations during the fiscal year 1936

Station	Inspection services	Detention services	Special services	Fumigation services	Total charges
Aberdeen, Wash.....	\$80	0	0	0	\$80.00
Angel Island, Calif. (San Francisco).....	6,329	\$6	\$1,100.00	\$4,116.01	11,551.01
Astoria, Oreg.....	290	0	0	68.47	358.47
Baltimore, Md.....	5,480	0	1,520.00	5,261.00	12,261.00
Boca Grande, Fla.....	165	0	0	0	165.00
Boston, Mass.....	10,379	60	842.75	5,894.25	17,176.00
Brunswick, Ga.....	60	0	0	0	60.00
Carrabelle, Fla.....	155	0	0	0	155.00
Charleston, S. C.....	1,579	0	50.00	315.82	1,944.82
Corpus Christi, Tex. ¹	780	0	0	0	780.00
Eastport, Maine.....	15	0	0	0	15.00
Eureka, Calif.....	40	0	0	0	40.00
Fall River, Mass.....	20	0	0	0	20.00
Fernandina, Fla. (Cumberland Sound).....	30	0	10.00	56.69	96.69

¹ Includes Port Aransas, Tex.

TABLE 2.—Statement of quarantine services rendered at maritime quarantine stations during the fiscal year 1936—Continued

Station	Inspection services	Detention services	Special services	Fumigation services	Total charges
Fort Monroe, Va.	2,935	0	340.00	775.31	4,050.31
Galveston, Tex.	6,949	0	835.00	307.31	8,091.31
Georgetown, S. C.	0	0	0	0	0
Gulport, Miss.	165	0	0	82.57	247.57
Jacksonville, Fla. (St. Johns River)	1,035	0	140.00	2,092.59	3,267.59
Key West, Fla.	2,209	0	60.00	31.52	2,300.52
Lewes, Del. (Delaware Breakwater)	0	0	0	0	0
Los Angeles, Calif.	17,538	0	2,200.00	6,431.57	26,169.57
Marcus Hook, Pa.	7,470	0	1,050.00	2,297.34	10,817.34
Marshfield, Oreg. (Coos Bay)	160	0	0	5.00	165.00
Miami, Fla.	8,017	0	20.00	220.00	8,257.00
Mobile, Ala.	1,735	0	390.00	439.66	2,564.66
New Bedford, Mass.	10	0	0	6.44	16.44
New London, Conn.	135	0	0	0	135.00
New Orleans, La.	13,694	0	1,810.00	4,743.24	20,247.24
Newport, R. I.	20	0	0	0	20.00
New York, N. Y. ²	45,941	0	6,880.00	16,610.76	69,431.76
Ogdensburg, N. Y.	0	0	0	0	0
Panama City, Fla.	125	0	30.00	10.34	165.34
Pensacola, Fla.	505	0	90.00	218.12	813.12
Plymouth, Mass.	90	0	0	0	90.00
Port Everglades, Fla.	1,278	0	30.00	0	1,308.00
Port Isabel, Tex.	40	0	0	0	40.00
Portland, Maine	1,170	0	10.00	0	1,180.00
Portland, Oreg.	70	0	215.00	1,008.60	1,293.60
Port San Luis, Calif. (San Luis Obispo)	915	0	130.00	0	1,045.00
Port Townsend, Wash. ³	485	0	385.00	3,820.85	4,690.85
Providence, R. I.	430	0	70.00	0	500.00
Sabine, Tex.	3,655	0	490.00	36.33	4,181.33
San Diego, Calif. (Point Loma)	3,137	105	500.00	49.15	3,791.15
Savannah, Ga.	965	0	40.00	459.55	1,464.55
Searsport, Maine	115	0	0	0	115.00
South Bend, Wash.	170	0	0	0	170.00
Southport, N. C. (Cape Fear)	500	0	0	139.97	639.97
Tampa, Fla.	2,520	0	370.00	368.51	3,258.51
Vineyard Haven, Mass.	0	0	0	0	0
West Palm Beach, Fla.	545	0	0	0	545.00
Total	150,130	171	19,607.75	55,866.97	225,775.72
Alaska:					
Ketchikan	0	0	0	0	0
Wrangell	0	0	0	0	0
Total	0	0	0	0	0
Hawaii:					
Ahukini	15	0	0	0	15.00
Hilo	141	0	0	0	141.00
Honolulu	4,027	0	30.00	15.39	4,072.39
Kahului	25	0	0	0	25.00
Port Allen	55	0	0	0	55.00
Lahaina	0	0	0	0	0
Mahukona	0	0	0	0	0
Total	4,263	0	30.00	15.39	4,308.39
Puerto Rico:					
Aguadilla	35	0	0	0	35.00
Arecibo	0	0	0	0	0
Arroyo	5	0	0	0	5.00
Central Aguirre	40	0	0	0	40.00
Fajardo	5	0	0	0	5.00
Guanica	245	10	0	0	255.00
Humacao	5	0	0	0	5.00
Mayaguez	365	0	0	0	365.00
Ponce	473	30	0	0	503.00
San Juan	5,515	0	240.00	201.40	5,956.40
Total	6,688	40	240.00	201.40	7,169.40
Virgin Islands:					
Christiansted	20	0	0	0	20.00
Frederiksted	595	0	0	0	595.00
St. Thomas	4,615	0	69.50	47.00	4,731.50
Total	5,230	0	69.50	47.00	5,346.50
Total, all stations	\$166,311	\$211	\$19,947.25	\$56,130.76	\$242,600.01

¹ Includes Perth Amboy, N. J.³ Includes all ports on Puget Sound.

MEXICAN BORDER STATIONS

TABLE 3.—Summary of quarantine transactions on the Mexican border for the fiscal year 1936

Station	Number of persons from interior of Mexico inspected	Number of local persons inspected	Total number of persons inspected	Total number of persons disin-fected	Total number of persons passed without treatment	Total number of persons vaccinated	Total number of sick refused admission	Total pieces of baggage disin-fected
Brownsville, Tex.....	2, 078	762, 091	764, 169	18	763, 621	527	3	0
Calexico, Calif.....	0	18, 493	18, 493	0	17, 586	887	20	0
Columbus, N. Mex.....	258	975	1, 233	0	1, 051	182	0	0
Del Rio, Tex.....	167	81, 667	81, 834	252	81, 164	416	2	107
Douglas, Ariz.....	181	1, 058	1, 239	0	999	155	85	0
Eagle Pass, Tex.....	14, 321	439, 010	453, 331	2, 245	449, 617	1, 469	0	2, 455
El Paso, Tex. ¹	10, 015	4, 999, 763	5, 009, 778	25, 295	4, 980, 413	4, 070	0	3, 480
Hidalgo, Tex.....	1, 832	267, 185	269, 017	2	267, 053	1, 962	0	0
Laredo, Tex. ²	114, 150	1, 751, 801	1, 865, 951	1, 299	1, 853, 320	12, 631	0	1, 760
Naco, Ariz.....	31	3, 238	3, 269	0	2, 837	432	0	0
Nogales, Ariz.....	4, 067	2, 922	6, 989	64	6, 718	207	0	0
Presidio, Tex.....	174	61, 487	61, 661	98	58, 809	2, 754	0	0
Rio Grande City, Tex.....	232	6, 170	6, 402	0	6, 123	279	0	0
Roma, Tex.....	1, 304	45, 296	46, 600	0	46, 070	530	0	0
San Ysidro, Calif.....	2, 640	6, 057	8, 697	0	7, 693	1, 004	0	0
Thayer (Mercedes), Tex.....	42	33, 484	33, 526	21	33, 158	347	0	0
Zapata, Tex.....	291	12, 713	13, 004	0	11, 812	1, 192	0	0
Total.....	151, 783	8, 493, 410	8, 645, 193	29, 294	8, 588, 044	29, 044	110	7, 802

¹ Includes Fort Hancock, Gaudalupe Gate, and Ysleta.² Includes Minera and San Ygnacio.

TRANSACTIONS AT UNITED STATES AIRPORTS OF ENTRY FOR AIRPLANES FROM FOREIGN PORTS

TABLE 4.—Summary of transactions at continental and insular stations for the fiscal year 1936

Location	Name of airport	Distance in miles to nearest Public Health Service station	Date designated	Number of air-planes arriving from foreign ports	Number of air-planes 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	Municipal Airport ²		Apr. 8, 1929						
Alameda, Calif.	Alameda Seaplane Base ³		June 26, 1936	14	14	131	131	0	0
Albany, N. Y.	Municipal Field	10	Sept. 28, 1928	0	0	0	0	0	0
Bangor, Maine ¹	Bangor Municipal Airport ²		June 26, 1936						
Bellingham, Wash.	Graham Airport ²		Apr. 18, 1931	3	0	6	0	0	0
Brownsville, Tex.	Municipal Airport	5	Jan. 8, 1930	442	442	4,234	4,234	772	6
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	11	11	197	197	0	0
Crosby, N. Dak. ¹	Crosby Municipal Airport ²		June 28, 1934						
	Wayne County Airport	20	Feb. 10, 1931						
Detroit, Mich.	Detroit Municipal Airport ²	10	June 19, 1931	95	0	202	0	0	0
	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						
	Duluth Boat Club Seaplane Base ²		do.	1	0	4	0	0	0
Eagle Pass, Tex.	Eagle Pass Airport ²	1½	Mar. 5, 1930	0	0	0	0	0	0
El Paso, Tex.	Municipal Airport	9	Aug. 23, 1932	76	76	414	414	168	1
Fairbanks, Alaska ¹	Weeks Municipal Airfield ²		Apr. 1, 1935						
Glendale, Calif.	Grand Central Air Terminal ³	12		155	155	1,119	1,119	0	0
Great Falls, Mont. ¹	Great Falls Municipal Airport ²		June 2, 1930						
Havre, Mont.	Havre Municipal Airport ²		do.						
Honolulu, T. H.	Honolulu Airport ³			12	12	208	208	3	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	0	0	0	0	0	0
Lakehurst, N. J.	U. S. Naval Airport ³	50		3	3	296	296	234	0

¹ No medical officer of Public Health Service on duty.

² Temporary permission.

³ Authorized for use but not officially designated.

TABLE 4.—Summary of transactions at continental and insular stations for the fiscal year 1936—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
Laredo, Tex.....	Laredo Airdrome ¹	3½	Jan. 24, 1930	12	12	29	29	5	0
Malone, N. Y.....	Malone Airport ¹		Apr. 18, 1930	1	0	4	0	0	0
	Pan American Field.....	14	Oct. 16, 1928	7	7	19	19	0	0
Miami, Fla.....	Dinner Key Seaplane Base ¹	11	Mar. 7, 1930	1,034	1,034	20,169	20,169	3,684	36
	Viking Airport and Seaplane Base ¹	4	May 16, 1934	144	144	459	459	37	0
Nogales, Ariz.....	Nogales Municipal Airport.....	7	June 27, 1929	22	22	55	55	0	0
Ogdensburg, N. Y.....	Ogdensburg Harbor ¹		Mar. 1, 1932	1	0	2	0	0	0
Pembina, N. Dak.....	Fort Pembina Airport ¹	5	Feb. 2, 1930	376	0	1,383	0	0	0
Plattsburg, N. Y. ¹	Mobodo Airport ¹		June 2, 1930						
Portal, N. Dak.....	Portal Airport ¹		Jan. 8, 1930	0	0	0	0	0	0
Port Angeles, Wash.....	Port Angeles Airport ¹	52	do.....	0	0	0	0	0	0
Port Townsend, Wash.....	Port Townsend Airport ¹	6	June 18, 1930	0	0	0	0	0	0
Put-in-Bay, Ohio ¹	Put-in-Bay Airport ¹		Mar. 12, 1934						
Rouses Point, N. Y.....	Rouses Point Seaplane Base ¹		July 14, 1932	0	0	0	0	0	0
St. Thomas, V. I.....	St. Thomas Airport ¹			53	53	915	915	0	0
San Diego, Calif.....	San Diego Municipal Airport.....	6	Jan. 24, 1930	261	21	855	68	4	0
San Juan, P. R.....	Isla Grande ¹		Jan. 19, 1929	287	230	3,594	3,480	625	1
Sault Ste. Marie, Mich.....	Sault Ste. Marie Airport ¹		Aug. 4, 1933	0	0	0	0	0	0
Scobey, Mont.....	Scobey Airport ¹		June 2, 1930	0	0	0	0	0	0
Seattle, Wash.....	Boeing Municipal Air Field.....		Sept. 11, 1928						
	Lake Union.....		Dec. 27, 1928	768	0	2,952	0	0	0
Skagway, Alaska ¹	Skagway Municipal Airport ¹		Nov. 30, 1931						
	Skagway Seaplane Base ¹		do.....						
Spokane, Wash. ¹	Spokane Municipal Airport ¹		June 2, 1931						
Swanton, Vt. ¹	Missisquoi Airport ¹		July 18, 1930						
Tampa, Fla.....	International Airport ¹	7	Dec. 1, 1933	0	0	0	0	0	0
Watertown, N. Y. ¹	Watertown Municipal Airport ¹		June 2, 1930						
West Palm Beach, Fla.....	Roosevelt Flying Service Base ¹		Mar. 10, 1931	45	45	105	105	5	0
Wrangell, Alaska.....	Wrangell Seaplane Base ¹		Nov. 30, 1931	0	0	0	0	0	0
Total.....				3,823	2,281	37,352	31,898	5,537	44

¹No medical officer of Public Health Service on duty.

²Temporary permission.

³Authorized for use but not officially designated.

CANAL ZONE

TABLE 5.—*Quarantine activities of the government of the Canal Zone during the fiscal year 1936*¹

Activities	Balboa	Cristobal	Total
Vessels boarded and passed.....	2, 882	3, 416	6, 298
Vessels granted pratique by radio.....	173	52	225
Total number of vessels passed.....	3, 055	3, 468	6, 523
Crew passed at quarantine.....	146, 376	223, 572	369, 948
Crew passed by radio.....	58, 182	10, 158	68, 340
Total number of crew passed.....	204, 558	233, 7 0	438, 288
Passengers passed at quarantine.....	46, 637	95, 131	141, 768
Passengers passed by radio.....	3, 363	959	4, 322
Total number of passengers passed.....	50, 000	96, 0 0	146, 090
Supplementary sanitary inspections of vessels.....	1, 468	2, 579	4, 047
Vessels fumigated with HCN gas.....	21	46	67
Box cars fumigated with HCN gas.....	107	146	253
Fumigation certificates issued to vessels.....	21	46	67
Deratization exemption certificates issued.....	3	4	7
Rodents recovered after fumigation.....	147	51	198
Airplanes inspected and passed.....	158	332	470
Crew of airplanes inspected and passed.....	523	1, 041	1, 564
Passengers of airplanes inspected and passed.....	949	1, 428	2, 377
Vessels detained in quarantine.....	2	0	2
Crew detained on board ship for quarantine.....	96	0	96

¹ Surg. O. E. Denney, 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 1936*

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.....	66	1	2	2	0	5	11, 566	0	34	33	7	74
Beaufort, S. C.....	0	0	0	0	0	0	0	0	0	0	0	0
Boston, Mass.....	5, 768	4	7	158	0	169	54, 466	1	30	61	0	92
Brunswick, Ga.....	0	0	0	0	0	0	162	0	0	0	0	0
Charleston, S. C.....	79	0	0	0	0	0	3, 213	0	4	2	0	6
Fall River, Mass.....	0	0	0	0	0	0	29	0	0	0	0	0
Fernandina, Fla.....	0	0	0	0	0	0	64	0	0	0	0	0
Fort Monroe, Va. ²	403	0	0	5	0	5	7, 991	0	22	7	2	31
Fort Pierce, Fla.....	0	0	0	0	0	0	0	0	0	0	0	0
Georgetown, S. C.....	0	0	0	0	0	0	0	0	0	0	0	0
Gloucester, Mass.....	0	0	0	0	0	0	354	0	0	0	1	1
Jacksonville, Fla.....	26	0	0	0	0	0	1, 416	0	4	0	0	4
Key West, Fla.....	3, 946	1	0	25	0	26	1, 134	0	0	1	0	1
Lewes, Del.....	0	0	0	0	0	0	0	0	0	0	0	0
Miami, Fla.....	11, 535	11	2	63	4	80	14, 472	0	0	0	0	0
New Bedford, Mass.....	39	3	0	0	4	7	17	1	0	0	2	3
New London, Conn.....	0	0	0	0	0	0	6	6	0	0	0	6
Newport, R. I.....	0	0	0	0	0	0	0	0	0	0	0	0
New York, N. Y. (Ellis Island).....	135, 868	27	51	6, 610	10	6, 698	390, 225	2	180	3	0	185
Perth Amboy, N. J.....	0	0	0	0	0	0	1, 202	0	1	0	0	1
Philadelphia, Pa.....	103	0	0	1	0	1	19, 832	47	0	5	6	58
Plymouth, Mass.....	3	0	0	0	0	0	94	0	0	0	0	0
Port Everglades, Fla.....	234	0	0	0	0	0	2, 359	0	0	0	0	0
Portland, Maine.....	84	0	0	0	0	0	3, 412	0	3	0	0	3
Providence, R. I.....	4	0	0	0	0	0	875	0	5	0	1	6
Savannah, Ga.....	65	0	0	0	0	0	2, 187	0	1	0	0	1
Searsport, Maine.....	0	0	0	0	0	0	222	0	0	0	0	0
Vineyard Haven, Mass.....	0	0	0	0	0	0	0	0	0	0	0	0
Washington, N. C.....	0	0	0	0	0	0	0	0	0	0	0	0

¹ Class A-I: Aliens certified for idiocy, imbecility, feeble-mindedness, insanity, epilepsy, chronic alcoholism. Class A-II: A iens 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 1936—Continued*

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			
West Palm Beach, Fla.	16	0	0	0	0	0	0	0	0	0	0	
Wilmington, N. C.	0	0	0	0	0	0	0	0	0	0	0	
Total	158, 239	47	6	6, 864	18	6, 991	515, 504	57	284	112	19	472
GULF COAST												
Boca Grande, Fla.	2	0	0	0	0	0	220	0	0	0	0	0
Carrabelle, Fla.	0	0	0	0	0	0	303	0	0	0	0	0
Cedar Keys, Fla.	0	0	0	0	0	0	0	0	0	0	0	0
Corpus Christi, Tex.	0	0	0	0	0	0	1, 362	0	0	0	0	0
Galveston, Tex.	1, 250	0	0	0	0	0	15, 039	13	1	0	0	14
Gulfport, Miss.	0	0	0	0	0	0	316	0	0	0	0	0
Mobile, Ala.	31	0	0	1	0	1	3, 007	0	4	0	0	4
Morgan City, La. (Atchafalaya)	0	0	0	0	0	0	0	0	0	0	0	0
New Orleans, La.	1, 741	7	1	14	2	24	24, 594	4	66	11	17	98
Panama City, Fla.	3	0	0	0	0	0	140	0	0	0	0	0
Pascagoula, Miss.	0	0	0	0	0	0	0	0	0	0	0	0
Pensacola, Fla.	5	0	0	0	0	0	958	0	10	0	0	10
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.	18	0	0	0	0	0	10, 337	0	15	0	2	17
Tampa, Fla.	181	0	0	2	0	2	2, 876	0	7	0	0	7
Total	3, 231	7	1	17	2	27	59, 152	17	103	11	19	150
PACIFIC COAST												
Aberdeen, Wash.	1	0	0	0	0	0	299	0	0	0	0	0
Angel Island, Calif. (San Francisco)	6, 902	0	13	166	21	200	3, 258	1	23	3	0	27
Astoria, Ore.	52	0	0	0	0	0	1, 827	0	6	1	0	7
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
Los Angeles, Calif.	4, 704	3	7	196	1	207	51, 556	4	87	83	3	177
Marshfield, Oreg. (Coos Bay)	0	0	0	0	0	0	603	0	0	0	0	0
Monterey, Calif.	0	0	0	0	0	0	0	0	0	0	0	0
Portland, Oreg.	6	0	1	0	0	1	310	0	0	0	0	0
San Diego, Calif.	993	4	6	2	0	12	6, 081	0	0	0	0	0
San Luis Obispo, Calif.	2	0	0	0	0	0	1, 887	0	1	0	1	2
Santa Barbara, Calif.	0	0	0	0	0	0	0	0	0	0	0	0
Seattle, Wash.	4, 224	2	3	22	4	31	12, 640	0	4	1	0	5
South Bend, Wash.	0	0	0	0	0	0	745	0	0	0	0	0
Total	16, 884	9	30	386	26	451	79, 206	5	121	88	4	218
INSULAR												
Alaska:												
Ketchikan	0	0	0	0	0	0	0	0	0	0	0	0
Hawaii:												
Honolulu	3, 643	0	14	55	7	76	33, 190	0	27	5	0	32
Philippines:												
Cebu	4	0	0	0	0	0	0	0	0	0	0	0
Davao	119	0	1	0	0	1	0	0	0	0	0	0
Iloilo	8	0	0	0	0	0	1	0	0	0	0	0
Jolo	129	0	0	0	0	0	0	0	0	0	0	0
Legaspi	0	0	0	0	0	0	0	0	0	0	0	0
Manila	23, 846	0	34	31	0	65	104	0	0	0	0	0
Zamboanga	167	0	0	0	0	0	0	0	0	0	0	0
Total	24, 273	0	35	31	0	66	105	0	0	0	0	0
Puerto Rico:												
Aguedilla	6	0	0	0	0	0	85	0	0	0	0	0
Arecibo	0	0	0	0	0	0	0	0	0	0	0	0
Arroyo	0	0	0	0	0	0	7	0	0	0	0	0
Central Aguirre (Jobos)	0	0	0	0	0	0	0	0	0	0	0	0
Fajardo	12	0	0	0	0	0	238	0	0	0	0	0
Guanica	13	0	0	0	0	0	409	1	0	0	0	1
Humacao	0	0	0	0	0	0	6	0	0	0	0	0
Mayaguez	110	0	0	0	0	0	491	0	0	0	0	0
Ponce	94	0	0	0	0	0	910	0	1	0	0	1
San Juan	6, 238	1	0	5	5	11	13, 688	0	3	0	0	3
Total	6, 473	1	0	5	5	11	15, 834	1	4	0	0	5
Total, all stations	212, 743	64	142	7, 358	58	7, 622	702, 991	80	539	216	42	877

¹ Includes all ports on Puget Sound.

TABLE 7.—Aliens inspected and certified at international border stations during the fiscal year 1936

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	949	949	2	2	0	0	0
Brownsville, Tex.....	251	338	482	1,071	64	5	10	32	17
Calexico, Calif.....	392	86	18,015	18,493	120	5	48	28	39
Columbus, N. Mex.....	6	134	971	1,111	0	0	0	0	0
Del Rio, Tex.....	45	0	5,830	5,875	2	0	1	1	0
Douglas, Ariz.....	39	6	1,194	1,239	118	12	47	39	20
Eagle Pass, Tex.....	351	0	6,121	6,472	44	8	2	12	22
El Paso, Tex. ¹	330	4,745	7,180	12,255	1,078	51	205	776	46
Hidalgo, Tex.....	19	4	486	509	71	0	17	18	36
Laredo, Tex.....	957	1,302	40,659	42,918	298	5	34	253	6
Naco, Ariz.....	31	0	3,238	3,269	266	17	54	88	107
Nogales, Ariz.....	259	27	2,640	2,926	429	10	94	223	102
Presidio, Tex.....	1	11	836	848	239	1	16	95	127
Rio Grande City, Tex.....	14	0	242	256	7	0	2	2	3
Roma, Tex.....	0	0	28	28	5	0	0	3	2
San Ysidro, Calif.....	373	897	7,427	8,697	220	6	22	192	0
Thayer (Mercedes), Tex.....	3	0	205	208	19	0	2	7	10
Tucson, Ariz.....	0	0	253	253	72	18	34	15	5
Zapata, Ariz.....	0	74	217	291	0	0	0	0	0
Total.....	3,071	7,624	96,973	107,668	3,054	140	588	1,784	542
CANADIAN BORDER									
Bellingham, Wash.....	0	0	0	0	0	0	0	0	0
Blaine, Wash.....	402	0	502	994	156	13	3	59	81
Buffalo, N. Y.....	102	669	43	814	149	21	6	50	72
Calais, Maine.....	140	0	0	140	11	1	0	8	2
Chicago, Ill.....	0	0	13	13	13	0	7	6	0
Detroit, Mich.....	1,837	1,039	1,302	4,178	636	135	24	477	0
Duluth, Minn.....	0	487	1,078	1,565	0	0	0	0	0
Eastport, Idaho.....	204	249	0	453	22	0	1	21	0
Eastport, Maine.....	30	0	69,817	69,847	2	0	0	1	1
Erie, Pa.....	0	0	0	0	0	0	0	0	0
Halifax, N. S., Canada.....	264	276	57	597	299	2	8	90	199
Havre, Mont.....	0	10	0	10	1	1	0	0	0
Houlton, Maine.....	18	6	38	62	8	3	0	3	2
International Falls, Minn.....	68	3,260	353,864	357,192	39	4	0	34	1
Jackman, Maine.....	71	0	85	156	67	4	2	16	45
Lewiston, N. Y.....	28	228	11,392	11,648	19	3	0	8	8
Malone, N. Y.....	7	16	25	48	17	5	0	0	12
Montreal, Canada.....	2,758	0	0	2,758	594	37	0	468	89
Newport, Vt.....	186	117	357	660	200	8	1	12	179
Niagara Falls, N. Y.....	249	222	851	1,322	33	5	2	18	8
Noyes, Minn.....	0	0	5	5	3	1	0	2	0
Ogdensburg, N. Y.....	11	13	0	24	10	1	0	5	4
Oroville, Wash.....	9	17	33,366	33,392	0	0	0	0	0
Portal, N. Dak.....	8	0	10	18	9	4	0	1	4
Port Angeles, Wash.....	0	3	0	3	0	0	0	0	0
Port Huron, Mich.....	162	169	594	925	138	16	1	88	33
Quebec, Canada.....	510	2,119	740	3,369	324	1	0	246	77
Rouses Point, N. Y.....	92	0	216	308	43	10	6	23	4
St. Albans, Vt.....	36	0	29	65	15	3	0	6	6
St. John, N. B., Canada.....	346	218	0	564	48	6	0	27	15
Sault Ste. Marie, Mich.....	0	0	0	0	0	0	0	0	0
Scobey, Mont.....	6	0	0	6	0	0	0	0	0
Sumas, Wash.....	13	28	28	69	21	2	3	16	0
Sweetgrass, Mont.....	185	4,337	0	4,522	0	0	0	0	0
Van Buren, Maine.....	23	2	0	25	2	0	0	0	2
Vanceboro, Maine.....	218	1,143	15	1,376	0	0	0	0	0
Vancouver, B. C., Canada.....	0	644	0	644	132	9	5	117	1
Victoria, B. C., Canada.....	205	149	0	354	62	1	0	32	29
Winnipeg, Man., Canada.....	1,497	391	3,954	5,842	1,335	10	20	1,109	196
Yarmouth, N. S., Canada.....	3	3	16	22	22	8	1	13	0
Total.....	9,688	15,815	478,487	503,990	4,430	314	90	2,956	1,070
Total, all stations.....	12,759	23,439	575,460	611,658	7,484	454	678	4,740	1,612

¹ Includes Fort Hancock, Guadalupe Gate, and Ysleta.

TABLE 8.—*Alien seamen inspected and certified at international border stations during the fiscal year 1936*

Place	Number of alien seamen examined	Alien seamen certified				
		Class A		Class B	Class C	Total
		I	II			
Bellingham, Wash.....	438	0	0	0	0	0
Brownsville, Tex.....	20	0	0	0	0	0
Buffalo, N. Y.....	16,502	1	0	59	102	162
Chicago, Ill.....	1,001	0	4	35	3	42
Duluth, Minn.....	133	0	0	3	0	3
Eastport, Maine.....	228	0	0	0	0	0
Erie, Pa.....	622	0	0	0	0	0
Lewiston, N. Y.....	136	0	0	0	2	2
Ogdensburg, N. Y.....	200	1	0	3	0	4
Port Angeles, Wash.....	76	0	0	0	0	0
Port Huron, Mich.....	359	2	0	21	6	29
Sault Ste. Marie, Mich.....	50	0	0	0	0	0
Total.....	19,765	4	4	121	113	242

TABLE 9.—*Number and character of the mandatorily excludable conditions certified at United States ports during the fiscal year 1936*

	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.....	72	54	68	115	81	57	130	167	191	27	282	94	1,338
Alien seamen.....	1	2	9	1	2	0	14	13	186	103	290	6	627

TABLE 10.—*Summary of medical inspection of aliens, fiscal year 1936*

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.....	78,625	971	78,043	7	6	552	17	582
Second.....	21,303	418	21,019	3	1	278	2	284
Third.....	92,251	4,238	89,473	12	73	2,662	31	2,778
Stowaways.....	280	214	251	4	9	15	1	29
Warrant cases.....	3,313	2,013	3,018	38	52	198	7	295
Total.....	195,772	7,854	191,804	64	141	3,705	58	3,968

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)					Certified on arrival (condition not noted abroad)					Total certified
					A-I	A-II	B	C	Number certified	A-I	A-II	B	C	Number certified	
First.....	6,023	118	5,740	5,737	0	0	283	0	283	0	1	2	0	3	286
Second.....	1,845	81	1,529	1,528	0	0	316	0	316	0	0	1	0	1	317
Third.....	9,103	142	6,052	6,052	0	0	3,051	0	3,051	0	0	0	0	0	3,051
Total..	16,971	341	13,321	13,317	0	0	3,650	0	3,650	0	1	3	0	4	3,654

TABLE 10.—Summary of medical inspection of aliens, fiscal year 1936—Continued

GROUP III.—ALIEN SEAMEN EXAMINED ON ARRIVAL

	Total examined	Intensively examined	Passed	Certified				Total certified
				A-I	A-II	B	C	
Alien crew.....	702, 882	143, 145	702, 005	80	539	216	42	877
Workaways.....	109	0	109	0	0	0	0	0
Total.....	702, 991	143, 145	702, 114	80	539	216	42	877

CANADIAN AND MEXICAN BORDER 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	
Statistical, making permanent entry (bona fide immigrants).....	12, 632	9, 486	10, 811	139	32	1, 144	506	1, 821
Statistical, making temporary entry.....	21, 789	5, 401	20, 610	93	70	826	190	1, 179
Nonstatistical, making entry (local crossers, etc.).....	570, 908	14, 928	567, 296	108	366	2, 325	813	3, 612
Warrant cases.....	3, 789	3, 663	3, 084	111	210	286	98	705
Total.....	609, 118	33, 478	601, 801	451	678	4, 581	1, 607	7, 317

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).....	145	145	126	123	0	0	16	3	19
Statistical, making temporary entry.....	1, 653	1, 653	1, 651	1, 541	2	0	0	0	2
Nonstatistical, making entry (local crossers, etc.).....	742	742	742	709	0	0	0	0	0
Total.....	2, 540	2, 540	2, 519	2, 373	2	0	16	3	21

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	1	2	3	22
Statistical, making temporary entry.....	1	0	109	0	110	112
Nonstatistical, making entry (local crossers, etc.)..	0	0	33	0	33	33
Total.....	1	0	143	2	146	167

TABLE 11.—*Distribution, according to class, of applicants for immigration visas who were medically examined during the fiscal year 1936*

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.....	633	260	373	0	41.1	58.9	0
Canada, total.....	11,883	3,275	7,258	1,350	27.6	61.1	11.3
Montreal.....	4,105	897	2,348	860	21.8	57.2	21.0
Quebec.....	400	3	397	0	.8	99.2	0
Toronto.....	2,315	1,137	1,178	0	49.1	50.9	0
Vancouver.....	1,112	362	749	1	32.5	67.4	.1
Windsor.....	2,621	716	1,905	0	27.3	72.7	0
Winnipeg.....	1,141	155	497	489	13.6	43.5	42.9
Yarmouth.....	189	5	184	0	2.6	97.4	0
All countries, Western Hemisphere.....	12,516	3,535	7,631	1,350	28.2	61.0	10.8
EASTERN HEMISPHERE							
Europe, total.....	25,931	17,553	8,370	8	67.67	32.3	.03
Belgium: Antwerp.....	745	642	103	0	86.2	13.8	0
England: London.....	2,041	1,403	638	0	68.7	31.3	0
Irish Free State: Dublin.....	555	290	258	7	52.2	46.5	1.3
Northern Ireland: Belfast.....	167	121	46	0	72.5	27.5	0
Scotland: Glasgow.....	344	148	195	1	43.0	56.7	.3
Germany, total.....	9,346	8,743	603	0	93.5	6.5	0
Berlin.....	2,981	2,805	176	0	94.1	5.9	0
Hamburg.....	1,461	1,307	154	0	89.5	10.5	0
Stuttgart.....	4,904	4,631	273	0	94.4	5.6	0
Holland: Rotterdam.....	601	548	53	0	91.2	8.8	0
Poland: Warsaw.....	1,045	599	446	0	57.3	42.7	0
Denmark: Copenhagen.....	271	219	52	0	80.8	19.2	0
Norway: Oslo.....	416	267	149	0	64.2	35.8	0
Sweden, total.....	422	252	170	0	59.7	40.3	0
Goteborg.....	217	121	96	0	55.8	44.2	0
Stockholm.....	205	131	74	0	63.9	36.1	0
Italy: Naples.....	7,620	2,522	5,098	0	33.1	66.9	0
Czechoslovakia: Prague.....	1,430	968	462	0	67.7	32.3	0
Austria: Vienna.....	928	831	97	0	89.3	10.7	0
Philippine Islands: Manila.....	172	111	61	0	64.5	35.5	0
All countries, Eastern Hemisphere.....	26,103	17,664	8,431	8	67.67	32.3	.03

TABLE 12.—*Distribution, according to sex, of applicants for immigration visas who were medically examined and notified for disabilities during the fiscal year 1936*

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.....	372	261	58.8	41.2	4.0	15.3	5.7	9.6
Canada, total.....	6,168	5,715	51.9	48.1	.6	13.8	.3	14.9
Montreal.....	2,046	2,059	49.8	50.2	.4	12.4	.3	14.8
Quebec.....	163	237	40.8	59.2	0	8.0	0	13.1
Toronto.....	1,317	998	56.9	43.1	1.0	9.0	.4	9.9
Vancouver.....	494	618	44.4	55.6	.2	11.9	.2	8.1
Windsor.....	1,440	1,181	54.9	45.1	.4	22.0	.2	21.2
Winnipeg.....	659	482	57.8	42.2	.9	12.9	.2	18.5
Yarmouth.....	49	140	25.9	74.1	0	14.3	0	20.7
All countries, Western Hemisphere.....	6,540	5,976	52.3	47.7	.8	13.9	.5	14.7
EASTERN HEMISPHERE								
Europe, total.....	11,229	14,702	43.3	56.7	1.9	21.0	2.3	19.4
Belgium: Antwerp.....	402	343	53.9	46.1	.3	22.4	.9	24.8
England: London.....	916	1,125	44.8	55.2	.02	10.5	.05	7.1
Irish Free State: Dublin.....	157	398	28.3	71.7	.6	15.9	.3	14.1
Northern Ireland: Belfast.....	70	97	41.9	58.1	0	22.9	3.1	21.7
Scotland: Glasgow.....	111	233	32.3	67.7	.9	17.1	1.3	15.0
Germany, total.....	4,540	4,806	48.6	51.4	1.5	27.2	.8	25.4
Berlin.....	1,519	1,462	50.9	49.1	.4	32.6	.8	32.5
Hamburg.....	682	779	46.7	53.3	.7	17.2	.5	17.6
Stuttgart.....	2,339	2,565	47.7	52.3	2.4	26.8	.9	23.9
Holland: Rotterdam.....	347	254	57.7	42.3	0	24.5	.8	25.6
Poland: Warsaw.....	486	559	46.5	53.5	1.2	17.9	4.5	21.3
Denmark: Copenhagen.....	132	139	48.7	51.3	.8	25.0	0	22.3
Norway: Oslo.....	157	259	37.7	62.3	2.5	26.1	.4	24.7
Sweden, total.....	198	224	46.9	53.1	.5	22.2	1.8	30.4
Goteborg.....	107	110	49.3	50.7	0	22.4	.9	31.8
Stockholm.....	91	114	44.4	55.6	1.1	22.0	2.6	28.9
Italy: Naples.....	2,768	4,852	36.3	63.7	3.7	15.5	4.5	8.8
Czechoslovakia: Prague.....	560	870	39.2	60.8	1.6	11.8	2.3	14.6
Austria: Vienna.....	385	543	41.5	58.5	4.4	19.6	1.1	19.0
Philippine Islands: Manila.....	95	77	55.2	44.8	2.1	2.1	0	1.0

TABLE 13.—Number and percentage of quota and nonquota applicants examined who were notified for different classes of disabilities during the fiscal year 1936

Country	Quota				Nonquota					
	Total number quota applicants examined	Number notified for—		Percentage of total examined who were notified for—		Total number non-quota 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.....	260	17	44	6.5	16.9	373	13	38	3.5	10.2
Canada.....	3,275	17	533	.5	16.3	7,258	28	1,049	.4	14.5
All countries Western Hemisphere.....	3,535	34	577	1.0	16.3	7,631	41	1,087	.5	14.2
EASTERN HEMISPHERE										
Europe, total.....	17,553	254	4,192	1.5	23.9	8,370	289	1,019	3.5	12.2
Belgium.....	642	4	146	.6	23.7	103	0	29	0	28.2
England.....	1,403	5	125	.4	8.8	638	3	53	.1	8.3
Irish Free State.....	290	1	53	.3	18.3	258	0	28	0	10.9
Northern Ireland.....	121	2	24	1.7	19.8	46	1	13	2.2	28.3
Scotland.....	148	4	29	2.7	19.6	195	0	25	0	12.8
Germany.....	8,743	98	2,332	1.1	26.8	603	8	126	1.3	20.9
Holland.....	548	2	146	.4	26.6	53	0	14	0	26.4
Poland.....	599	21	132	3.5	22.0	446	10	74	2.2	16.6
Denmark.....	219	1	50	.5	22.8	52	0	14	0	6.4
Norway.....	267	5	70	1.9	26.2	149	0	35	0	23.5
Sweden.....	252	4	72	1.6	28.4	170	1	40	.6	23.7
Italy.....	2,522	73	708	2.9	28.1	5,098	248	501	4.9	9.8
Czechoslovakia.....	968	13	140	1.3	14.5	462	16	53	3.5	11.5
Austria.....	831	21	165	2.5	19.9	97	2	14	2.1	14.4
Philippine Islands: Manila.....	111	2	2	1.8	1.8	61	0	1	0	1.6
All countries, Eastern Hemisphere.....	17,664	256	4,194	1.4	23.7	8,431	289	1,020	3.4	12.1

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 1936

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.....	5.2	16.2	9.2	18.4	3.0	14.6	4.0	5.2
Canada.....	.7	16.0	.3	16.8	.6	14.3	.2	14.5
All countries, Western Hemisphere.....	1.0	16.0	.9	16.9	.8	14.4	.4	14.2
EASTERN HEMISPHERE								
Europe, total.....	1.5	24.4	1.4	23.4	2.8	12.1	3.8	12.2
Belgium.....	.3	21.5	1.0	24.1	0	28.0	0	28.3
England.....	.02	1.1	.1	7.3	.03	9.4	.1	7.0
Irish Free State.....	0	17.9	.5	18.5	0	13.3	0	10.1
Northern Ireland.....	0	19.6	2.7	20.0	0	29.2	4.5	27.3
Scotland.....	2.6	25.6	2.8	17.4	0	12.7	0	12.9
Germany.....	1.5	27.6	.8	25.8	1.3	21.2	1.4	17.9
Holland.....	0	27.2	.9	25.8	0	29.0	0	22.7
Poland.....	1.6	18.9	5.8	25.6	.6	15.9	3.2	17.0
Denmark.....	.9	25.2	0	20.5	0	24.0	0	29.6
Norway.....	3.5	27.8	.6	27.2	0	29.5	0	20.9
Sweden.....	.8	25.9	2.1	30.7	0	17.4	1.2	29.8
Italy.....	1.0	10.0	1.9	18.1	1.5	3.5	3.4	6.3
Czechoslovakia.....	1.0	13.1	1.6	15.3	2.9	8.7	3.8	13.1
Austria.....	4.4	20.0	1.2	19.7	4.4	15.2	0	13.7
Philippine Islands: Manila.....	3.3	1.6	0	2.0	0	2.9	0	0

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 1936

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.....	30	82	4.7	13.0	30	11	4.7	1.7
Canada, total.....	50	1,705	.4	14.3	50	734	.4	6.2
Montreal.....	16	557	.4	13.6	16	250	.4	6.1
Quebec.....	0	44	0	11.0	0	12	0	3.0
Toronto.....	17	218	.7	9.4	17	93	.7	4.0
Vancouver.....	2	109	.2	9.8	2	0	.2	0
Winnipeg.....	8	567	.3	21.6	8	251	.3	9.6
Yarmouth.....	7	174	.6	15.2	7	112	.6	9.8
Yarmouth.....	6	36	0	19.0	0	16	0	8.5
All countries, Western Hemisphere.....	80	1,787	.6	14.3	80	745	.6	6.0
EASTERN HEMISPHERE								
Europe, total.....	543	5,211	2.1	20.1	543	1,055	2.1	4.1
Belgium: Antwerp.....	4	175	.5	23.5	4	84	.5	11.3
England: London.....	8	178	.4	8.7	8	37	.4	1.8
Irish Free State: Dublin.....	1	81	.2	14.6	1	6	.2	1.1
Northern Ireland: Belfast.....	3	37	1.8	22.2	3	6	1.8	3.6
Scotland: Glasgow.....	4	54	1.1	15.7	4	1	1.1	.03
Germany, total.....	106	2,458	1.1	26.3	106	602	1.1	6.4
Berlin.....	17	972	.6	32.6	17	475	.6	15.9
Hamburg.....	9	254	.6	17.4	9	8	.6	.6
Stuttgart.....	80	1,232	1.6	25.1	80	119	1.6	2.4
Holland: Rotterdam.....	2	160	.3	26.6	2	47	.3	7.8
Poland: Warsaw.....	31	206	2.9	19.7	31	15	3.0	1.4
Denmark: Copenhagen.....	1	64	.4	23.6	1	18	.4	6.6
Norway: Oslo.....	5	105	1.2	25.2	5	27	1.2	6.5
Sweden, total.....	5	112	1.1	26.5	5	29	1.1	6.8
Goteborg.....	1	59	.5	27.2	1	13	.5	6.0
Stockholm.....	4	53	2.0	25.9	4	16	2.0	7.8
Italy: Naples.....	321	1,209	4.2	15.9	321	94	4.2	1.3
Czechoslovakia: Prague.....	29	193	2.0	13.5	29	43	2.0	3.0
Austria: Vienna.....	23	179	2.5	19.0	23	46	2.5	4.9
Philippine Islands: Manila.....	2	3	1.2	1.7	2	1	1.2	.6

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 1936

Country	Quota						Nonquota					
	Number notified		Number refused visas		Percentage of notified cases re-fused visas		Number notified		Number refused visas		Percentage of notified cases re-fused 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.....	17	44	17	4	100	9.1	13	38	13	7	100	18.4
Canada.....	17	533	17	224	100	42.0	28	1,049	28	475	100	45.3
All countries, Western Hemisphere....	34	577	34	228	100	39.5	41	1,087	41	482	100	44.3
EASTERN HEMISPHERE												
Europe, total.....	254	4,192	254	952	100	22.7	289	1,019	289	103	100	10.1
Belgium.....	4	146	4	73	100	50.0	0	29	0	11	0	37.9
England.....	5	125	5	29	100	23.2	3	53	3	8	100	15.0
Irish Free State.....	1	53	1	4	100	7.5	0	28	0	2	0	7.1
Northern Ireland.....	2	24	2	2	100	8.3	1	13	1	4	100	30.8
Scotland.....	4	29	4	0	100	0	0	25	0	1	0	4.0
Germany.....	98	2,332	98	596	100	25.6	8	126	8	6	100	4.8
Holland.....	2	146	2	43	100	29.4	0	14	0	4	0	28.6
Poland.....	21	132	21	5	100	3.8	10	74	10	10	100	13.5
Denmark.....	1	50	1	17	100	34.0	0	14	0	1	0	7.1
Norway.....	5	70	5	23	100	32.9	0	35	0	4	0	11.4
Sweden.....	4	72	4	24	100	33.3	1	40	1	5	100	12.5
Italy.....	73	708	73	50	100	7.1	248	501	248	44	100	8.8
Czechoslovakia.....	13	140	13	40	100	28.6	16	53	16	3	100	5.7
Austria.....	21	165	21	46	100	27.0	2	14	2	0	100	0
Philippine Islands:												
Manila.....	2	2	2	1	100	50.0	0	1	0	0	0	0
All countries, Eastern Hemisphere....	256	4,194	256	953	100	22.7	289	1,020	289	103	100	10.1

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 1936

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.....	57	25	10	1	17.5	4.0
Canada, total.....	853	852	409	325	47.9	38.1
Montreal.....	253	304	117	133	46.2	43.8
Quebec.....	13	31	7	5	53.8	16.1
Toronto.....	119	99	65	28	54.6	28.3
Vancouver.....	59	50	0	0	0	0
Windsor.....	317	250	160	91	50.5	36.4
Winnipeg.....	85	89	56	56	65.9	62.9
Yarmouth.....	7	29	4	12	57.1	41.4
All countries, Western Hemisphere.....	910	877	419	326	46.0	37.2
EASTERN HEMISPHERE						
Europe, total.....	2,355	2,856	606	449	25.7	15.7
Belgium: Antwerp.....	90	85	50	34	55.6	40.0
England: London.....	97	81	26	11	26.8	13.5
Irish Free State: Dublin.....	25	56	4	2	16.0	3.6
Northern Ireland: Belfast.....	16	21	3	3	18.8	14.3
Scotland: Glasgow.....	19	35	1	0	5.2	0
Germany, total.....	1,238	1,220	344	258	27.8	21.1
Berlin.....	497	475	266	209	53.0	44.0
Hamburg.....	113	141	8	0	7.1	0
Stuttgart.....	628	604	70	49	1.1	8.1
Holland: Rotterdam.....	95	65	29	18	30.5	27.7
Poland: Warsaw.....	87	119	9	6	10.3	5.0
Denmark: Copenhagen.....	33	31	14	4	42.4	12.9
Norway: Oslo.....	41	64	15	12	36.6	18.8
Sweden, total.....	44	68	17	12	38.6	17.6
Goteborg.....	24	35	8	5	33.3	14.3
Stockholm.....	20	33	9	7	45.0	21.2
Italy: Naples.....	429	780	50	44	11.7	5.6
Czechoslovakia: Prague.....	66	127	19	24	28.8	18.9
Austria: Vienna.....	75	104	25	21	33.3	20.0
Philippine Islands: Manila.....	2	1	1	0	50.0	0
All countries, Eastern Hemisphere.....	2,357	2,857	607	449	25.8	15.7

TABLE 18.—*Number and percentage of quota and nonquota applicants of each sex who were refused visas for mental conditions during the fiscal year 1936*

Country	Quota						Nonquota					
	Male			Female			Male			Female		
	Number examined	Number re-refused	Percent re-refused	Number examined	Number re-refused	Percent re-refused	Number examined	Number re-refused	Percent re-refused	Number examined	Number re-refused	Percent re-refused
WESTERN HEMISPHERE												
Cuba.....	173	1	0.6	87	6	6.9	199	1	0.5	174	5	2.9
Canada.....	2,075	7	.3	1,200	3	.3	3,235	13	.4	4,023	6	.1
All countries, Western Hemisphere.....	2,248	8	.4	1,287	9	.7	3,434	14	.4	4,197	11	.3
EASTERN HEMISPHERE												
Europe, total.....	8,062	32	.4	9,491	61	.6	3,164	18	.6	5,206	70	1.3
Belgium.....	352	0	0	290	3	1.0	50	0	0	53	0	0
England.....	588	0	0	815	1	.1	328	0	0	310	3	1.0
Irish Free State.....	95	0	0	195	1	.5	60	0	0	198	0	0
Northern Ireland.....	46	0	0	75	1	1.3	24	0	0	22	0	0
Scotland.....	39	1	2.6	109	3	2.7	71	0	0	124	0	0
Germany.....	4,304	20	.5	4,439	12	.3	236	2	.8	367	2	.5
Holland.....	316	0	0	232	2	.9	31	0	0	22	0	0
Poland.....	322	2	.6	277	12	4.3	164	0	0	282	6	2.1
Denmark.....	107	0	0	112	0	0	25	0	0	27	0	0
Norway.....	113	1	.8	154	0	0	44	0	0	105	0	0
Sweden.....	112	1	.9	140	2	1.4	86	0	0	84	0	0
Italy.....	941	2	.2	1,581	8	.5	1,827	13	.7	3,271	49	1.5
Czechoslovakia.....	388	3	.8	580	10	1.7	172	3	1.7	290	10	.3
Austria.....	339	2	.6	492	6	1.2	46	0	0	51	0	0
Philippine Islands: Manila.....	61	1	1.6	50	0	0	34	0	0	27	0	0
All countries, Eastern Hemisphere.....	8,123	33	.4	9,541	61	.6	3,198	18	.6	5,233	70	1.3

TABLE 19.—Number and character of the mandatorily excludable conditions notified during the fiscal year 1936

Disease or defect	WESTERN HEMISPHERE									Total, all stations	
	Cuba: Habana	Canada							Total		
		Montreal	Quebec	Toronto	Vancouver	Windsor	Winnipeg	Yarmouth			
<i>Class A-I</i>											
Chronic alcoholism.....	0	0	0	1	0	0	0	0	0	1	1
Insanity.....	2	4	0	0	0	0	0	0	0	5	7
Mentally defective.....	5	6	0	2	1	1	1	0	0	10	15
Epilepsy.....	0	0	0	0	0	0	1	0	0	1	1
Feeble-mindedness.....	3	1	0	0	0	0	1	0	0	2	5
Constitutional psychopathic inferiority.....	3	2	0	4	1	3	1	0	0	11	14
Imbecility.....	0	0	0	0	0	0	0	0	0	0	0
Total, class A-I.....	13	13	0	7	2	4	4	0	0	30	43
<i>Class A-II</i>											
Leprosy.....	0	0	0	0	0	0	0	0	0	0	0
Trachoma.....	4	2	0	0	0	0	0	0	0	2	6
Tuberculosis, pulmonary.....	3	0	0	4	0	0	1	0	0	5	8
Tuberculosis, other forms.....	0	0	0	0	0	0	0	0	0	0	0
Ringworm.....	10	0	0	0	0	1	0	0	0	1	11
Veneral diseases.....	0	1	0	4	0	3	2	0	0	10	10
Total, class A-II.....	17	3	0	8	0	4	3	0	0	18	35
Grand total.....	30	16	0	15	2	8	7	0	0	48	78

EASTERN HEMISPHERE

Disease or defect	EASTERN HEMISPHERE													Total, all stations			
	Philippine Islands: Manila	Europe															
		Belgium	England	Irish Free State	Northern Ireland	Scotland	Germany	Holland	Poland	Denmark	Norway	Sweden	Italy		Czechoslovakia	Austria	Total
<i>Class A-I</i>																	
Chronic alcoholism.....	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	
Insanity.....	0	0	3	0	0	0	3	1	0	0	0	4	0	0	13	13	
Mentally defective.....	0	0	0	1	1	1	18	0	17	0	1	1	2	20	64	64	
Epilepsy.....	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	
Feeble-mindedness.....	1	3	0	0	0	0	4	1	3	0	0	0	64	6	3	84	85
Constitutional psychopathic inferiority.....	0	0	0	0	0	0	9	0	0	0	0	1	0	0	3	13	13
Imbecility.....	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	2	2
Total, class A-I.....	1	3	3	1	1	1	36	2	20	0	1	3	73	26	8	178	179
<i>Class A-II</i>																	
Leprosy.....	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Trachoma.....	0	0	1	0	1	0	15	0	8	0	0	1	235	2	3	266	266
Tuberculosis, pulmonary.....	0	1	1	0	1	0	27	0	3	0	3	1	6	1	5	49	49
Tuberculosis, other forms.....	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Ringworm.....	0	0	2	0	0	0	17	0	0	0	0	0	0	0	7	26	26
Veneral diseases.....	0	0	0	0	0	0	8	0	0	1	1	0	6	0	0	16	16
Total, class A-II.....	1	1	4	0	2	0	67	0	11	1	4	2	248	3	15	358	359
Grand total.....	2	4	7	1	3	1	103	2	31	1	5	5	321	29	23	536	538

DIVISION OF SANITARY REPORTS AND STATISTICS

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

Asst. Surg. Gen. R. C. Williams was relieved from duty in charge of the Division on May 31, 1936, and Medical Director Robert Olesen was detailed as Assistant Surgeon General in charge on June 1, 1936.

Throughout the fiscal year ended June 30, 1936, the Division of Sanitary Reports and Statistics acted as a clearing house for public health information. Data relating to outbreaks and the prevalence of diseases dangerous to the public health were collected from all available sources in the United States and foreign countries. The information was compiled, abstracted, or tabulated and made available to Federal, State, and local health officers by publication in the weekly Public Health Reports and by special bulletins.

Toward the close of the fiscal year the Office of Health Education was established under the direction of Senior Surg. R. R. Spencer. This office is concerned both with professional and lay health education. In addition to issuing a monthly periodical, "The Health Officer", courses of instruction were prepared for classes of commissioned Service officers. An institute for rural physicians in the State of Georgia was prepared, sponsored, and financed. In association with the Office of Education of the Department of the Interior, weekly radio lectures on health topics are being prepared.

MORBIDITY AND MORTALITY REPORTS

The collection of reports of cases of notifiable diseases through collaborating and assistant collaborating epidemiologists was continued. These are officers of State and local departments of health who are given appointments as officers of the Public Health Service for the purpose of collecting information as to the prevalence of communicable diseases and forwarding the data to the Public Health Service.

Weekly telegraphic reports were received from State health officers and weekly mail reports from health officers of cities of over 10,000 population. These reports give immediate information as to the incidence of the principal communicable diseases. Monthly reports from States give additional data and distributions of cases by counties.

Annual reports from States and cities give the numbers of cases of notifiable diseases and deaths from these diseases for the calendar year.

Reports from foreign countries are received from officers of the Public Health Service, American consular officers, the International Office of Public Health in Paris, the Pan American Sanitary Bureau, the health section of the League of Nations, and from other sources.

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 1933, 1934, and 1935.

CASES

Disease	Number of States ¹	Aggregate population (in thousands)			Cases			Cases per 100,000 population		
		1933	1934	1935	1933	1934	1935	1933	1934	1935
Chicken pox.....	45	116,379	117,472	118,351	230,969	233,207	249,394	198.5	198.5	210.7
Diphtheria.....	47	118,895	119,929	120,814	48,100	40,771	36,735	40.5	34.0	30.4
Influenza.....	47	118,895	119,929	120,814	-----	-----	-----	-----	-----	-----
Malaria.....	47	118,895	119,929	120,814	-----	-----	-----	-----	-----	-----
Measles.....	47	118,895	119,929	120,814	385,204	767,629	706,608	324.0	640.1	584.9
Meningococcus meningitis	40	112,305	113,088	113,875	2,788	2,260	5,224	2.5	2.0	4.6
Mumps.....	42	95,078	95,974	96,689	87,202	96,789	136,428	91.7	100.8	141.1
Pellagra.....	47	118,895	119,929	120,814	-----	-----	-----	-----	-----	-----
Pneumonia (all forms)....	46	114,577	115,603	116,439	-----	-----	-----	-----	-----	-----
Poliomyelitis.....	44	108,859	109,818	110,614	4,625	7,047	10,643	4.2	6.4	9.6
Scarlet fever.....	47	118,895	119,929	120,814	187,103	194,083	235,818	157.4	161.8	195.2
Smallpox.....	47	118,895	119,929	120,814	6,252	5,337	7,927	5.3	4.5	6.6
Tuberculosis (all forms)....	47	118,895	119,929	120,814	-----	-----	-----	-----	-----	-----
Tuberculosis (respiratory system).....	42	112,786	113,598	114,422	-----	-----	-----	-----	-----	-----
Typhoid fever and paratyphoid fever.....	47	118,895	119,929	120,814	22,291	21,353	17,651	18.7	17.8	14.6
Whooping cough.....	47	118,895	119,929	120,814	171,728	248,893	173,067	144.4	207.5	143.3

DEATHS

Disease	Deaths			Deaths per 100,000 population			Cases reported for each death registered		
	1933	1934	1935	1933	1934	1935	1933	1934	1935
Chicken pox.....	136	122	144	0.1	0.1	0.1	1,698	1,912	1,732
Diphtheria.....	4,679	4,020	3,646	3.9	3.4	3.0	10	10	10
Influenza.....	30,390	19,554	26,588	25.6	16.3	22.0	-----	-----	-----
Malaria.....	4,463	4,401	4,310	3.8	3.7	3.6	-----	-----	-----
Measles.....	2,056	5,935	3,551	1.7	4.9	2.9	187	129	199
Meningococcus meningitis	1,122	966	2,170	1.0	9.9	1.9	2	2	2
Mumps.....	47	61	71	.1	.1	.1	1,855	1,587	1,922
Pellagra.....	3,801	3,409	3,440	3.2	2.8	2.8	-----	-----	-----
Pneumonia (all forms)....	84,308	95,050	95,557	73.6	82.2	82.1	-----	-----	-----
Poliomyelitis.....	664	726	884	.6	.7	.8	7	10	12
Scarlet fever.....	2,234	2,218	2,393	1.9	1.8	2.0	84	88	99
Smallpox.....	35	21	24	(?)	(?)	(?)	179	254	330
Tuberculosis (all forms)....	70,267	67,298	65,574	59.1	56.1	54.3	-----	-----	-----
Tuberculosis (respiratory system).....	60,424	58,073	56,813	53.6	51.1	49.7	-----	-----	-----
Typhoid fever and paratyphoid fever.....	4,260	4,014	3,340	3.6	3.3	2.8	5	5	5
Whooping cough.....	4,018	6,857	4,351	3.4	5.7	3.6	43	36	40

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.

Limited personnel available for the work retarded the compilation and analysis of laws, ordinances, and regulations pertaining to public health. Some court decisions were digested and published and the collection of laws and regulations was continued.

NEGRO HEALTH WORK

The Negro Health Work of the Public Health Service was continued. The year 1936 National Negro Health Week reached an estimated total of over a million Negro members of organizations and families in all Southern and many Northern States and over 2,000 communities.

There were clean-up activities in over 50,000 homes, approximately 3,500 lectures were given to 4,000,000 people, and many thousands of health publications were distributed to the general population. More than 500 clinics provided health examinations and treatment to 75,000 children and adults. The reports of year-round activities initiated or stimulated by the National Negro Health Week include various progressive measures that cannot but enhance the facilities for health protection.

PUBLICATIONS ISSUED BY THE DIVISION

The fiftieth annual volume of the weekly Public Health Reports was completed with the issue of December 27, 1935. This is one of the oldest of regular Government periodical publications; it was first printed in 1878, under the title of "Bulletins of Public Health", and has been issued under the present title since 1895. The 52 numbers printed during the fiscal year comprised volume 50, part 2, and volume 51, part 1, and contained 1,828 pages of text and tabular matter exclusive of title pages and tables of contents, as compared with 1,751 pages in the fiscal year 1935, 1,578 pages in 1934, and 1,762 pages in 1933. In earlier years these annual volumes averaged approximately 3,000 pages. The reduction in size in recent years, of almost 50 percent, was made necessary by reduction in printing funds. It has been accomplished by suspending publication of some current statistical material, by condensing other tables, and by revising and condensing text articles as much as possible. The Public Health Reports is especially important as a medium of presenting current morbidity statistics for the use of health officers and others concerned, and of making a permanent record of these statistics for future use, and also as a journal for reporting the results of current research relating to the cause, prevention, and cure of disease and articles on health administration. The value of the Public Health Reports in these respects was retained to the greatest extent possible in the face of the handicap of reduced printing funds.

During the year 65 important articles published in the Public Health Reports were issued in separate form as reprints, thus providing a more extensive and more economical distribution of these articles to persons especially interested in the particular subjects and permitting the printing of additional copies for sale by the Superintendent of Documents. In the preceding fiscal year 60 such separates were issued, as compared with 50 in 1934. Formerly about 100 articles appearing in the Public Health Reports each year were issued as separates.

Five supplements to the Public Health Reports were issued during the year, as follows: No. 115, The Size Distribution of Industrial Dusts; No. 116, A List of Public Health Service Publications Suitable for General Distribution; No. 117, The Notifiable Diseases—Prevalence in States, 1934; No. 118, Experiments on the Tolerance and Addiction Potentialities of Dihydrodesoxymorphine-D ("Desomorphine"); and No. 119, The Notifiable Diseases—Prevalence in States, 1935.

New editions of 17 previously issued publications were secured during the year as the stock became exhausted and the interest in and demand for them justified the additional printing. About half of these publications required slight revision to bring them to date.

The Hospital News, a semimonthly journal containing articles dealing with the work in the marine hospitals and outpatient relief stations, was issued by this Division regularly during the year. The process of reproducing this material was changed from mimeographing to multilithing, which greatly improved the appearance and legibility of the pages. The Hospital News reproduces articles and reports 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, the purpose being to bring such information currently to the attention of the personnel engaged in hospital work. In achieving this purpose, it has definitely filled a long unsupplied need. While the Hospital News is conducted under the auspices of the Division of Marine Hospitals and Relief and the Division of Mental Hygiene, it is edited and issued by the Division of Sanitary Reports and Statistics. It is not a publication in the scientific sense of that word, as its distribution is limited to Public Health Service personnel and it is not for sale. The material used, however, justifies a wider distribution and a more permanent record, as many of the reports are definite contributions to clinical medicine and should be made available generally to persons interested in that field.

The National Negro Health Week publications—Bulletin, Leaflet, and Poster—were edited and issued by this Division during the year. These publications constitute an important part in the observance of this Health Week, the object of which is to improve the health of Negroes and the conditions under which they live by stimulating interest in health activities, intensive for 1 week, but with a year-round program, and by aiding community leaders in their efforts directed toward important local health problems.

PUBLICATIONS DISTRIBUTED AND EXHIBITS PREPARED

There were 83 new publications distributed by the Division, as compared with 79 during the preceding year. A total distribution of 248,243 copies of new publications and of editions of previously published documents was made. Of these, 153,529 were sent in response to individual requests for information and 84,714 were distributed to Service mailing lists.

Twenty-nine requests for the loan of stereopticon slides were received; and in response to these requests, 2,501 slides were lent to universities, health officers, public health lecturers, officials of the Public Health Service, and others.

In recent years the Public Health Service has had an appropriation for the preparation and display of exhibits relating to public health. The funds appropriated during this fiscal year, as in previous years, were inadequate, but an important exhibit on undulant fever was prepared and displayed at the annual meeting of the American Medical Association at Kansas City, Mo. Other exhibits of the Service were displayed at medical and public health meetings in various cities of the United States. Additional exhibit material was prepared and placed 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

1675. State and insular health authorities, 1934. Directory, with data as to appropriations and publications. March 1, 1935. 17 pages.
1678. Mottled enamel in Texas. By H. Trendley Dean, R. M. Dixon, and Chester Cohen. March 29, 1935. 18 pages; 2 plates.
1680. Studies of sewage purification. I. Apparatus for the determination of dissolved oxygen in sludge-sewage mixtures. By E. J. Theriault and Paul D. McNamee. April 5, 1935. 10 pages.
1681. Age incidence of illness and death considered in broad disease groups. Based on records for 9,000 families in 18 States visited periodically for 12 months, 1928-31. By Selwyn D. Collins. April 12, 1935. 19 pages.
1683. Mortality in certain States during 1934, with comparative data for recent years. April 26, 1935. 10 pages.
1684. Relation of sickness to income and income change in 10 surveyed communities. Health and depression studies no. 1: Method of study and general results for each locality. By G. St. J. Perrott and Selwyn D. Collins. May 3, 1935. 28 pages.
1685. City health officers, 1934. Directory of those in cities of 10,000 or more population. May 10, 1935. 17 pages.
1686. Studies of sewage purification. II. A zooglea-forming bacterium isolated from activated sludge. By C. T. Butterfield. May 17, 1935. 13 pages; 4 plates.
1687. A communicable disease meter. A device for recording and comparing the current incidence of communicable diseases. By Robert Olesen. May 24, 1935. 10 pages.
1688. Prevention of intranasally-inoculated poliomyelitis of monkeys by instillation of alum into the nostrils. By Charles Armstrong and W. T. Harrison. May 31, 1935. 6 pages.
1689. Protection of mice against meningococcus infection by polyvalent anti-meningococcal serum. By Sara E. Branham. June 7, 1935. 10 pages.
1690. The irritants in adhesive plaster. By Louis Schwartz and Samuel M. Peck. June 14, 1935. 9 pages.
1691. Benign lymphocytic choriomeningitis (acute aseptic meningitis). A new disease entity. By Charles Armstrong and Paul F. Dickens. June 21, 1935. 12 pages.
1692. Leprosy. The effect of a vitamin B₁ deficient diet on the incubation period of rat leprosy. By L. F. Badger and W. H. Sebrell. June 28, 1935. 9 pages.
1693. Report of the Committee on Milk, Conference of State and Provincial Health Authorities, 1935. July 19, 1935. 4 pages.
1694. 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, 1933, to June 30, 1935. July 26, 1935. 3 pages.
1695. Malaria epidemic in Aurora, Ohio. By R. N. Hoyt and R. D. Worden. July 5, 1935. 3 pages.
1696. Roentgenological appearances in silicosis and the underlying pathological lesions. Report by a committee composed of H. K. Pancoast, E. P. Pendergrass, A. R. Riddell, A. J. Lanza, Wm. J. McConnell, R. R. Sayers, H. L. Sampson, and L. U. Gardner. August 2, 1935. 8 pages.
1697. The control of communicable diseases. Report of a committee of the American Public Health Association. August 9, 1935. 61 pages.
1698. Dedication and opening of the Lexington Narcotic Farm. By W. L. Treadway. August 2, 1935. 5 pages.
1699. Public Health Service publications. A list of publications issued during the period January-June 1935. August 2, 1935. 4 pages.
1700. Control of rabies in New York City. By Robert Olesen. August 16, 1935. 20 pages.
1701. Height and weight of children of the depression poor. Health and depression studies no. 2. By Carroll E. Palmer. August 16, 1935. 7 pages.
1702. Acute response of guinea pigs to vapors of some new commercial organic compounds. VIII. Butanone. By F. A. Patty, H. H. Schrenk, and W. P. Yant. September 6, 1935. 12 pages.
1703. The maternity nursing service of a bicounty health department. Brunswick-Greenville health administration studies no. 5. Prepared by Pearl McIver. September 20, 1935. 16 pages.
1704. Directory of whole-time county health officers, 1935. September 20, 1935. 10 pages.

1705. The blacktongue-preventive value of 7 foodstuffs. By W. H. Sebrell, G. A. Wheeler, and D. J. Hunt. September 27, 1935. 9 pages.
1706. The accuracy of certified causes of death. Its relation to mortality statistics and the International List. (Report of the Committee, American Public Health Association.) September 13, 1935. 45 pages.
1707. Dust storms and their possible effect on health. With special reference to the dust storms in Kansas in 1935. By Earle G. Brown, Selma Gottlieb, and Ross L. Laybourn. October 4, 1935. 15 pages; 8 plates.
1708. Milk control and the United States Supreme Court. By James A. Tobey. October 4, 1935. 6 pages.
1709. A nonflammable pyrethrum spray for use in airplanes. By C. L. Williams and W. C. Dreessen. October 11, 1935. 4 pages.
1710. Age incidence of specific causes of illness. Based on records for 9,000 families in 18 States visited periodically for 12 months, 1928-31. By Selwyn D. Collins. October 11, 1935. 25 pages.
1711. Cultivation of the virus of Rocky Mountain spotted fever in the developing chick embryo. By Ida A. Bengtson and R. E. Dyer. October 25, 1935. 10 pages; 3 plates.
1712. The urinary excretion of silica by persons exposed to silica dust. By J. J. Bloomfield, R. R. Sayers, and F. H. Goldman. March 29, 1935. 4 pages.
1713. Disabling illness among industrial employees in 1934 as compared with earlier years. By Dean K. Brundage. November 1, 1935. 13 pages.
1714. Extent of rural health service in the United States, December 31, 1930-December 31, 1934. November 1, 1935. 16 pages.
1715. Studies of sewage purification. III. The clarification of sewage—A review. By Emery J. Theriault. November 8, 1935. 15 pages.
1716. Physical condition and unemployment. By Harold S. Diehl. November 15, 1935. 9 pages.
1717. Microscopic appearance of experimentally produced dust nodules in the peritoneum. By J. W. Miller and R. R. Sayers. November 15, 1935. 10 pages; 6 plates.
1718. Further studies of the effect of radium upon bacteria. By R. R. Spencer. November 22, 1935. 14 pages; 4 plates.
1719. A technique which completely excludes air contamination of bacterial cultures. By R. R. Spencer. November 22, 1935. 2 pages; 1 plate.
1720. Influenza and pneumonia mortality in a group of about 95 cities in the United States during four minor epidemics, 1930-35, with a summary for 1920-35. By Selwyn D. Collins and Mary Gover. November 29, 1935. 21 pages.
1721. Studies on the minimal threshold of the dental sign of chronic endemic fluorosis (mottled enamel). By H. Trendley Dean and Elias Elvove. December 6, 1935. 11 pages.
1722. Job analysis of a rural health officer. Brunswick-Greenville health administration studies no. 6. Prepared by J. O. Dean. December 13, 1935. 12 pages.
1723. Cost of local enforcement of the United States Public Health Service milk ordinance. By A. W. Fuchs and L. C. Frank. December 13, 1935. 5 pages.
1724. State and insular health authorities, 1935. Directory, with data as to appropriations and publications. December 20, 1935. 18 pages.
1725. The typhoid control program and results of 13 years' work in Williamson County, Tenn., 1922-35. By W. C. Williams and E. L. Bishop. January 3, 1936. 15 pages.
1726. City smoke and its effects. A statement prepared for the Congressional Subcommittee on Public Health, Hospitals, and Charities. January 3, 1936. 4 pages.
1727. Diets of low-income families surveyed in 1933. Health and depression studies no. 3. By Dorothy G. Wiehl. January 24, 1936. 21 pages.
1728. Calcium cyanide dust in ship fumigation. By C. L. Williams. February 7, 1936. 4 pages.
1729. Milk-sanitation status of urban communities. Urban communities in which pasteurized milk is both properly produced and properly pasteurized, and in which raw milk is at least properly produced, as shown by ratings of 90 percent or more reported by the State milk-sanitation authorities during the period January 1, 1934, to December 31, 1935. February 7, 1936. 4 pages.

1730. Results of field studies with the Brodie poliomyelitis vaccine. By A. G. Gilliam and R. H. Onstott. February 14, 1936. 12 pages.
1731. The place of mental hygiene in a Federal health program. By Walter L. Treadway. February 21, 1936. 13 pages.
1732. Prevention of experimental intranasal infection with certain neurotropic viruses by means of chemicals instilled into the nostrils. By Charles Armstrong and W. T. Harrison. February 28, 1936. 13 pages.
1733. Prevention of intravenously inoculated poliomyelitis of monkeys by intranasal instillation of picric acid. By Charles Armstrong. March 6, 1936. 3 pages.
1734. Biological products. Establishments licensed for the propagation and sale of viruses, serums, toxins, and analogous products. March 6, 1936. 6 pages.
1735. The official United States and international unit for standardizing gas gangrene antitoxin (oedematiens). By Ida A. Bengtson. March 13, 1936. 10 pages.
1736. Results of a dental examination of 1,908 white and colored males at the Ohio State Reformatory. By W. M. Gafafer and C. T. Messner. March 27, 1936. 12 pages.
1737. The picture of heart disease mortality obtained from vital statistics in Washington, D. C., during 1932. By O. F. Hedley. March 20, 1936. 14 pages.
1738. Changes in the incidence and fatality of smallpox in recent decades. By A. W. Hedrich. April 3, 1936. 30 pages.
1739. Acute response of guinea pigs to vapors of some new commercial organic compounds. IX. Pentanone (methyl propyl ketone). By W. P. Yant, F. A. Patty, and H. H. Schrenk. April 3, 1936. 8 pages.

SUPPLEMENTS

115. The size distribution of industrial dusts. By J. J. Bloomfield. 1935. 9 pages.
116. Some Public Health Service publications suitable for general distribution. 1935. 23 pages.
117. The notifiable diseases. Prevalence in States, 1934. 1935. 12 pages.

PUBLIC HEALTH BULLETINS

217. The determination and control of industrial dust. By J. J. Bloomfield and J. M. Dalla Valle. April 1935. 167 pages.
218. Studies in illumination. IV. Daylight in buildings. A study of the effect of the height and width of windows and of the reflecting power of the walls and ceiling upon the natural illumination within a building. By James E. Ives, Frederick L. Knowles, and Lewis R. Thompson. April 1935. 52 pages.
220. Public Health Service milk ordinance and code. July 1935. 114 pages.
221. Anthraco-silicosis among hard coal miners. Engineering studies by J. J. Bloomfield and J. M. Dalla Valle; medical studies by R. R. Jones and Waldemar C. Dreessen; statistical analysis by Dean K. Brundage and Rollo H. Britten. With sections on autopsy material by J. W. Miller and on silica in the urine and in lung specimens by F. H. Goldman. December 1935. 114 pages; 45 plates.
222. History of county health organizations in the United States 1908-33. Compilation by John A. Ferrell and Pauline A. Mead. March 1936. 469 pages.
223. Observations on Indian health problems and facilities. By Joseph W. Moun-
tain and J. G. Townsend. February 1936. 47 pages.
224. Atmospheric pollution of American cities for the years 1931-33. With special reference to the solid constituents of the pollution. By James E. Ives, Rollo H. Britten, David W. Armstrong, W. A. Gill, and Frederick H. Goldman. March 1936. 75 pages.
225. Some features of tuberculosis mortality distribution in the United States. By L. L. Lumsden and C. C. Dauer. March 1936. 39 pages.
226. Dental survey of school children, ages 6 to 14 years made in 1933-34 in 26 States. By C. T. Messner, W. M. Gafafer, F. C. Cady, and H. T. Dean. May 1936. 248 pages.

NATIONAL INSTITUTE OF HEALTH BULLETINS

165. I. A method for quantitating neuromuscular irritability. The effect of certain drugs on the neuromuscular apparatus. By Maurice I. Smith.
II. The pharmacologic action of some alcoholic phosphoric esters. By Maurice I. Smith. June 1935. 29 pages.
166. Epidemic amebic dysentery. The Chicago outbreak of 1933. By Herman N. Bundesen, Joel I. Connolly, Isaac D. Rawlings, Arthur E. Gorman, George W. McCoy, and Albert V. Hardy. March 1936. 187 pages.

ANNUAL REPORT

Annual Report of the Surgeon General of the United States Public Health Service for the fiscal year 1935. 158 pages.

MISCELLANEOUS PUBLICATIONS

11. Official list of commissioned and other officers of the United States Public Health Service. January 1, 1936. 63 pages.
16. Nomenclature of diseases and conditions. 1935. 78 pages.

UNNUMBERED PUBLICATIONS

Index to Public Health Reports, volume 50, part 1, January-June 1935. 24 pages.

Index to Public Health Reports, volume 50, part 2, July-December 1935. 22 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-second annual observance. 1936. 8 page folder.

National Negro Health Week poster. Twenty-second annual observance. 1936.

National Negro Health Week leaflet. Twenty-second annual observance. 1936. 2 pages.

DIVISION OF MARINE HOSPITALS AND RELIEF

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




The marine hospitals and other relief stations continued to furnish outpatient and hospital treatment to American seamen and other legal beneficiaries in 154 ports of the United States and its possessions. Contracts were maintained with 197 hospitals located chiefly in ports not served by the 25 marine hospitals. At the close of the year 5,213 patients remained in the hospitals, including 159 insane in St. Elizabeths Hospital and 374 patients at the National Leper Home.

The volume of work shows a substantial increase. Marine hospitals and contract hospitals treated a daily average of 272 more patients than they did in 1935. As in the preceding year, operation of the hospitals was difficult, owing to inadequate appropriations and insufficient personnel. The ratio of personnel to patients in the average civilian hospital as reported by the American Hospital Association is $1\frac{1}{4}$ to 1, whereas in the United States marine hospitals it is only one-half this ratio; that is, 0.6 to 1. The 11 days additional leave of absence authorized during the year and the effort to decrease working hours make this ratio even more embarrassing. The increase in the number of beneficiaries treated, together with the steady rise in the cost of hospital supplies, made it necessary to request a deficiency appropriation of \$159,000. Medical officers in charge of the hospitals and relief stations were admonished during the year that funds would not be available for supplies, repairs, and replacements other than those considered urgently needed. In spite of this, it was necessary to carry forward into the new year requisitions totaling approximately \$100,000. In many cases repairs and replacements have been neglected to the point of hampering efficiency and causing an economic waste of property. This condition is deplorable and cannot go on indefinitely.

Recommendations for an increase in salary for personnel have repeatedly come from medical officers in charge. The recommendations were based on the fact that a promotion is a just reward for years of efficient and loyal service. These recommendations could not be approved for the reason that funds for such meritorious rewards were not available. This condition is lacking in justice. It is a hazard to the morale of the Service and should be remedied.

The per-diem cost during the year was of necessity kept down to the very low figure of \$3.39. The standard of care of patients was with much difficulty maintained at the usual high level, but the low per diem did not permit of reasonable working hours and normal leave for employees and normal replacement of equipment.

Seamen are the most numerous class of patients, but the customary medical services were furnished to the Coast Guard, Army, Navy, Employees' Compensation Commission, Civil Service Commission, Bureau of Navigation and Steamboat Inspection, Lighthouse establishment, Immigration Service, Coast and Geodetic Survey, Veterans' Administration, Bureau of Fisheries, Civilian Conservation Corps, Civil Works Administration, Public Works, and Works Progress

GROUP OF HOSPITALS	HOSPITAL LOCATION	COST PER PATIENT DAY				SALARIES  FOOD  OTHER 								
		RELIEF DAYS	TOTAL	SALARIES	FOOD	OTHER	1	2	3	4	5	6	7	8
GENERAL	Baltimore, Md.	107,350	\$2.96	\$1.93	\$0.39	\$0.64								
	Boston, Mass.	62,951	3.25	2.04	.40	.81								
	Buffalo, N.Y.	21,212	4.18	2.21	.39	1.58								
	Chicago, Ill.	66,240	4.17	2.99	.39	1.19								
	Cleveland, Ohio	71,740	3.37	2.12	.43	.82								
	Detroit, Mich.	79,524	3.12	1.88	.46	.79								
	Ellis Island, N.Y.	143,093	4.10	2.50	.44	1.06								
	Evansville, Ind.	25,481	3.95	2.11	.45	.97								
	Galveston, Texas	65,152	3.32	1.91	.45	.94								
	Key West, Fla.	15,575	4.56	2.12	.51	2.03								
	Louisville, Ky.	37,140	3.15	1.97	.44	.74								
	Memphis, Tenn.	40,320	3.46	1.81	.46	1.19								
	Mobile, Ala.	51,575	2.88	1.77	.38	.73								
	New Orleans, La.	146,215	3.15	2.00	.46	.70								
	Norfolk, Va.	96,249	3.03	1.80	.39	.84								
	Pittsburgh, Pa.	21,956	3.95	2.32	.40	1.24								
	Portland, Me.	16,919	4.81	3.09	.48	1.26								
	St. Louis, Mo.	35,974	3.19	1.82	.41	.96								
	San Francisco, Calif.	138,324	3.60	2.32	.42	.86								
	Savannah, Ga.	62,226	2.70	1.51	.38	.79								
Seattle, Wash.	124,317	2.93	1.81	.43	.71									
Stapleton, N.I.	122,514	3.73	2.33	.42	.98									
Wesmark Bay, Mass.	4,531	3.21	1.88	.48	.85									
New York, N.Y. (a)														
	Per diem cost for General Hospitals		3.41	2.09	.42	.90								
	Total Relief Days	1,571,929		Cost \$5,353,868.44										
TUBERCULOSIS SANATORIUM	Fort Stanton, N.M.	67,187	4.14	1.84	.68	1.62								
				Cost \$ 278,094.27										
LEPROSARIUM	Carville, La.	135,757	2.80	1.61	.41	.78								
				Cost \$ 380,274.15										
ALL	Per diem cost for all hospitals		3.39	2.04	.43	.92								
	Relief days for all hospitals	1,774,873		Cost \$6,012,236.86										

(a) In-patient department of station closed.

Average per-diem cost of inpatient relief, United States marine hospitals, fiscal year 1936.

Administration. In cooperation with the Civil Service Commission and the Immigration Service, medical officers of the Public Health Service were assigned as members of examining boards convening at various places in the United States for the purpose of giving oral mental examinations and physical examinations to applicants for the position of Border Patrol Inspector.

The Public Health Service also cooperated with other Government departments in Washington in furnishing emergency medical relief to employees and supervising 20 medical relief units in the Treasury Department and other agencies. During the year thorough physical examinations were given to more than 200 special agents in the Federal Bureau of Investigation, Department of Justice, to determine physical defects and physical fitness. These examinations are to be given every member of the corps and repeated periodically.

For a complete statement of relief furnished at each station and the customary collateral functions performed by the marine hospitals for the agencies listed above, see pages 113 to 117.

CLASSES OF BENEFICIARIES AND AMOUNT AND CHARACTER OF SERVICES RENDERED

Summary of services by class of beneficiary

Class of beneficiary	Hospital days		Outpatient treatments		Physical examinations (not related to treatment)		Remarks
	Number	Percent of total	Number	Percent of total	Number	Percent of total	
American merchant seamen.	1, 109, 748	58. 27	598, 761	46. 36	9, 063	8. 33	Communicable diseases are reported to local health officers.
Veterans.....	130, 539	6. 85	1, 202	. 09	1, 136	1. 04	Patients of the Veterans' Administration.
Lepers.....	136, 035	7. 14	7	-----	2	-----	National Leper Home, Carville, La.
Coast Guard personnel....	88, 325	4. 64	130, 206	10. 08	5, 149	4. 73	All medical services and supplies, ashore and afloat.
Injured Federal employees.	95, 451	5. 01	119, 837	9. 28	23, 741	21. 82	Patients of the Employees' Compensation Commission.
Immigrants.....	24, 487	1. 29	10, 759	. 83	1, 258	1. 16	Patients of the Bureau of Immigration.
Seamen, Engineer Corps and Army Transport Service.	43, 732	2. 30	23, 427	1. 81	1, 222	1. 12	Civilian employees on Army vessels.
Seamen from foreign vessels.	6, 058	. 32	867	. 07	44	. 04	Pay patients.
Seamen and keepers, Lighthouse Service.	14, 582	. 77	6, 772	. 52	161	. 15	Medical supplies also furnished to lighthouse vessels.
Civilian Conservation Corps.	170, 798	8. 97	1, 950	. 15	1, 252	1. 15	Patients of the Civilian Conservation Corps.
Civil Works Administration.	9, 429	. 49	1, 673	. 13	318	. 29	Patients of the Civil Works Administration.
Works Progress Administration.	48, 762	2. 56	82, 858	6. 42	17, 579	16. 16	Patients of the Works Progress Administration.
Alaska cannery workers leaving United States.	-----	-----	990	. 08	7, 277	6. 69	Vaccinations and other preventive measures.
Pilots and other licenses.....	-----	-----	-----	-----	7, 306	6. 72	For the Steamboat Inspection Service.
Civil Service applicants and employees.	-----	-----	-----	-----	25, 409	23. 35	For the Civil Service Commission.
Shipping Board.....	-----	-----	-----	-----	1, 357	1. 25	To determine fitness for sea duty.
All others entitled to treatment.	26, 395	1. 39	312, 307	24. 18	6, 533	6. 00	From Bureau of Fisheries, Army, Navy, Mississippi River Commission, Coast and Geodetic Survey, etc.
Total.....	1, 904, 341	100. 00	1, 291, 616	100. 00	108, 807	100. 00	



NEW UNITED STATES MARINE HOSPITAL AT STAPLETON, N. Y.



NEW INFIRMARY BUILDING AT THE NATIONAL LEPROSARIUM, CARVILLE, LA.

DENTAL TREATMENT

During the fiscal year 173,271 beneficiaries of the Service were given dental treatment by full-time officers at an average cost of \$1.58 per patient. Had the dental treatment rendered at these stations been procured at authorized fees by contract dentists instead of by Service personnel, the average cost would have been \$6.97 per patient. The major items of treatment and a comparison with the preceding fiscal year are shown in the following list:

	1935	1936
Number of patients treated.....	174,353	173,271
X-rays.....	39,207	37,889
Prophylactic treatments (hours).....	14,406	19,621
Vincent's stomatitis treatments (hours).....	4,452	8,944
Pyorrhoea treatments (hours).....	4,449	6,472
Extractions.....	83,189	82,877
Alveolectomies.....	2,177	3,694
Alloy fillings.....	47,081	45,219
Gold inlays.....	1,142	1,220
Porcelain crowns.....	132	127
Silicate cement fillings.....	20,554	19,652
Dentures (full and partial).....	6,974	8,533
Fracture cases (hours).....	1,463	1,048
Number of treatments (out-patient).....	478,444	514,621
Number of treatments (in-patient).....	199,014	184,122
Total number of treatments.....	677,458	698,743

The amount of treatment rendered by the full-time dental officers shows a slight increase over last year. In addition 2,491 beneficiaries were treated at 36 smaller stations by contract dentists on a fee basis, at a total cost to the Service of \$12,606.17, or an average of \$5.06 per patient.

An allotment of \$7,770 was made from Social Security funds for this fiscal year for the study of focal infection. The study is being conducted at the United States Marine Hospital, Baltimore, Md. Plans have been made to provide dental care to Coast Guard personnel at isolated stations by means of an automobile and trailer dental unit.

COAST GUARD

The average number of Coast Guard beneficiaries on active duty and retired was 10,748. A summary of medical services furnished in recent years is shown in the following table:

Year	Numerical strength of Coast Guard and medical services given				Average amount of medical services 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	32,350	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	198,809	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
1936.....	10,748	88,325	130,206	5,149	8.2	21.1	.5

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

As in the past, medical officers have been assigned to the cutters on the International Ice Patrol in the North Atlantic and to the cutters comprising the Bering Sea Patrol force operating in the North Pacific. Medical officers are assigned to the vessels basing at Honolulu, Territory of Hawaii, San Juan, P. R., Juneau and Cordova, Alaska.

A medical officer and a dental officer are assigned to duty ashore at the Unalaska Coast Guard Dispensary, Unalaska, Alaska, in order to render relief to beneficiaries of the small craft operating out of that port. This year a medical officer held sick call at the Indian Affairs Hospital at Unalaska; and by using this hospital, the medical service is vastly improved as compared with the service rendered in the Coast Guard dispensary on the dock in previous years.

Seven new cutters are under construction for the Coast Guard, all of which will have more elaborate hospital space than any vessels now in the Service. Three of these vessels, when commissioned, will be assigned outside the continental limits of the United States to replace older vessels now on foreign service. The equipment furnished these vessels will enable the medical officer assigned to render the greatest relief possible.

Medical Director A. J. McLaughlin served as chief medical officer of the Coast Guard the greater part of the year. He was relieved during the month of June by Medical Director H. McG. Robertson.

OPERATING COSTS IN MARINE HOSPITALS

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, 998, 210
0200	Janitor and laundry supplies, X-ray films, etc.....	74, 348
0210	Medical and hospital supplies.....	283, 276
0220	Scientific and educational supplies.....	5, 921
0230	Fuel.....	198, 610
0250	Forage.....	26, 739
0260	Provisions.....	1, 100, 968
0280	Sundry supplies.....	52, 298
03	Subsistence and support of persons (contract hospital care, etc.).....	335, 851
04	Care of animals and vehicles.....	117
0500	Telegraph service.....	1, 058
0510	Telephone service.....	28, 989
06	Travel expense.....	59, 873
07	Freight.....	60, 000
10	Furnishing heat, light, power, and water (service).....	211, 255
1100	Rent of buildings and offices.....	9, 791
1110	Other rents.....	6, 407
1280	Repairs and parts, motor vehicles.....	6, 619
1290	Repairs and alterations, other equipment.....	19, 084
1373	Laundry service.....	36, 260
1375	Ashes and garbage removal.....	2, 740

1380	Miscellaneous services.....	6,689
2250	Burials.....	20,007
3000	Passenger-carrying vehicles.....	2,692
3010	Furniture, furnishings, and fixtures.....	276,454
3020	Scientific equipment.....	62,544
3040	Livestock.....	1,623
3050	Other equipment.....	28,619
Total.....		6,918,042

CONSOLIDATED AND DETAILED REPORTS

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

TABLE 1.—Number of patients treated annually, 1868 to 1936¹

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	1936.....	327,245
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; 1935, 2,448; and 1936, 3,970.

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, 1936	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.....	331,215	54,208	1,324	5,213	1,904,341	277,007	1,291,616	108,807
FIRST-CLASS STATIONS								
<i>Marine hospitals</i>								
Baltimore, Md.....	13,095	2,945	100	330	107,450	10,150	64,446	4,840
Boston, Mass.....	9,936	1,925	33	172	62,953	8,011	36,418	5,106
Buffalo, N. Y.....	5,030	732	15	53	21,212	4,298	27,047	2,346
Carville, La.....	1,179	441	27	374	135,757	738	1,357	5
Chicago, Ill.....	6,573	1,902	28	154	66,340	4,671	28,583	3,127
Cleveland, Ohio.....	8,177	2,167	87	184	71,740	6,010	26,289	2,583
Detroit, Mich.....	4,958	2,439	111	235	79,594	2,519	19,664	972
Ellis Island, N. Y.....	8,035	3,667	86	220	149,099	4,368	11,602	589
Evansville, Ind.....	1,619	960	16	57	25,881	659	1,689	145
Fort Stanton, N. Mex.....	1,787	355	12	189	67,187	1,432	5,754	69
Galveston, Tex.....	6,840	2,282	37	190	65,154	4,558	18,518	1,737
Key West, Fla.....	1,566	508	11	35	16,975	1,058	4,327	88
Louisville, Ky.....	2,150	1,393	42	85	37,140	757	4,392	570
Memphis, Tenn.....	4,677	1,821	25	101	40,320	2,856	16,281	1,589
Mobile, Ala.....	3,981	1,461	21	144	51,575	2,520	11,904	1,702
New Orleans, La.....	13,089	4,642	96	470	146,235	8,447	34,153	3,682
New York, N. Y.....	40,336	-----	-----	-----	-----	40,336	239,733	17,490
Norfolk, Va.....	10,350	3,142	81	243	96,249	7,208	38,023	1,616
Pittsburgh, Pa.....	3,041	756	15	58	21,956	2,285	5,001	1,634
Portland, Maine.....	1,557	433	13	47	18,939	1,124	3,244	418
St. Louis, Mo.....	2,998	967	13	104	36,974	2,031	9,591	1,790
San Francisco, Calif.....	19,243	4,245	109	379	138,354	14,998	86,111	3,438
Savannah, Ga.....	4,487	1,765	37	157	62,226	2,722	10,508	1,190
Seattle, Wash.....	12,712	3,340	125	311	124,417	9,372	22,738	8,318
Stapleton, N. Y.....	14,321	4,315	62	545	122,515	10,006	38,519	1,660
Vineyard Haven, Mass.....	257	128	2	19	8,631	129	187	19
Contract overflow hospitals.....	94	94	8	32	12,874	-----	-----	-----
Total.....	202,088	48,825	1,212	4,888	1,787,747	153,263	766,079	66,723
SECOND- AND THIRD-CLASS STATIONS								
Aberdeen, Wash.....	499	44	-----	2	386	455	831	431
Albany, N. Y.....	195	24	-----	1	363	171	330	383
Anacortes, Wash.....	166	15	-----	-----	96	151	339	10
Apalachicola, Fla.....	20	-----	-----	-----	-----	20	82	2
Ashtabula, Ohio.....	336	14	-----	-----	61	322	886	22
Astoria, Oreg.....	446	28	-----	1	158	418	864	38
Balboa Heights, Canal Zone.....	960	268	5	10	3,812	692	715	-----
Bangor, Maine.....	9	2	-----	-----	31	7	11	37
Bath, Maine.....	74	-----	-----	-----	-----	74	199	7
Beaufort, N. C.....	277	42	3	-----	277	235	1,155	14
Bellingham, Wash.....	353	13	-----	-----	195	340	837	236
Biloxi, Miss.....	774	5	-----	-----	51	769	1,118	18
Boothbay Harbor, Maine.....	34	4	-----	-----	15	30	78	4
Brunswick, Ga.....	80	3	-----	-----	12	77	212	45
Burlington, Iowa.....	74	25	1	-----	160	49	69	-----
Cairo, Ill.....	701	73	1	2	489	628	1,830	166
Calais, Maine.....	3	2	-----	-----	23	1	2	5
Cambridge, Md.....	106	9	-----	-----	83	97	213	2
Cape May, N. J.....	1,704	50	-----	-----	129	1,654	4,431	91
Charleston, S. C.....	692	49	-----	1	574	643	1,356	248
Cincinnati, Ohio.....	150	13	-----	-----	172	137	292	214
Cordova, Alaska.....	397	58	-----	2	1,071	339	583	56
Corpus Christi, Tex.....	306	45	-----	-----	342	261	462	1
Crisfield, Md.....	770	5	-----	-----	36	765	1,229	8
Duluth, Minn.....	494	43	-----	3	657	451	814	131
Eastport, Maine.....	86	-----	-----	-----	-----	86	240	96
Edenton, N. C.....	26	-----	-----	-----	-----	26	82	-----
Elizabeth City, N. C.....	200	-----	-----	-----	-----	200	696	10
El Paso, Tex.....	270	19	-----	2	523	251	1,197	263
Erie, Pa.....	372	15	1	1	133	357	1,216	667
Escanaba, Mich.....	48	5	-----	-----	53	43	94	11
Eureka, Calif.....	167	17	2	-----	91	150	331	12
Everett, Wash.....	182	23	-----	-----	71	159	294	2
Fall River, Mass.....	193	29	2	-----	321	164	434	36
Gallipolis, Ohio.....	202	64	-----	-----	588	138	359	72
Gary, Ind.....	106	2	-----	1	3	104	202	10
Georgetown, S. C.....	31	-----	-----	-----	-----	31	71	2
Gloucester, Mass.....	434	15	-----	-----	143	419	1,220	6
Grand Haven, Mich.....	231	17	1	-----	144	214	567	59

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, 1936	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								
Green Bay, Wis.	128	12			103	116	392	16
Gulfport, Miss.	165	3			47	162	373	26
Hancock, Mich.	75	5	1		34	70	110	39
Honolulu, Hawaii	1,226	104	3	5	1,283	1,122	2,555	370
Houston, Tex.	1,468	129		1	694	1,339	3,991	155
Indiana Harbor, Ind.	182	4	1		15	178	279	1
Jacksonville, Fla.	856	48	1	1	547	808	2,262	607
Juneau, Alaska	418	41	2	2	433	377	465	520
Ketchikan, Alaska	1,154	106	5	5	1,157	1,048	2,656	479
La Crosse, Wis.	23	3			10	20	54	20
Lewes, Del.	265	29	2	3	386	236	573	7
Los Angeles, Calif.	2,031	97		5	1,752	1,934	6,490	1,522
Ludington, Mich.	291	11			136	280	462	1
Machias, Maine	40					40	71	1
Manila, P. I.	926	81		2	1,460	845	1,662	1,013
Manistee, Mich.	83	4		1	40	79	583	17
Manitowoc, Wis.	317	18			118	299	635	9
Marquette, Mich.	288	14		1	143	274	768	45
Marshfield, Oreg.	170	22	1	2	94	148	287	12
Menominee, Mich.	69	3			50	66	189	26
Miami, Fla.	1,513	170	6	6	1,469	1,343	4,959	178
Milwaukee, Wis.	1,140	134	1	7	1,750	1,006	2,596	564
Morehead City, N. C.	593	67	1		527	526	1,666	8
Muskegon, Mich.	157	9			78	148	232	38
Nantucket, Mass.	84	4			27	80	291	8
Nashville, Tenn.	108					108	185	195
Natchez, Miss.	897	101		1	649	796	1,853	63
Newark, N. J.	31					31	65	74
New Bedford, Mass.	383	24		3	220	359	638	80
New Bern, N. C.	240	37	1	1	256	203	326	12
New Haven, Conn.	139	23			330	116	181	60
New London, Conn.	2,015	30	1	3	314	1,985	2,558	82
Newport, Oreg.	160	8	1		120	152	386	3
Newport, R. I.	308	46		1	722	262	466	29
Newport News, Va.	292					292	553	56
Ogdensburg, N. Y.	83	1			5	82	166	30
Olympia, Wash.	59	11			171	48	64	26
Oswego, N. Y.	138	18			23	120	394	167
Paducah, Ky.	1,491	14	2		93	1,477	3,240	107
Panama City, Fla.	357	5			48	352	925	12
Pensacola, Fla.	457	49	1	1	499	408	1,431	56
Perth Amboy, N. J.	120	10			90	110	239	15
Petersburg, Alaska	285	24	1		137	261	865	34
Philadelphia, Pa.	8,431	386	10	8	3,399	8,045	27,763	4,887
Ponce, P. R.	147	22		2	385	125	456	12
Port Angeles, Wash.	349	28			101	321	400	71
Port Arthur, Tex.	1,998	15	1	1	50	1,983	6,825	142
Port Huron, Mich.	343	10			50	333	813	579
Portland, Oreg.	3,352	298	6	14	3,877	3,054	9,246	2,584
Port Townsend, Wash.	86	6			24	80	452	11
Providence, R. I.	465	30		2	306	435	1,036	233
Provincetown, Mass.	304					304	872	29
Reedville, Va.	492					492	1,506	12
Richmond, Va.	136	18	1		167	118	216	17
Rock Island, Ill.	4,869	10			22	4,859	18,830	2,025
St. Thomas, Virgin Islands	237	19			110	218	437	8
San Diego, Calif.	1,188	63	2	9	1,963	1,125	3,968	1,096
Sandusky, Ohio	111	5	1		39	106	180	216
San Juan, P. R.	1,006	57	1		636	949	2,321	113
San Pedro, Calif.	4,370	342	5	11	4,730	4,028	11,261	675
Sault Ste. Marie, Mich.	1,023	99	2		818	924	1,445	240
Seward, Alaska	425	68	1	2	829	357	631	60
Sheboygan, Wis.	79	5			39	74	151	8
Sitka, Alaska	1,432	8	1		99	1,424	1,934	287
South Bend, Wash.	77	20			163	57	111	13
Southport, N. C.	926	114	1	6	1,365	812	929	10
Superior, Wis.	358	36	1	4	430	322	567	16
Tacoma, Wash.	238	19		1	67	219	604	76
Tampa, Fla.	598	60	1	2	467	538	994	183
Toledo, Ohio	744	78	4	1	916	666	1,485	221
Unalaska, Alaska	46	10			143	36	77	
Vicksburg, Miss.	449	14	2		38	435	1,371	181
Washington, D. C.	6,906	292	6	13	4,220	6,614	37,897	16,226
Washington, D. C. dental clinic	1,607					1,607	20,972	

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, 1936	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.								
Washington, N. C.-----	121	10	-----	-----	167	111	220	5
White Stone, Va.-----	735	-----	-----	-----	-----	735	3,312	17
Wilmington, N. C.-----	512	86	1	3	696	426	1,028	159
Wrangell, Alaska.-----	191	25	3	-----	204	166	277	30
FOURTH-CLASS STATIONS								
Ashland, Wis.-----	156	15	-----	-----	310	141	269	99
Bay City, Mich.-----	87	6	-----	2	58	81	197	-----
Bridgeport, Conn.-----	49	18	3	2	246	31	37	-----
Chattanooga, Tenn.-----	1	1	-----	-----	4	-----	-----	-----
Hartford, Conn.-----	1	1	-----	-----	25	-----	-----	-----
Nome, Alaska.-----	20	7	1	-----	35	13	16	1
Portsmouth, N. H.-----	9	-----	-----	-----	-----	9	10	-----
Saginaw, Mich.-----	18	3	-----	-----	7	15	66	2
Wilmington, Del.-----	33	6	-----	-----	48	27	44	-----
MISCELLANEOUS								
Curtis Bay, Md.-----	1,929	-----	-----	-----	-----	1,929	7,380	173
U. S. Coast Guard Academy, New London, Conn.-----	2,174	202	3	4	2,287	1,972	4,505	361
St. Elizabeths Hospital, Wash- ington, D. C.-----	176	176	5	159	58,680	-----	-----	-----
Special acting assistant surgeons for Coast Guard and Light- house Service.-----	4,026	83	3	1	565	3,943	12,458	436
U. S. Coast Guard vessels and bases.-----	7,844	26	-----	1	147	7,818	36,562	547
Emergency medical relief activ- ities, Treasury Department.-----	34,781	-----	-----	-----	-----	34,781	228,205	-----
Emergency.-----	79	27	-----	-----	369	52	124	1
Total.-----	129,127	5,383	112	325	116,594	123,744	525,537	42,084
Grand total.-----	331,215	54,208	1,324	5,213	1,904,341	277,007	1,291,616	108,807

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, 1936	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.-----	165,693	27,578	719	2,906	1,109,748	138,115	598,761	9,063
Foreign seamen.-----	692	306	6	19	6,053	386	867	44
Coast Guard.-----	33,239	3,396	31	207	88,325	29,843	130,206	5,149
Bureau of Fisheries.-----	59	13	-----	1	433	46	107	-----
Army.-----	340	100	1	2	1,718	240	672	210
Navy and Marine Corps.-----	212	64	3	3	1,028	148	521	41
Mississippi River Commission. Engineer Corps and Army Transport Service.-----	7,689	1,398	38	114	43,732	6,291	23,427	1,222
Lighthouse Service.-----	2,646	458	18	40	14,582	2,188	6,772	161
Coast and Geodetic Survey.-----	848	118	1	11	3,256	730	4,029	422
Employees' Compensation Commission.-----	28,802	4,354	37	257	95,451	24,448	119,837	23,741
Veterans' Administration.-----	3,970	3,855	345	464	130,539	115	1,202	1,136
Immigration Service.-----	4,789	1,253	7	74	24,487	3,536	10,759	1,258
Public Health Service officers and employees.-----	10,926	1,046	14	45	17,292	9,880	73,669	2,487
Lepers.-----	450	447	27	374	136,035	3	7	2
Civilian Conservation Corps. Civil Works Administration.-----	7,829	6,629	48	393	170,798	1,200	1,950	1,252
Works Progress Administra- tion.-----	882	512	1	9	9,429	370	1,673	318
Miscellaneous.-----	23,534	2,523	24	284	48,762	21,011	82,858	17,579
	38,614	158	4	10	2,668	38,456	234,297	44,722
Total.-----	331,215	54,208	1,324	5,213	1,904,341	277,007	1,291,616	108,807

TABLE 4.—Classification of outpatient treatments furnished at United States marine hospitals and other relief stations

	General medical	Dental	Eye, ear, nose, and throat	Neuro-psychiatric	Tuberculosis	Surgical	Veneral diseases	Inoculations and vaccinations	Arsenicals	Physiotherapy and X-ray	Total
Marine hospitals.....	95,137	256,535	41,041	140	589	107,109	78,927	5,952	24,782	155,867	766,079
Other relief stations.....	59,802	30,158	16,668	360	448	83,023	17,488	5,601	7,132	23,003	243,683
Special acting assistant surgeons.....	7,410	252	981	69	804	1,063	96	1,222	105	456	12,458
Coast Guard vessels and bases.....	16,364	5,869	4,017	90	35	6,515	3,534	1,835	1,097	1,711	41,067
Emergency medical relief activities, Treasury Department.....	123,901	-----	49,227	-----	-----	55,077	-----	-----	-----	-----	228,205
Emergency.....	124	-----	-----	-----	-----	-----	-----	-----	-----	-----	124
Total.....	302,738	292,814	111,934	659	1,876	252,787	100,045	14,610	33,116	181,037	1,291,616

DIVISION OF VENEREAL DISEASES

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

It is encouraging to note the increasing interest and progress in venereal disease control during the year 1935-36. Marked impetus has been given to the investigative and to the advisory work of the Division of Venereal Diseases as a result of the enactment of the Social Security legislation and to the adoption of a policy more favorable toward venereal disease control. The extent of the present program is more in proportion to the great prevalence and economic importance of syphilis and gonorrhea than formerly.

COOPERATIVE CLINICAL STUDIES

The profitable retrospective investigations conducted in cooperation with five of the leading syphilis clinics of the United States have been continued. Studies of cardiovascular syphilis have been prosecuted further, and a series of scientific articles has been published during the year. In addition, it has been possible to begin the publication of papers on syphilis of the central nervous system. A great amount of information on syphilis of the central nervous system has been accumulated which is of fundamental importance to the medical profession, and several articles on this subject will soon be published.

Two meetings of the members of the Cooperative Clinical Group were held during the fiscal year. The main purpose was to plan projected studies of syphilis which might with profit be carried on in the five cooperating clinics. The Group also decided to appoint collaborators to assist in the preparation and publication of scientific articles on subjects of a more specialized character than had previously been undertaken.

The studies which have been selected for investigation are as follows:

1. Nonspecific therapy of syphilis. This study is under way.
2. Early syphilis—follow-up studies to determine the ultimate fate of the patient who apparently has been cured.
3. Prenatal syphilis—the fate of the apparently normal infant born of a syphilitic mother.
4. Conjugal syphilis—the course of syphilis in marital partners and an investigation of the strains of *Spirochaeta pallida*.
5. An investigation of patients with latent syphilis with manifestations of cardiovascular disease which are sufficient only to permit a tentative diagnosis. The value of such manifestations has not as yet been established, and through follow-up of patients with these manifestations it should be possible to determine their importance.
6. Syphilis in the carrier and in the patient—a comparative study to accumulate additional knowledge regarding the course of syphilis.

COOPERATIVE WORK WITH STATE HEALTH DEPARTMENTS

During the last few months of the fiscal year it was possible again to assign specially trained medical officers to State health departments, and thus to extend the advisory service of experts. The work had been seriously curtailed in recent years because of the very limited personnel and the demand, in other activities, for the services of the two officers who were originally assigned to this duty. Advisory assistance was extended to the State health departments in Arkansas, Delaware, Ohio, Rhode Island, and South Carolina. In one State a serious outbreak of what was thought to be gonococcal vulvovaginitis occurred, and the Public Health Service provided the services of experts to help in the solution of this problem. Scientific papers and lectures were presented before a large number of State medical and public health associations.

An advisory committee consisting of physicians prominent in the clinical management and control of venereal diseases was appointed and to them was assigned the duty of drawing up general recommendations for the development of venereal disease control programs in State and local health departments. The recommendations of this committee pertained to such subjects as the administration of the venereal disease control program; the provision of adequate treatment facilities in urban and rural communities; the prosecution of epidemiologic work; the cooperation of health departments with physicians; the collection of morbidity and mortality reports; the development of an informative and educational program; standardization of treatment, particularly in early and prenatal syphilis; and the development of minimum requirements for facilities and personnel in venereal disease control programs. These recommendations have been received very favorably, and were endorsed by the members of the Conference of State and Territorial Health Officers in April 1936.

During the year, 266,626 new cases of syphilis and 162,487 new cases of gonorrhea were reported to the State health departments. Seven hundred and thirteen clinics furnished morbidity reports to State health departments. These clinics reported 79,905 new cases of syphilis and 44,358 new cases of gonorrhea. They discharged as arrested or cured 63,566 patients and gave a total of 3,344,257 treatments, including 934,063 doses of arsphenamine.

EDUCATIONAL AND INFORMATIVE ACTIVITIES

A leaflet descriptive of Venereal Disease Information has been sent during the year to physicians throughout the United States. This distribution was made possible through the cooperation of the State boards of health, by whose personnel the envelopes were addressed and mailed. As a result of this cooperative work, Venereal Disease Information remains the medical publication of the Federal Government which has the largest paid subscription. The monthly average of paid subscriptions for the year was 5,868, and the monthly average of free distribution was 2,674 copies.

A limited allotment of funds for printing necessarily limited the number of special articles published. Three special articles were reprinted and distributed to health officers, interested physicians, and

other workers. Those which were reprinted and distributed included the following:

- No. 53. Syphilis control in New York State. By Thomas Parran. September 1935. 6 pages.
- No. 54. Recommendations for a venereal disease control program in State and local health departments. Report of an advisory committee to the United States Public Health Service. By R. A. Vonderlehr, Herman N. Bundesen, Joseph Earle Moore, N. A. Nelson, P. S. Pelouze, William F. Snow, John H. Stokes, U. J. Wile, Lida J. Usilton. January 1936. 16 pages.
- No. 55. Cardiovascular syphilis. Cooperative clinical studies in the treatment of syphilis. By Harold N. Cole, with Lida J. Usilton, and Joseph Earle Moore, Paul A. O'Leary, John H. Stokes, Udo J. Wile, Thomas Parran, R. A. Vonderlehr. April 1936. 28 pages.

The popular education program has been continued as in the past.

A total of 5,580 requests for bulletins and pamphlets was referred to State departments of health for the distribution of this material directly to the residents within their boundaries. Bulletins and pamphlets were also distributed on an individual basis to health departments, other organizations, and to individuals to a total of 70,719.

VENEREAL DISEASE RESEARCH LABORATORY, STAPLETON, STATEN ISLAND, N. Y.

Plans have matured for the reorganization and expansion of the present laboratory facilities to a degree which will permit of the profitable utilization of increased scientific personnel and consequent broadening of the scope of future investigative efforts. The personnel increase will be guided to strengthen and facilitate the handling of problems in which the general plan of study touches upon the sciences of bacteriology, physical chemistry, biochemistry, and cytology. The plan also provides for a very considerable increase in the cage-space available for the housing of experimental animals thus permitting the carrying out, in an uninterrupted manner, of a large number of experimental projects. When complete the new laboratory will constitute a highly comprehensive unit for the study of many phases of the venereal group.

Considerable effort has been expended in a study of the technical details and the clinical adaptability of the complement fixation procedure in serodiagnosis of gonococcal infections. Whereas there is ample evidence of inherent merit in the procedure, especially its sensitivity in cases of proved infection, the factors of specificity and reliability are still at a level which renders its general use as a formal procedure at least partially unsafe.

The experimental groundwork in the basic phases concerned with prophylaxis in syphilis has been completed and published. Some progress has been made in the development of an agency which when applied during the early stage of exposure, may serve as an inhibiting factor in the further migration and penetration of *Spirochaeta pallida*.

Some further efforts looking toward a determination of the public health status of latent and inadequately treated cases of syphilitic infection have been carried out. The results so far have been entirely negative and thus have not contributed greatly to previous knowledge upon the subject.

Preliminary work in a bacteriologic resurvey of chancroid infection, transmission of syphilis through blood transfusion, further studies in the life cycle of *Spirochaeta pallida*, and increased sensitivity without

consequent loss of specificity in the serodiagnosis of syphilis have been carried out.

STUDY OF SERODIAGNOSTIC TESTS FOR SYPHILIS

The evaluation of serodiagnostic tests for syphilis was continued under the supervision of a committee of experts known as the Committee on Evaluation of Serodiagnostic Tests for Syphilis. At the beginning of the fiscal year notices were published in a number of medical journals in which an invitation was extended to State, municipal, and private laboratories performing such tests to participate in an investigation of the ability of the personnel of such laboratories to perform serodiagnostic tests for syphilis. Thirty-nine directors of State, municipal, and private laboratories expressed a desire to be included in this study. Of these, only 30 could be selected because of limitation of funds available for the prosecution of this work. The selection was made on the basis of priority of the receipt of request or because of the strategic position of the laboratory in furthering the control of syphilis in this country. The directors of 11 State laboratories, 5 municipal laboratories, and 14 private laboratories were selected for participation. As a result of this study, 51 performances of 19 separate diagnostic methods were evaluated. Control performances of serodiagnostic tests were conducted by serologists who had described such tests or modifications and who were residents of the United States. The primary purpose of this study was to meet the conditions encountered in ordinary practice in the performance of serodiagnostic tests for syphilis.

In the evaluation project of the preceding fiscal year the relative efficiency of the original tests or modifications was determined on the basis of specificity and sensitivity. In this project the tests were performed under ideal conditions. In the project undertaken in the present fiscal year the tests were performed under routine conditions which existed in State, municipal, and private laboratories. The results indicate that the performance of serodiagnostic tests for syphilis in some laboratories is highly efficient; in others it is fairly efficient; and in a smaller group it is very inefficient. In some instances the technique is so poor that entirely new tests should be adopted in place of the ones now in use. The directors of the several laboratories participating in this study have been advised with regard to the specificity and sensitivity ratings of their respective tests. The report of the committee in charge of the work will be presented at the American Public Health Association meeting and published in several of the larger medical journals during the coming year.

One of the most important recommendations of the committee was to the effect that a system of comparative examination of serodiagnostic tests for syphilis be extended annually to all State laboratories. It was further recommended that State laboratories in turn offer a similar opportunity to check the performance of serodiagnostic tests in local laboratories located within the boundaries of the State. In compliance with this recommendation, the Public Health Service proposes to extend annually to all State laboratories an opportunity to check the performance of their serodiagnostic tests for syphilis on both a comparative serologic and clinical basis. Specimens will be collected from donors known to be infected with syphilis

and from others free of this disease. The serologic performance will be controlled as far as possible by the performance of serodiagnostic tests in the laboratories of the originators of such procedures. The action of the health departments in urging the general adoption of the routine serologic test for syphilis in all patients suffering from serious illness makes it absolutely essential that these tests should be entirely reliable.

Such an annual comparative examination of tests should assure a reliable performance of serodiagnostic tests in the participating laboratories.

UNTREATED SYPHILIS IN THE NEGRO

Observations have been continued on a group of 400 male Negroes infected with syphilis and now in the latent or late stages of this disease. Most of these individuals have never received modern treatment for their infection. Comparable observations also have been continued on a group of 200 male Negroes who, as far as it has been possible to determine, are not infected with syphilis. This study was started several years ago and was originally based upon clinical and laboratory observations. The results of these original observations were analyzed statistically and the general scientific findings will be published early in the next fiscal year. Plans for the continuation of this study are under way. During the last 12 months success has been attained in gaining permission for the performance of autopsies on 11 of the 15 individuals who died. Pathologic observations made after death are absolutely essential for the confirmation of the original clinical and laboratory observations. The present study will not only make available comparative information regarding the course of treated and untreated syphilis, but should also solve the problem of the effect of syphilis on the development of such conditions as hypertension and arteriosclerosis, and should make it possible to accumulate comparative mortality rates for a group of untreated syphilitic Negroes and Negroes who are known not to be syphilitic.

VENEREAL DISEASE CLINIC, HOT SPRINGS, ARK.

The Venereal Disease Clinic conducted at Hot Springs, Ark., in cooperation with the National Park Service, experienced an appreciable lessening of the load carried during the preceding fiscal year—8,490 applicants as compared with 14,946. This decrease was due to the restriction of admissions to early, infectious cases and to the curtailment of Transient Bureau relief. The latter agency continued to provide domiciliary care to the destitute patients of this clinic but was obliged at intervals to reduce its intake.

Because of the great congestion of patients it was necessary to limit the treatment in each case to the minimum requirements for the prevention of an infectious relapse, that is, 20 injections of an arsenical and 20 or 30 of a heavy metal. An educational program was interwoven into the course of treatment by continually stressing the importance of early, accurate diagnosis, and early, persistent treatment. This doctrine is being spread by former patients of this clinic in their home communities, the result of which may be reflected in the comparative increase in cases of primary and secondary syphilis applying here for treatment in recent years.

Upon discharge, patients are exhorted to continue their treatment at their respective destinations, and a mercury preparation is supplied by this clinic upon request from private physicians in order to assist and encourage these patients to persist in their efforts to be cured.

Of the 8,490 applicants for treatment, from every State in the Union except Delaware and Vermont, 4,448 were afflicted with venereal diseases. There were 3,368 cases of syphilis, including 316 primary, 597 secondary, 2,330 tertiary, 91 central nervous system, and 34 congenital. Of the 3,368 cases of syphilis, 2,992 were admitted for treatment; 376 late latent cases were rejected because of the restrictions previously mentioned.

Of a total of 1,262 cases of gonorrhea, 1,203 were admitted for treatment; 182 patients were treated for both syphilis and gonorrhea. Seven cases of granuloma inguinale and seven of lymphogranuloma inguinale were treated.

There were 235,362 treatments given, consisting of 27,740 arsphenamine injections; 67,979 bismuth and mercury injections; 4,547 other intravenous and intramuscular injections of sodium thiosulphate, sodium iodide, calcium gluconate, tartar emetic, bismarsen, and fuadin; 41,180 gonorrhea treatments; and 93,916 baths. There were 4,946 vaccinations against smallpox and 333 inoculations for typhoid immunization.

There were 81,673 laboratory examinations made, consisting of 37,297 serologic tests for syphilis, 19,148 icterus indices, 693 dark-fields, 9,515 smears for gonorrhea, 14,640 urine analyses, and 380 special examinations, including blood chemistry, water analysis, smears for malaria, Frei, and other indicated tests.

During the year the clinic staff was augmented by the addition of five part-time consultants who replaced two regular commissioned officers. Two clerks and one laboratory aide were also added. For the first time in its history this clinic now has a staff more nearly commensurate with its needs.

TABLE 1.—Report of State departments of health showing the number of cases of syphilis and gonorrhoea reported, the annual rates per 1,000 inhabitants, the amount of arsphenamine distributed, and the laboratory examinations made, from July 1, 1935 to June 30, 1936

State	Number of cases			Annual rate for syphilis and gonorrhoea per 1,000 inhabitants	Doses of arsphenamine distributed	Laboratory examinations		
	Syphilis	Gonorrhoea	Syphilis and gonorrhoea			Serologic tests made	Microscopic examinations for <i>Spirochaeta pallida</i>	Microscopic examinations for gonococcus
Total.....	266,626	162,487	429,113	3.4	1,313,501	2,063,837	6,673	388,929
Alabama.....	9,405	3,703	13,108	4.6	52,389	82,149	.....	15,042
Arizona.....	503	1,310	1,813	4.7	.....	.....	.....	2,501
Arkansas.....	3,014	1,733	4,747	2.4	25,188	35,156	693	9,404
California.....	15,968	15,816	31,784	5.6	157,479	79,929	560	30,972
Colorado ¹	58	47	105	.6	.....	.....	.....	.....
Connecticut.....	2,448	1,540	3,988	2.3	18,293	107,187	5	8,611
Delaware.....	1,335	453	1,788	7.0	5,249	7,843	66	1,453
District of Columbia ²	1,690	1,610	3,300	6.1	13,952	6,425	68	7,265
Florida.....	3,194	1,137	4,331	2.7	.....	.....	.....	.....
Georgia.....	13,232	6,035	19,267	5.8	80,300	103,468	.....	5,929
Idaho.....	0	0	0	.....	.....	22,360	.....	2,501
Illinois.....	15,940	13,166	29,106	3.7	98,411	98,693	2,337	49,022
Indiana.....	1,892	1,896	3,788	1.1	44,482	139,684	.....	8,809
Iowa.....	1,270	1,822	3,092	1.2	4,637	777	7	1,463
Kansas.....	1,011	848	1,859	1.0	9,092	38,246	.....	3,291
Kentucky.....	2,521	3,064	5,585	2.0	16,204	13,478	447	4,666
Louisiana.....	2,705	1,345	4,050	1.9	1,954	25,969	55	2,914
Maine.....	454	534	988	1.2	6,311	11,287	.....	4,233
Maryland.....	9,473	2,736	12,209	7.3	56,223	14,007	17	4,236
Massachusetts.....	5,401	6,065	11,466	2.6	89,095	134,005	.....	11,119
Michigan.....	6,375	6,524	12,899	2.8	33,773	40,383	.....	34,690
Minnesota.....	3,803	3,709	7,512	2.9	11,500	161,298	.....	12,888
Mississippi.....	14,621	22,659	37,280	19.0	.....	45,806	.....	5,476
Missouri ²	6,713	3,906	10,619	3.0	15,653	18,551	.....	4,277
Montana.....	453	579	1,032	1.9	.....	.....	.....	.....
Nebraska.....	377	800	1,177	.9	3,891	28,579	13	4,433
Nevada ³.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire.....	182	221	403	.8	2,932	10,667	.....	2,939
New Jersey.....	6,451	3,290	9,741	2.3	42,491	54,267	452	13,764
New Mexico.....	699	721	1,420	3.5	338	202	.....	28
New York.....	74,247	18,711	92,958	7.2	111,929	319,500	.....	29,960
North Carolina.....	15,294	5,220	20,514	6.0	84,835	138,098	196	12,161
North Dakota.....	308	662	970	1.4	.....	13,878	5	2,052
Ohio.....	6,713	2,968	9,681	1.4	36,045	30,753	658	11,349
Oklahoma.....	2,089	1,820	3,909	1.6	.....	.....	.....	.....
Oregon.....	784	1,698	2,482	2.4	2,886	9,851	20	3,932
Pennsylvania.....	4,038	2,248	6,286	.6	40,378	72,251	.....	20,498
Rhode Island.....	1,424	674	2,098	3.1	9,245	16,247	86	3,158
South Carolina.....	2,919	3,997	6,916	3.4	.....	.....	.....	.....
South Dakota.....	76	381	457	.7	.....	6,158	.....	.....
Tennessee.....	11,464	6,062	17,526	6.0	70,516	52,985	465	9,093
Texas.....	4,781	1,845	6,626	1.1	81,370	6,852	212	4,699
Utah ⁴.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont.....	232	341	573	1.5	1,491	8,184	10	1,920
Virginia.....	6,428	3,333	9,761	3.7	20,809	16,397	52	3,394
Washington.....	1,645	2,182	3,827	2.3	11,008	48,446	142	26,351
West Virginia.....	2,675	1,433	4,108	2.3	45,080	35,529	12	3,965
Wisconsin.....	4321	1,673	1,994	.7	8,072	8,292	95	6,972
Wyoming ³.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ For 2 months.

² For 11 months.

³ Not reporting.

⁴ Only cases of syphilis in the infectious stage are reported.

TABLE 2.—*Report of 111 correctional and penal institutions cooperating with State departments of health*¹

New cases admitted:	
Syphilis.....	7, 278
Gonorrhea.....	3, 447
Chancroid.....	171
Total.....	10, 896
Cases discharged as arrested or cured.....	6, 967
Treatments given.....	356, 310
Doses of arsphenamine administered.....	67, 789
Serologic tests made.....	56, 233
Microscopic examinations for gonococcus.....	19, 362

¹ Includes 34 prison camps.TABLE 3.—*Report of 713 clinics, furnished through State health departments, July 1, 1935, to June 30, 1936*¹

State	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsphenamines administered	Serologic tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chan-roid					
Total.....	7, 589	126, 271	79, 905	44, 358	2, 008	63, 566	3, 344, 257	934, 063	575, 147	232, 866
Alabama.....	² 436	7, 494	6, 062	1, 368	64	1, 166	113, 758	52, 389	—	—
Arkansas.....	12	3, 789	2, 616	1, 173	—	1, 012	³ 235, 362	27, 740	37, 297	9, 515
California.....	452	8, 845	4, 640	4, 199	6	4, 352	247, 558	63, 312	39, 719	26, 421
Connecticut.....	204	1, 406	898	508	—	1, 025	52, 058	11, 439	6, 392	1, 437
Delaware.....	61	647	460	180	—	251	11, 771	5, 367	2, 451	629
District of Columbia ⁴	11	3, 330	1, 690	1, 610	30	273	59, 751	13, 952	6, 407	7, 265
Georgia.....	149	8, 612	6, 838	1, 492	282	5, 208	147, 838	63, 525	27, 329	2, 018
Illinois.....	244	10, 743	5, 811	4, 849	83	12, 904	374, 288	92, 638	83, 718	44, 616
Indiana.....	160	2, 938	1, 356	1, 563	19	1, 520	125, 872	36, 654	12, 197	3, 613
Iowa.....	20	383	268	175	—	183	17, 696	4, 637	777	1, 463
Kansas.....	24	471	281	189	1	152	11, 482	4, 349	1, 244	930
Kentucky.....	243	5, 615	2, 511	3, 034	70	1, 250	68, 444	15, 934	13, 090	4, 574
Louisiana.....	12	495	336	159	—	4	5, 947	1, 954	4, 549	541
Maine.....	108	765	342	418	5	254	19, 070	6, 310	1, 472	522
Maryland.....	438	5, 310	3, 173	1, 961	176	2, 403	146, 186	56, 064	13, 860	3, 894
Massachusetts.....	306	5, 265	2, 758	2, 507	—	1, 436	—	—	—	—
Michigan.....	150	4, 736	2, 153	2, 474	109	2, 768	187, 429	33, 718	38, 472	34, 622
Minnesota.....	36	721	364	356	1	283	22, 434	4, 538	2, 269	1, 308
Nebraska.....	48	707	350	357	—	177	21, 624	3, 940	4, 257	2, 965
New Hampshire.....	59	256	116	140	—	156	13, 005	2, 922	637	517
New Jersey.....	369	6, 053	3, 790	2, 237	26	4, 100	255, 031	42, 574	33, 219	13, 764
New York.....	1, 335	7, 505	5, 305	2, 192	8	6, 909	302, 702	85, 184	35, 221	10, 178
North Carolina.....	488	8, 899	7, 507	1, 189	203	2, 257	123, 022	72, 775	44, 616	5, 376
Ohio.....	406	6, 583	3, 890	2, 027	666	2, 243	170, 799	34, 822	28, 646	10, 334
Oregon ⁴	11	366	231	134	1	265	18, 069	2, 305	1, 206	984
Pennsylvania.....	635	4, 910	3, 025	1, 872	13	3, 496	89, 881	37, 901	10, 719	—
Rhode Island.....	71	726	535	190	1	514	30, 639	9, 245	14, 982	2, 565
Tennessee.....	623	8, 687	5, 912	2, 626	149	2, 979	214, 609	64, 726	51, 171	8, 512
Texas.....	8	1, 990	1, 485	427	48	739	36, 053	9, 774	304	1, 567
Virginia.....	46	2, 924	2, 123	778	23	350	37, 573	20, 809	16, 397	3, 394
Washington.....	37	1, 543	753	789	1	1, 225	50, 101	10, 908	25, 180	20, 540
West Virginia.....	255	2, 727	1, 941	770	16	1, 280	76, 500	33, 586	9, 049	2, 056
Wisconsin.....	132	860	445	415	—	432	57, 705	8, 072	8, 300	6, 746

¹ States which did not report and those which have 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 County reports.³ Includes 93,916 baths given at the U. S. Public Health Service clinic, Hot Springs National Park, Ark.⁴ For 11 months.

TABLE 4.—*Report of cooperative clinic activities furnished through State health departments from 1919 to 1936*

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	129,293	3,085,401	55,905	23.86
1935.....	656	134,720	3,359,632	61,064	24.94
1936.....	713	126,271	3,344,257	63,566	26.48

TABLE 5.—*Annual report of the U. S. Public Health Service clinic at Hot Springs National Park, Ark., from July 1, 1935, to June 30, 1936*¹

Total applicants.....	8,490	Gonorrhea (new cases).....	1,173
Venereal.....	² 4,448	Acute.....	1,060
Nonvenereal.....	3,607	Chronic.....	113
Did not return.....	435		
		Total treatments given.....	235,362
Syphilis.....	3,368	Arsphenamine.....	27,740
New cases.....	2,616	Heavy metal.....	67,979
Readmitted cases.....	376	Other intravenous.....	4,547
Rejected.....	376	Gonorrhea.....	41,180
		Baths.....	93,916
Gonorrhea.....	1,262	Laboratory examinations.....	81,673
New cases.....	1,173	Complement fixation tests.....	19,148
Readmitted.....	30	Precipitation tests.....	18,149
Rejected.....	59	Icterus indices.....	19,148
		Darkfields.....	693
Syphilis (new cases).....	2,616	Gonococcus smears.....	9,515
Primary.....	311	Urine analyses.....	14,640
Secondary.....	573	Special.....	380
Tertiary.....	1,628		
Neuro.....	76		
Congenital.....	28		

¹ From the annual report of the clinic.

² The 4,448 venereal disease patients represent 4,630 cases of venereal disease, since 182 patients were treated for both syphilis and gonorrhea.

TABLE 6.—*Report of the U. S. Public Health Service clinic at Hot Springs National Park, Ark., from July 1, 1935, to June 30, 1936*

Year	Number of applicants	Number of cases			Treatments given ¹
		Total venereal diseases	Syphilis	Gonorrhea	
Total.....	82,100	61,930	39,346	22,584	1,223,844
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	50,883
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
1936.....	8,490	4,630	3,368	1,262	141,446

¹ Baths not included.TABLE 7.—*Statistical summary of activities in the control of venereal diseases for the fiscal years 1935 and 1936*

	1936	1935 ¹
<i>Medical activities</i>		
A. Cases of venereal disease reported to State health departments:		
I. Syphilis.....	266,626	255,856
II. Gonorrhoea.....	162,487	162,763
III. Chancroid.....	3,800	3,090
Total.....	432,913	421,709
B. Doses of arsphenamines distributed by State health departments.....	1,313,501	1,400,220
C. Clinics:		
I. Clinics established during the year.....	56	68
II. Clinics reporting to State health departments.....	713	656
III. Report from clinics:		
a. New cases admitted.....	126,271	134,720
b. Cases discharged as arrested or cured.....	63,566	61,064
c. Treatments given.....	3,344,257	3,359,632
d. Doses of arsphenamines administered.....	934,063	896,261
e. Serologic tests made.....	575,147	668,266
f. Microscopic examinations for gonococcus.....	232,866	251,356
<i>Educational activities</i>		
A. Pamphlets:		
I. Requests for pamphlets received by the Public Health Service.....	12,449	10,206
II. Pamphlets distributed:		
a. By the Public Health Service to State health departments and others.....	70,719	71,790
b. By State health departments.....	641,815	583,836
Total.....	712,534	655,626
III. Venereal disease pamphlets issued by the Public Health Service.....	4	5
B. Lectures, exhibits, and film showings reported by State health departments:		
I. Number.....	1,707	2,021
II. Average attendance.....	81	100
C. Motion-picture films lent by the Public Health Service.....	58	261

¹ Data for 1935 were changed from previously published figures because of the receipt of additional reports.

DIVISION OF MENTAL HYGIENE

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

The year ending June 30, 1936, marks the sixth 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 have been continued during the year at the United States Narcotic Farm, Lexington, Ky.,¹ which opened for operation in May 1935. Special studies in this field begun at the United States Penitentiary Annex, Fort Leavenworth, Kans., were continued and elaborated upon at Lexington.

Investigations were continued on the addiction liability of certain substitutes for morphine. Studies were completed on dihydroheterocodeine and dihydroisocodeine. The first-mentioned substance was found to be more potent than morphine and quicker in action, but the effects were less sustained. Definite addiction liability was demonstrated by this substance. Dihydroisocodeine was less potent than morphine and its action less sustained. It, too, demonstrated definite addiction liability.

Studies were made on the value of Rossium in the treatment of drug addiction, and the results indicated that Rossium was without demonstrable beneficial effect on the abstinence syndrome, whether administered alone or in combination with certain therapeutic agents.

Studies of carbohydrate and water metabolism in relation to morphine addiction have been continued.

Studies calculated to reveal changes in the cerebrospinal fluid pressure which might occur during abstinence were undertaken, the results indicating that the cerebrospinal pressure does not deviate from normal either during addiction or during the withdrawal phenomena. Further observations in this field will be made during the coming year.

Special studies were made of the clinical value of dihydroisocodeine in connection with the relief of cough among tuberculosis patients

¹ Name changed by congressional act to United States Public Health Service Hospital, effective July 1, 1936.

and in the relief of pain among cancer patients. These were carried on in cooperation with the State Department of Health of Massachusetts. More extended observations on its value will be continued during the coming year.

Because of the high addiction potentialities of dihydrodesoxymorphine-D demonstrated by clinical studies of this substance during the preceding year, representations were made by the American representative on the Opium Advisory Committee of the League of Nations to suppress the manufacture of this substance, and recommendations were made to the Secretary of the Treasury that it be not imported, manufactured, or sold in the United States.

During the year studies were inaugurated dealing with the behavior responses of the chimpanzee to certain habit-forming drugs. This work is carried on in cooperation with the division of comparative psychobiology of Yale University.

Dr. Lyndon F. Small, Consultant in Alkaloid Chemistry to the Public Health Service, has applied for a patent covering the making of certain ethers of morphine and its dihydrogenated derivatives. This patent, when granted, will be lodged, *ex officio*, in the custody of the Secretary of the Treasury and become the property of the United States.

Further studies have been made of the abusive uses and the medicinal and scientific requirements of the United States concerning narcotic drugs.

DISSEMINATION OF INFORMATION

Several articles relating to the work of the Division were published, including "The Truth About Narcotic Drug Addiction", "What Causes People to Become Drug Addicts", and "The Place of Mental Hygiene in a Federal Health Program." Articles on the physiological action and addiction liability of dihydrodesoxymorphine-D, and on the value of Rossium in the treatment of addiction have been approved for publication. Advisory consultant services were rendered various agencies, including representatives of local political jurisdictions, with reference to the drug-addiction problem.

NARCOTIC FARMS

Since the opening of the United States Narcotic Farm at Lexington, Ky., in May 1935, 1,240 persons have been admitted as patients. Of these, 960 were admitted during the fiscal year ending June 30, 1936. During the year 479 persons were discharged, leaving 761 patients in the institution at the close of the year.

Of those admitted, 619 were Federal prisoners, 6 of whom were committed directly from Federal district courts and 613 were transferred from the Federal prison system; 58 were probationers, placed on probation by courts having jurisdiction; and 283 were voluntary patients.

On March 20, 1936, the United States district court at Lexington, Ky., rendered a decision to the effect that the Narcotic Farm had no authority to hold voluntary patients against their will. This decision seriously impaired the treatment of voluntary patients because many of them, thinking they were actually cured after the withdrawal of the

drug, insisted upon their discharge. This situation accounts for the large number of discharges of voluntary patients, totaling 237.

During the year 213 prisoners were discharged on "conditional release", 13 were paroled, 7 were released on the expiration of their sentence, 5 died, and 1 escaped. Of the 58 probationers admitted, 3 have been discharged; and of the 283 voluntary cases admitted, 237 were discharged. Of these, 145 were discharged against medical advice, 58 as having reached maximum benefit, 16 as cured, 1 as not being an addict within the meaning of the law, 1 as being an alien and not entitled to treatment, 1 as not being a proper charge against the Government, 12 by elopement, and 3 by death.

Of the cured voluntary patients, none are known to have relapsed, but some of those discharged as having reached maximum benefit have relapsed. This situation was expected, since an analysis of the characters of these individuals indicated weaknesses which cannot meet the stresses of community environment and they would be expected to resort to narcotics.

There is no question that the treatment of narcotic addiction in a hospital has distinct advantages over the management of such cases in a correctional institution. The extent and value of such treatment cannot be accurately gaged from the standpoint of statistics at the present time. Reports have been received, however, to the effect that some prisoners released on "conditional release" and parole have returned to narcotics. This is not surprising, since many of these patients, though cured of their immediate difficulty, have personalities distorted by dissipation and prison life to an extent that they cannot be expected to withstand all the environmental stresses to which they are subjected when released from an institution. They were, however, discharged at the opportune time for an attempt at outside adjustment.

In the management of the institution it has been found possible for 20 percent of the inmates to be cared for under a regime of minimum custody, and at least 58 percent are given this privilege sometime before discharge. This application of minimum custody has in no way relaxed the discipline of the institution, no patient being allowed to leave the institution grounds.

This method of treatment has two advantages: First, it implies a confidence in the patient that increases his self-respect and makes him more responsive to rehabilitation; second, it imposes a certain amount of trust and responsibility which is of great value to the individual in preparation for taking up his duties in society before he is actually exposed to its many dangers and pitfalls. During the year only 1 prisoner violated this trust and 12 voluntary patients eloped. These voluntary patients were restless under what they considered illegal restraint, and the management of the institution did not feel the same responsibility in the safe custody of them as they did for the prisoners.

It is thought that the purposes of the institution would be better served if all prisoner addicts were sent to it directly from courts instead of indirectly from prisons, and that a wider use should be made of the probation feature in the act authorizing the institutions. Such a plan would be advantageous to those admitted, because from the beginning thorough study and treatment could be instituted and the individual patient saved the stigma of a prison sentence.

During the year the laboratory facilities have been amplified to meet the special needs of the institution in terms of special studies. It is anticipated that the work planned in this field will add considerably to the knowledge of drug addiction and afford suggestions for improvements in the methods of treating it.

Occupational facilities have been developed during the year, the farming activities being successful and the tailor shop put on a production basis. Because of inadequate facilities, wood-working has not been carried on to any great extent. A larger wood-working shop is greatly needed, as well as other mechanical features for which funds have been requested. The occupational facilities, however, have provided some form of occupational therapy for approximately 85 percent of the patients.

During the year proposals were solicited for the construction of the initial buildings for the United States Narcotic Farm at Fort Worth, Tex. Because the proposals were in excess of the moneys available, all bids were canceled, the plans redrawn, and further proposals solicited. It is anticipated that the contract will be awarded some time during the early part of the ensuing fiscal year.

MEDICAL AND PSYCHIATRIC SERVICES IN FEDERAL PENAL AND CORRECTIONAL INSTITUTIONS

The Public Health Service continued the work of supervising and furnishing the medical and psychiatric services for the Federal penal and correctional system, extending this service to include Federal Prison Camp No. 8, Montgomery, Ala., under date of July 5, 1935, and Federal Prison Camp No. 11, Kooskia, Idaho, under date of January 2, 1936, making a total of 18 medical units in connection with the various institutions under the control of the Department of Justice, as follows:

INSTITUTION AND CHIEF MEDICAL OFFICER

- United States Penitentiary, Alcatraz, Calif., Acting Asst. Surg. George Hess.
- Federal Industrial Institution for Women, Alderson, W. Va., Acting Asst. Surg. Edda von Bose.
- United States Penitentiary, Atlanta, Ga., Asst. Surg. Havelock F. Fraser.
- United States Industrial Reformatory, Chillicothe, Ohio, Passed Asst. Surg. Robert P. Hagerman (R).
- United States Southwestern Reformatory, El Reno, Okla., Acting Asst. Surg. Wilson K. Dyer.
- United States Penitentiary Annex, Fort Leavenworth, Kans., Asst. Surg. Floyd A. Hawk.
- Federal Prison Camp No. 11, Kooskia, Idaho, Acting Asst. Surg. Bernard H. Shallow.
- United States Detention Farm, La Tuna, Tex., Asst. Surg. Alford G. Hendrick (R).
- United States Penitentiary, Leavenworth, Kans., Passed Asst. Surg. Oliver C. Williams.
- United States Northeastern Penitentiary, Lewisburg, Pa., Asst. Surg. Jonathan B. Peebles, Jr.
- United States Penitentiary, McNeil Island, Wash., Surg. Romney M. Ritchey (R).
- United States Detention Farm, Milan, Mich., Acting Asst. Surg. William D. Wilder.
- Federal Prison Camp No. 8, Montgomery, Ala., Acting Asst. Surg. Thomas H. Smith.
- Federal Jail, New Orleans, La., Acting Asst. Surg. Benjamin L. Newell.
- United States Detention Headquarters, New York, N. Y., Acting Asst. Surg. Robert E. Frick.

Federal Reformatory Camp, Petersburg, Va., Acting Asst. Surg. Carl I. Pirkle.
United States Hospital for Defective Delinquents, Springfield, Mo., Surg. Marion
R. King.

Federal Prison Camp No. 10, Tucson, Ariz., Medical Interne Basil Thompson.

There has been a continued increase in the prison population in the majority of the institutions. This increase in population has resulted in increasing the duties of the medical and technical staff at the various units and has also involved an increased consumption of medical and hospital supplies.

The continuance of the program of classification and rehabilitation of prisoners, whereby each prisoner is given medical treatment and the benefit of medical, psychiatric, and psychological supervision in his work assignments and solution of his adjustment problems, has made heavy demands upon the members of the medical staff serving as members of the classification committees and disciplinary boards. The results of this program have been gratifying.

The greatly improved sanitary conditions at the various institutions achieved partly through the periodical sanitary inspections made by the medical staff during the previous year have been maintained during the past year by the continuance of these inspections.

Because of the limited nursing personnel at the United States Industrial Reformatory, Chillicothe, Ohio, certain difficulties were experienced in providing adequate trained, nursing care for hospital cases. White inmates of superior mental ability were assigned to the hospital as student attendants and given a course of study in nursing procedures so that they might provide the additional nursing help needed. This arrangement has not only added materially to the effectiveness of the nursing program but also aided in some degree in furnishing vocational training to a group of inmates interested in this particular field.

In addition to furnishing medical, surgical, dental, psychiatric, and sanitary advisory services to the United States Detention Farm, La Tuna, Tex., the chief medical officer furnished these same services to all Federal prisoners confined in the El Paso County Jail, El Paso, Tex., where he made 304 visits, examining and treating 2,558 persons.

A daily average of 20 female Federal prisoners have been confined in the El Paso County Jail during the year, and illnesses among this group of prisoners have been successfully treated there. Pediatric and obstetrical services have also been rendered this group.

Psychiatric and medical advisory services were also furnished to the United States Court for the Western District of Texas. At the inauguration of these services a large number of drug-addict violators were being brought to the attention of the court, many of whom pleaded pitiful plights of disease to enlist the sympathy of the court. These violators in practically all instances have been sentenced to the Leavenworth prison. During the fiscal year a total of 40 certifications of diseases existing among Federal prisoners has been made to the United States district attorney's office, and four appearances in the United States court have been made by the chief medical officer to give professional testimony.

The laboratory service at the United States Penitentiary, Leavenworth, Kans., has shown a marked increase over that of the previous year. This station has continued to use the spinal and avertin anesthetics with the same good results that have been experienced in

the past. One case of spinal meningitis occurred, but a serious epidemic was averted. Skin tests for meningococci susceptibility were given 94 inmates who had been exposed to this case, and 31 of these who showed positive reactions were vaccinated against meningitis. One case of gas gangrene of the groin occurred and was saved by the immediate use of gas-gangrene antitoxin. Vaccinations against Rocky Mountain spotted fever were administered to 60 inmates prior to their transfer to Federal Prison Camp No. 11, at Kooskia, Idaho.

The increase in duties at the United States Northeastern Penitentiary, Lewisburg, Pa., without a corresponding increase in facilities for their proper performance, has made it impossible to carry out individual mental tests to the extent in which they are indicated, and group tests have had to be substituted.

The medical unit at the United States Penitentiary, McNeil Island, Wash., continued to furnish medical supervision to the Federal Road Camp No. 5 at Fort Lewis, Wash., the chief medical officer and the dental officer making weekly visits to this camp. Of the 361 new admissions to the road camp during the past fiscal year, 40 percent required hospitalization at the penitentiary hospital for various medical and surgical diseases. This appears to be a rather high incidence of morbidity for that type of an institution.

Owing to the increase in the patient population and the heavy burden incident to proper care of the sick, 3 additional medical officers and 18 attendants were assigned to duty at the United States Hospital for Defective Delinquents at Springfield, Mo. In addition to furnishing medical and psychiatric services at this institution, medical service was also rendered the prison camp, with an average daily population of about 150 men.

During the last half of the year plans were outlined for limited training of attendants. Suitable textbooks dealing with nursing and medical subjects were made available to the attendants for selective reading in connection with their duties. Fifteen lectures were given by the medical officers and Public Health Service nurses. The nurses also gave practical bedside demonstrations and instructions to attendants on the wards. A limited course in physical training, with special emphasis on defensive tactics, was also given. The reaction of the attendants to training and instruction has been favorable, and the improvement in the nursing care of patients has justified the efforts of the staff in connection with the training course.

Occupational therapy has played an important part in the rehabilitation and treatment of most of the patients. Qualifications and aptitude of each patient are brought into full consideration before the staff classification committee meetings, and a joint decision is reached as to the type of occupation best suited to each individual. Primary consideration is given particularly to psychotic patients where employment serves as a valuable psychotherapeutic aid for recovery and adjustment. Practical occupational therapy is prescribed in the form of general maintenance of the institution, such as cleaning, kitchen, laundry, and improvement and maintenance of the grounds. A limited number demonstrate aptitudes in clerical work and are able to fill positions of this character. Patients who are mentally and physically incapable of taking advantage of gainful occupations are occupied as far as possible in the occupational-therapy craft shops, where carpentry, painting, rug weaving, basket weaving, and other activities are

supervised and directed by the occupational-therapy aide. A special effort is made to extend the benefits of occupational craft work to nonambulatory individuals. Approximately 39 percent of the tuberculous, 87 percent of the chronic infirm, and 84 percent of the psychotic patients have engaged in work of one type or another, as mentioned above.

The medical staff completed a survey and study of 235 psychotic criminals admitted to this institution to ascertain, if possible, the major causative and precipitating factors present in prison life to produce psychoses. Of this group it was found that 130, or 55 percent, were psychotic before the commitment of the crime which led to confinement, and 20, or 8½ percent, of the group presented no evidence of psychosis at the time of their offense but were found psychotic upon admission to prison. It is assumed that the majority of the group of 20 became psychotic while detained in jail awaiting trial. An analysis of the remaining 85 showed that a large number of them became ill during the first year in prison. The fact that 62 of the 85 cases, or approximately 73 percent, were afflicted with definite psychopathic personalities is of interest.

Structural modifications have been necessary to meet the needs of the more incorrigible mental cases. An increase in the number of single rooms has been authorized and it is anticipated that the mentally disordered population will materially increase during the next fiscal year.

During the year the following articles were published in connection with the work in the Federal penal and correctional institutions: "Surgical Preparation of the Jaws to Receive Dentures", "A Statistical Study of the Ferguson Form Board Test", "A Study of the Characteristics of 1,000 Prison Inmates", "A Case of Tuberculous Meningitis", "A Discussion of General Paresis", "The Inheritance of Nervous and Mental Disease", "Physiotherapy as an Aid to Psychotherapy in the Neuroses", "Leukoplakia—With Case Reports", "The Use of Continuous Nasal Siphonage Suction Tube for Postoperative Distension, Nausea, and Vomiting, Also Intestinal Obstruction and a Comparison of the Different Types of Apparatus", "A Simple Type of Transfusion Technique", "Mucocele of the Appendix and Cecum Producing Intestinal Obstruction", "Fascial Strips in Difficult Hernias", and "Chewing Gum in the Urinary Bladder."

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 1936 there were furnished 349,634 hospital relief days and 698,128 out patient relief days.

STUDIES AND INVESTIGATIONS ON THE CAUSES, PREVALENCE, AND MEANS FOR THE PREVENTION AND TREATMENT OF NERVOUS AND MENTAL DISEASES

During the year the Public Health Service engaged in a cooperative survey to determine the adequacy of measures, policies, and facilities for the care of mental illness in the metropolitan district of New York for the purpose of predicating a future program or policy to meet the needs for the care of mental diseases occurring in that district. This survey was conducted in cooperation with The National Committee

for Mental Hygiene to be integrated with the United Hospital Survey for New York City. The phase of study conducted by the Public Health Service covered dispensary and general hospital practice and consisted of a current analysis of clinical material for demonstrating the nature of the psychic problems as seen in dispensary and general hospital practice.

In order to attain the specific objectives desired, the study included an intensive administrative and clinical analysis of a representative general hospital and dispensary in the metropolitan area of New York, an analysis of the experiences of others in the field of practice, and a general survey of the literature on the subject.

The general results of the study point definitely to the necessity of considering the subject of psychosomatic interrelationships in plans for future development of adequate medical services in general hospitals and dispensaries. Whether the illness be physical, mental, or a combination of these two, all measures must be adopted eventually to meet the many diversified needs encountered in general hospital and dispensary practice.

Pursuant to the request of the Attorney General that the Public Health Service extend psychiatric service to Federal courts, arrangements were made to furnish psychiatric diagnostic services to United States district courts for a period of approximately 1 year as a research project to demonstrate the wisdom and feasibility of establishing these services as a future permanent activity of the Public Health Service, such centers for this demonstration being selected as seem practicable and desirable. The nature of the services furnished is on a consultive and advisory fee basis only. It is not for the purpose of determining the guilt or innocence of an accused, but is intended to assist the court to determine the mental state of a defendant as one element in the problem of the disposition to be made of a case.

In the event the nature of the case requires a period of observation and more intensive study and examination, when such is recommended by the consultant, the individual prisoner is sent to a hospital under contract with the Public Health Service where the staff of that institution assumes responsibility for observation, examination, and report.

Senior Surg. J. G. Wilson was assigned to duty in charge of the organization of the work. The first unit was organized in Boston, Mass., in May 1936, and a panel of physicians appointed as advisory consultants to the Federal court in that city. A contract was made with the Boston Psychopathic Hospital for the examination and report of cases requiring more intensive study. Arrangements are being made to establish similar units at other points throughout the country during the ensuing year.

This is the first organized effort to establish such a facility in connection with Federal court procedure. It is believed the data obtained will enable the Service to determine whether or not such an activity would be of practical value.

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 non-expendable 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 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. The authority for increasing annual leave from 15 to 26 days and recognition of 44 hours as a desirable work week have made the administration of marine hospitals and quarantine stations much more difficult. The principles of the longer leave period and the shorter work week are enthusiastically approved by medical officers in charge of hospitals but, because of insufficient personnel, many employees, if not most, are in part denied both privileges, and such a condition is, of course, detrimental to morale. 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, 1935, 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, and 15 sanitary engineers, 100 passed assistant surgeons, 23 passed assistant dental surgeons, 5 passed assistant sanitary engineers, 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 passed assistant dental surgeon, and 3 assistant

pharmacists were on waiting orders. During the fiscal year the following changes occurred in the several grades: The Surgeon General was placed on a waiting-order status, and one of the surgeons was assigned to duty as Surgeon General; 1 assistant surgeon general reverted to the grade of surgeon and 1 medical director was assigned to duty in the bureau as assistant surgeon general; 1 medical director, 1 senior dental surgeon, and 1 surgeon on active duty died during the year; 1 medical director was placed on waiting-orders status; 1 senior surgeon and 1 assistant pharmacist on waiting orders status died during the year; 1 surgeon was dismissed, 1 passed assistant surgeon and 1 assistant surgeon each resigned, and 1 assistant surgeon was separated from the corps because of inability to qualify for the next higher grade; 4 senior surgeons were promoted to the grade of medical director, 7 surgeons were promoted to the grade of senior surgeon, 4 passed assistant surgeons were promoted to the grade of surgeon, 1 passed assistant dental surgeon was promoted to the grade of dental surgeon, 15 assistant surgeons were promoted to the grade of passed assistant surgeon, 3 assistant dental surgeons were promoted to the grade of passed assistant dental surgeon, 1 assistant sanitary engineer was promoted to the grade of passed assistant sanitary engineer and 7 assistant pharmacists were promoted to the grade of passed assistant pharmacist; 32 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; 2 doctors were appointed to the corps in the grade of surgeon, 1 doctor was appointed in the grade of passed assistant surgeon, and 3 engineers were appointed in the grade of passed assistant sanitary engineer.

On July 1, 1936, after these changes had occurred, the regular corps consisted of 2 Surgeons General (1 on waiting orders), 8 Assistant Surgeons General, 53 medical directors, 1 pharmacologist director, 45 senior surgeons, 1 senior sanitary engineer, 68 surgeons, 14 dental surgeons, 15 sanitary engineers, 111 passed assistant surgeons, 25 passed assistant dental surgeons, 9 passed assistant sanitary engineers, and 8 passed assistant pharmacists, 46 assistant surgeons, 5 assistant dental surgeons, and 2 assistant pharmacists—a total of 413 officers. Of this number 1 Surgeon General, 16 medical directors, 8 senior surgeons, 15 surgeons, 4 passed assistant surgeons, 1 assistant dental surgeon, and 2 assistant pharmacists were on waiting orders.

At the close of the fiscal year 1936, 1 medical director, 6 senior surgeons, 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, 2 surgeons, and 1 passed assistant surgeon were serving on detail to the United States Employees' Compensation Commission; 2 medical directors were assigned as assistants to the Director, Pan American Sanitary Bureau, Washington, D. C.; 3 senior surgeons, 1 surgeon, 3 passed assistant surgeons, and 1 passed 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 medical director, 1 senior surgeon, 1 dental surgeon, 1 passed assistant surgeon, 2 passed assistant dental surgeons, and 2 assistant surgeons were serving on detail with the United States

Coast Guard; in connection with mental hygiene activities, 2 senior surgeons, 2 surgeons, 2 passed assistant surgeons, 1 passed assistant dental surgeon, and 6 assistant surgeons were assigned for duty at various penal and correctional institutions, and 1 medical director, 1 surgeon, 5 passed assistant surgeons, 1 passed assistant dental surgeon, 1 assistant surgeon, and 1 passed assistant pharmacist were assigned to duty at the United States Narcotic Farm, Lexington, Ky.

RESERVE OFFICERS

On July 1, 1935, the reserve commissioned officers on active duty numbered 64, consisting of 4 surgeons, 1 dental surgeon, 10 passed assistant surgeons, 1 passed assistant dental surgeon, 37 assistant surgeons, and 11 assistant dental surgeons.

On July 1, 1936, the number of reserve officers on active duty was 51, consisting of 4 surgeons, 1 dental surgeon, 10 passed assistant surgeons, 1 passed assistant dental surgeon, 27 assistant surgeons, and 8 assistant dental surgeons.

ACTING ASSISTANT SURGEONS

On July 1, 1935, there were 707 acting assistant surgeons in the Public Health Service, and by July 1, 1936, this number had decreased to 698.

Of the 698 acting assistant surgeons, 92 were on duty at marine hospitals; 428 were engaged in immigration, relief, and maritime, border, insular, and foreign quarantine work, 1 was engaged in the prevention of trachoma; 5 were engaged for duty in connection with field investigations of public health; 112 were on duty with the United States Coast Guard; 3 were serving with the Bureau of Mines by detail; 26 were serving at various penal and correctional institutions and 31 were engaged in antivenereal disease activities as part-time employees at nominal compensations. Eleven of the thirty-one acting assistant surgeons engaged in antivenereal disease activities held appointments as collaborating epidemiologists.

ATTENDING SPECIALISTS

On July 1, 1935, there were 520 attending specialists in the Service, and during the year this number increased to 585, of which 297 were consultants to marine hospitals, while 46 were available for call at second- and third-class relief stations; 39 were engaged in antivenereal disease activities, 81 were serving at various penal and correctional institutions; and 122 were consultants in connection with quarantine, immigration, and scientific research activities.

INTERNES

On July 1, 1935, there were 129 medical and dental internes in the Service; on July 1, 1936, there were 187. Internes are appointed for temporary periods of 1 or 2 years for duty at marine hospitals, and stations where mental hygiene activities are being conducted.

PHARMACISTS AND ADMINISTRATIVE ASSISTANTS

On July 1, 1935, there were 13 pharmacists and 43 administrative assistants in the Public Health Service. During the year 1 druggist

in the Service was reallocated to the position of pharmacist; an addition of 9 was made in the administrative corps, making a total at the end of the fiscal year of 14 pharmacists (8 chief and 6 junior) and 52 administrative assistants (12 first class, 8 second class, 11 third class, and 21 fourth class).

NURSES, DIETITIANS, AND RECONSTRUCTION AIDES

On July 1, 1935, there were on duty in the Public Health Service 560 nurses, 31 dietitians, 31 aides, 67 guard-attendants, and 4 social workers. On July 1, 1936, there were on duty 620 nurses (an increase of 60), 31 dietitians, 33 aides, 71 guard-attendants (an increase of 4) and 2 social workers. They are assigned as follows: Hospital Division, nurses 582, dietitians 30, aides 32, social workers 2; Mental Hygiene Division, nurses 35, dietitian 1, aides 3, guard-attendants 71; Foreign Quarantine Division, nurses 3. There were 50 resignations and 79 discontinuances during the year. On July 1, 1935, the nurses in the emergency relief rooms of the Treasury Department were placed under the nursing service. During the year nurses assigned to trachoma eradication with the Domestic Quarantine Division were discontinued, this work being taken over by the State health departments. Nurses have been detailed to the marine hospitals in Cleveland, Ohio; Baltimore, Md.; and New Orleans, La., to assist in studies in diabetes, arthritis, and the use of pyrotherapy. These studies are being made as part of the Social Security and Works Progress Administration programs.

CONTRACT DENTAL SURGEONS

On July 1, 1935, there were 54 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 1936, this number had decreased to 51; 8 were at marine hospitals, 23 were at second-, third-, and fourth-class relief stations, 13 were serving at various penal and correctional institutions and 7 were detailed to the United States Coast Guard for duty.

EPIDEMIOLOGISTS

During the year the number of assistant collaborating epidemiologists was increased from 4,643 to 4,769. 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 remained at 44. These appointees are on duty in 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 73 members, of whom 14 were commis-

sioned medical officers, 44 other research workers, and 15 consulting experts. The staff was assisted by 17 technicians and 87 other subordinates, making a total of 177. Of this total, 158 were on full-time schedule.

PROPERTY RECORDS

The property return section has accounted for all property of the Service and 329 property returns have been audited during the year. A total of \$4,124.99 was turned in to "Miscellaneous receipts" from sales of property. Surplus property not desired by any other Government department was sold for \$1,845.74, unserviceable property for \$405.24, hides for \$235.80, junk metals for \$232.76, unserviceable boats and boat property for \$1,395.45. Property surplus to the Public Health Service valued at \$6,395.32 was transferred to other Government departments. Surplus property of other Government departments valued at \$41,687.07 has been received by the Public Health Service. Property valued at \$34,461.90 has been transferred from service stations where it was surplus to stations where it could be used. By the exchange value on old typewriters turned in on the purchase price of new machines \$1,004.50 has been 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, 1936. Of the 12,190 employees shown in the table, 4,769 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.

	Regular corps						Reserve corps					Acting assistant surgeon	Attending specialist and consultant	Contract dental surgeon	Interne	Temporary emergency workers	Pharmacist
	Surgeon general	Medical director	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Medical director	Senior surgeon	Surgeon	Passed assistant surgeon						
Bureau.....	1		8													135	
FIELD																	
Hospital division:																	
Marine hospitals:																	
Baltimore, Md.....				1	2	6					2	4	26		17		
Boston, Mass.....	1					3					1	3	17		7		
Buffalo, N. Y.....					2							2	10		3		1
Carville, La.....	1											5	4				1
Chicago, Ill.....	1				2		2				1	5	19		8		
Cleveland, Ohio.....	1					3						9	9		6		
Detroit, Mich.....					1	2						3	17		4		
Ellis Island, N. Y.....	1		1			4					1	6	7		5		
Evansville, Ind.....					1							2	9				
Fort Stanton, N. Mex.....					2	1	2					1	2		1		
Galveston, Tex.....	1					3						2	14		8		
Hudson Street, N. Y.....	1				1	2	1			1	1	11	19		2		2
Key West, Fla.....					1	1						2	1		1		1
Louisville, Ky.....				1		1	1					2	9		3		1
Memphis, Tenn.....				1		1					1	2	10		3		
Mobile, Ala.....				1		2	2					1	5		3		
Norfolk, Va.....				1	3	3	1				1	3	13		22		1
Reserve Bank of St. Louis.....	1				1	4	3					4	11		12		1
Portland, Maine.....	1					1	1					2	8		3		
						1	1						13		2		

PUBLIC HEALTH SERVICE

Regular corps

Reserve corps

Hospital division—Continued.
 Marine hospital—Continued.
 Vineyard Haven, Mass.....

Total, hospitals.....

Relief stations:

Second class.....

Third class.....

Total relief stations.....

Foreign Quarantine Division:

Quarantine stations:

Baltimore, Md.....

Boston, Mass.....

Ellis Island (also immigration).....

El Paso, Tex.....

Fort Monroe, Va.....

Galveston, Tex.....

Honolulu, T. H.....

Quarantine, Tex.....

Marens Hook, Pa.....

New Orleans, La.....

Reserve Bank of St. Louis.....

San Francisco, Calif. (also immigration).....

	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 emergency workers	Pharmacist
Hospital division—Continued.																		
Marine hospital—Continued.																		
Vineyard Haven, Mass.....				1										1				
Total, hospitals.....																		
Relief stations:																		
Second class.....	3			2	5	2						2	16	36	8	1		
Third class.....													151	10	23			
Total relief stations.....																		
Foreign Quarantine Division:																		
Quarantine stations:																		
Baltimore, Md.....					1								3					
Boston, Mass.....						1							1					
Ellis Island (also immigration).....	2		1			2							15					
El Paso, Tex.....													2					
Fort Monroe, Va.....	1												1					
Galveston, Tex.....					1								2					
Honolulu, T. H.....	1					1							10					
Quarantine, Tex.....													2					
Marens Hook, Pa.....				1		1							2					
New Orleans, La.....				1	1		1						3					
Reserve Bank of St. Louis.....				1	1	2							5					
San Francisco, Calif. (also immigration).....	1					2	1						2					

PUBLIC HEALTH SERVICE

Total, all activities.....																	
Scientific Research Division:																	
National Institute of Health.....	4			7	7					1	11						
Leprosy investigations.....				1	2												
Malaria investigations.....			2	2	2												
Stream pollution.....				2	1								3				
Industrial hygiene and sanitation.....			1	1	5					2	33						
Child hygiene.....					1						6						
Statistical Office.....											5					47	
All other stations.....	3		1	4	13	4				2	55						
Total, all activities.....																	
Sanitary Reports and Statistics																	
Division of Venereal Diseases.....				1	1	2					31	39					
Division of Mental Hygiene:																	
Alderson, W. Va.....											2	4	1				
Atlanta, Ga.....									1		2	1	5	3	4		
Chillicothe, Ohio.....											2	1	5	3	4		
Fort Leavenworth, Kans.....											1	3	1	2	2		
Leavenworth, Kans.....					2	1					2	3			5		
Petersburg, Va.....											2	4					
McNeil Island, Wash.....											1	4			1		
All other stations.....	1		2	3	8	4		1	1	8	14	55	6	16			
Total, all activities.....																	
Miscellaneous:																	
Detailed to other offices.....	2		4	3	5					1	3						
Coast Guard.....	1		1	1	3	2			2	1	112	4	7				
Perry Point, Md. (supply station).....					1												1
Public health districts.....		1															
Waiting orders.....	1	16	8	15	4	3											
All other miscellaneous.....		1	2	3	6	1											
Total, miscellaneous.....																	
Grand total.....	2	54	8	46	96	53		5	11	35	698	585	51	187	714	14	

	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.....														214	9	249		258
FIELD																		
Hospital division:																		
Marine hospitals:																		
Baltimore, Md.....			1	1	42	4	5		2			12	107		58	174	232	
Boston, Mass.....			1	1	16	1	1		1			9	61		32	91	122	
Buffalo, N. Y.....					7	1			1			4	17		18	30	48	
Carville, La.....			1	1	1							6	278		11	287	298	
Chicago, Ill.....			2		24	1	2					11	78		38	118	156	
Cleveland, Ohio.....			2	1	28							4	79		28	114	142	
Detroit, Mich.....			1	1	26	1	3					8	67		31	107	138	
Ellis Island, N. Y.....			1	1	42		4		1			6	170		26	225	251	
Evansville, Ind.....			1		9							4	31		12	45	57	
Fort Stanton, N. Mex.....					10	2	2					8	115		9	137	146	
Galveston, Tex.....			1	1	20		1					6	57		29	86	115	
Hudson Street, N. Y.....				1	6	6		1	1			9	40		41	64	105	
Key West, Fla.....					6							3	18		7	27	34	
Louisville, Ky.....					11							4	33		18	48	66	
Memphis, Tenn.....				1	12							4	40		18	57	75	
Mobile, Ala.....			1	1	15		1		1			4	49		15	72	87	
New Orleans, La.....			1	1	52	4	4		2			19	152		54	234	288	
Norfolk, Va.....			2		30	1	3	1	1			7	108		37	153	190	
Pittsburgh, Pa.....			1	1	8							3	18		16	31	47	
Portland, Maine.....				1	7							3	26		20	37	57	
St. Louis, Mo.....					12			1				5	33		21	51	72	
San Francisco, Calif.....			1		42	3	3	1				12	162		62	224	286	

Foreign Quarantine Division:															
Quarantine stations:															
Baltimore, Md.		1							1	1	1	14	4	18	22
Boston, Mass.		1							2	2	1	17	2	23	25
Ellis Island (also immigration)											2	8	20	10	30
El Paso, Tex.											1	10	2	11	13
Fort Monroe, Va.									2	2	1	11	2	16	18
Galveston, Tex.		1							2	2	1	7	3	13	16
Honolulu, T. H.		1							2		1	18	12	22	34
Laredo, Tex.												12	2	12	14
Marcus Hook, Pa.		1		2					3	3	1	20	4	30	34
New Orleans, La.		2							4	4	2	18	6	30	36
Rosebank, N. Y.		2							6	6	7	82	9	103	112
San Francisco, Calif. (also immigration)		1		1					4	2	2	32	6	42	48
San Juan, P. R.									1		2	24	17	27	44
Foreign ports											3	21	51	24	75
All other stations		6	1	2					14	16	11	212	185	262	447
Total, quarantine and immigration													325	643	968
Domestic Quarantine Division:															
Interstate											4	58	9	62	71
Trachoma													2		2
Emergency relief (field)														632	632
All other stations											7	35	22	42	64
Total, all activities													33	736	769
Scientific Research Division:															
National Institute of Health	52	1									14	89	30	156	186
Leprosy investigations											2	4	3	6	9
Malaria investigations											5	13	6	18	24
Nutrition studies											1	7		8	8
Stream pollution											2	19	6	21	27
Industrial hygiene and sanitation											6	16	42	22	64
Chief FRASER Statistical Office							1				5	3	7	9	16
All other stations		1		8							6	4	5	57	62
Total, all activities											31	78	82	118	200
Total, all activities													181	415	596

	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 employee	Departmental personnel	Medical and scientific	General and technical	Subtotal	Grand total
Division of Mental Hygiene—Continued.																		
Chillicothe, Ohio.....			1		3								3		15	7	22	
Fort Leavenworth, Kans.....			1										4		8	5	13	
Leavenworth, Kans.....			1		3								4		13	8	21	
Petersburg, Va.....													3		6	3	9	
McNeil Island, Wash.....			1		2										7	3	10	
All other stations.....			5	2	19	3	1					22	273		118	325	443	
Total, all activities.....															190	362		552
Miscellaneous:																		
Detailed to other offices.....															18		18	
Coast Guard.....					1										134	1	135	
Perry Point, Md. (supply station).....												4	6		2	10	12	
Public health districts.....			1									4			1	5	6	
Waiting orders.....															47		47	
All others.....															13		13	
Total, miscellaneous.....															215	16		231
Grand total.....	4,769	52	52	20	604	34	38	5	10	41	38	356	3,244	214	1,999	10,191		12,190

CHIEF CLERK'S OFFICE

DANIEL MASTERSON, Chief Clerk and Administrative Officer

DEPARTMENTAL PERSONNEL

On July 1, 1935, the departmental force on duty in the Administration Building consisted of 184 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 12 from the appropriation, "Expenses, Division of Mental Hygiene." In the course of the year 33 new employees were added, 29 chargeable to the appropriation, "Diseases and Sanitation Investigations, Social Security Act", and 4 to the appropriation, "Expenses, Division of Mental Hygiene", making a total of 217 positions at the close of the fiscal year. In addition it was found necessary to utilize the services for a brief period of five temporary employees, of which one was paid from the appropriation, "Salaries, Office of the Surgeon General", and four employed in connection with the preparation and erection of the Public Health Service exhibit at the Texas Centennial Exposition at Dallas, Tex., were paid from appropriations available for that purpose.

During the year four employees resigned, two died, and seven were transferred to other Government agencies. Ninety-six administrative promotions were effected during the fiscal year 1936, 90 of which were payable from the appropriation, "Salaries, Office of the Surgeon General", and 6 chargeable to the appropriation, "Expenses, Division of Venereal Diseases." These were the first administrative promotions made in the departmental force since April 1931. Sixteen re-allocations of positions were made by the Civil Service Commission, of which 13 resulted in salary increases. Increases in grade were made possible to 25 employees by advancements to positions left vacant by the resignation, death, or transfer of the incumbents. The average salary at the beginning of the fiscal year was \$1,893.48, but it had increased to \$1,907.47 at the close of the year.

Sick leave averaged 8.1 days per employee, as compared with 9.3 days for the preceding year.

There were 1,657 visits to the emergency room maintained in the Administration Building, in 284 of which there was attendance by a physician.

There were two deaths among the personnel. Miss J. Ruth Griffith, principal clerk in the Division of Personnel and Accounts, died June 13, 1936, after continuous service in the Public Health Service since July 11, 1922. Miss Olive L. Mole died December 1, 1935, after having served more than 20 years with the Federal Government, of which approximately 14½ years were with the Public Health Service. At the time of her death Miss Mole was employed as an assistant clerk in the Mail and Records Section of the Chief Clerk's office.

PRINTING AND BINDING

The printing and binding allotment for the fiscal year 1936 was \$58,000. This sum proved insufficient to cover the heavy demands brought about by steady growth of the Service and by Social Security legislation. Requisitions increased by more than 50 percent over the preceding year; and although the allotment was budgeted and the strictest economy practiced in expenditures, these funds covered little more than the items which could not be deferred. An additional amount of \$10,631.25 allotted from funds appropriated by the First Deficiency Appropriation Act helped to avoid the canceling of a large number of requisitions for forms and enabled the Service to have done much essential binding for the libraries at the Headquarters Building and the National Institute of Health, which had long been neglected because of lack of funds.

It was only through allocation of funds from the Social Security appropriation, however, and a gift of \$10,500 from the Rockefeller Foundation, that it was possible to publish results of some important researches and to print other valuable information relating to health and sanitation. The total amount encumbered for the year, made available by the additions described, was \$93,601.13, a slight increase over the amount allotted annually to this Service prior to 1933. Without these additions, the Service would have been seriously embarrassed in performing important functions authorized by law, because of its inability to obtain the necessary printed material.

OFFICE QUARTERS, SUPPLIES, AND EQUIPMENT

Material increase in work and in personnel on duty at headquarters overtaxed the available office space in the Administration Building. All available storage space was converted into offices, and it was further necessary to move a small portion of the personnel into space in another Government building. In view of existing and imminent future needs, it would be a great advantage if the Administration Building could be extended to completion in accordance with the architect's original design. Preliminary plans to this end have been drawn, which would provide approximately 35,000 additional feet of net office space.

The facilities of the photographic unit and the duplicating unit were augmented by new equipment so as to improve both the quantity and quality of the product. This was important in view of the new and increased duties imposed upon the Public Health Service. Improved labor-saving machinery was also provided for other parts of the Surgeon General's office.

In order that the emergency relief activities supervised by the Public Health Service could be supplied without delay with necessary stationery supplies and blank forms, these supplies were furnished direct from the administration building, necessitating the setting up of a temporary shipping unit for this purpose.

PUBLIC HEALTH SERVICE LIBRARY

The library has been used during the past year more than ever before. The rapidly expanding activities of the Service, with enlarged personnel, has increased the number of requests for books, bibliog-

raphies, and information on specific subjects. Various Government agencies interested in social welfare made many demands upon the library both for publications and information. Additions to the collection comprised 285 volumes and 300 pamphlets, raising the total on the shelves to 14,136 books and 7,750 pamphlets. Journals and periodicals to the number of 255 were received and circulated. Only 33 of these represented paid subscriptions.

APPENDIX

FINANCIAL STATEMENT

The following is a statement of expenditures from appropriations of the Public Health Service for the fiscal year 1936:

Appropriation	Appropriated and received from other sources	Obligations			Unobligated balance
		Incurred	Liquidated	Outstanding	
Salaries, Office of Surgeon General.....	¹ \$306,315	\$306,114	\$306,114.00		\$201
Pay, etc., commissioned officers.....	² 1,793,467	1,774,658	1,765,501.80	\$9,156.20	18,809
Pay of acting assistant surgeons.....	335,000	307,500	302,076.26	5,423.74	27,500
Pay of other employees.....	1,000,000	995,918	994,297.43	1,620.57	4,082
Freight, transportation, etc.....	25,000	24,711	23,483.24	1,227.76	289
Maintenance, National Institute of Health Books.....	64,000	62,683	52,677.55	10,005.45	1,317
	450	448	298.72	149.28	2
Pay of personnel and maintenance of hospitals.....	³ 6,943,042	6,915,182	6,596,501.42	318,680.58	27,860
Quarantine Service.....	⁴ 322,925	317,150	291,232.08	25,917.92	5,775
Preventing the spread of epidemic diseases. Preventing the spread of epidemic diseases, 1935-36.....	253,668	243,582	228,176.53	15,405.47	10,086
	⁵ 6,485	6,469	5,876.32	592.68	16
Field investigations of public health.....	240,000	236,059	231,434.85	4,624.15	3,941
Interstate Quarantine Service.....	⁶ 38,817	36,956	33,379.46	3,576.54	1,861
Studies of rural sanitation.....	25,000	24,338	24,188.79	149.21	662
Control of biologic products.....	45,000	44,112	42,231.70	1,880.30	888
Expenses, Division of Venereal Diseases.....	80,000	77,781	76,822.14	958.86	2,219
Expenses, Division of Mental Hygiene.....	⁷ 655,920	648,417	612,446.64	35,970.36	7,503
Educational exhibits.....	1,000	999	852.64	146.36	1
Diseases and sanitation investigations.....	375,000	358,575	188,164.84	170,410.16	16,425
Working-capital fund, narcotic farm, Lexington, Ky.....	⁸ 49,423	39,377	33,724.63	5,652.37	10,046
Payment to officers and employees in foreign countries due to appreciation of foreign currency.....	⁹ 46,200	42,000	39,139.71	2,860.29	4,200
Total appropriated.....	11,303,567	12,463,029	11,848,620.75	614,408.25	143,683
Total from other sources.....	1,303,145				
Grants to States for public-health work, Social Security Act.....	3,333,000	2,451,141	2,451,141.00		881,859

¹ Includes \$1,745 reimbursement from diseases and sanitation investigations, Social Security Act, Public Health Service, 1936.

² Includes reimbursements from medical and hospital service, penal institutions (Justice transferred to Treasury, Public Health Service), 1936, \$38,042; diseases and sanitation investigations, Social Security Act, Public Health Service, 1936, \$12,500; and \$14,191 from Employees' Compensation Commission.

³ Includes \$474,085 reimbursement for care of beneficiaries of Veterans' Administration, and \$651,497 for hospital care of members of Civilian Conservation Corps and beneficiaries of the Army and Navy.

⁴ Includes \$775 reimbursement for supplies used in fumigating vessels for Army and Navy.

⁵ Funds available at close of fiscal year 1935.

⁶ Includes \$2,282 reimbursement from mosquito control, District of Columbia.

⁷ Includes \$1,516 reimbursement from working capital fund, Narcotic Farm, Lexington, Ky., and \$4,404 for subsistence furnished voluntary inmates at Lexington, Ky.

⁸ Includes \$17,865 balance from 1935, and \$31,558 reimbursement from expenses, Division of Mental Hygiene, Public Health Service, 1936.

⁹ Public Health Service allotment from Secretary of the Treasury.

FUNDS TRANSFERRED FROM OTHER AGENCIES

Expenditures from allotments of funds from other bureaus and of-
fices for direct expenditure during the fiscal year 1936 were as follows:

Appropriation	Allotted	Expended
Emergency Relief, Treasury, Public Health Service (health survey) ¹	\$3,450,000.00	\$2,625,350.00
Emergency Relief, Federal Emergency Relief Administration (grants to States) ²	400,000.00	238,920.23
Texas Centennial Exposition (transfer to Treasury, act Aug. 12, 1935).....	32,500.00	24,344.00
Veterans' Administration, working fund ³	313,312.50	313,312.50
Department of Justice:		
Prison camps.....	7,600.00	6,306.65
Medical and hospital service, penal institutions.....	489,600.00	487,157.00
Total.....	4,693,012.50	3,695,390.38

¹ Of the amount allotted, \$728,250 was rescinded.

² Of the amount allotted, \$161,079 was returned to Federal Emergency Relief Administration.

³ This amount does not include \$142,772.50 credited direct to appropriation.

MISCELLANEOUS RECEIPTS—COVERED INTO THE TREASURY

The revenues derived from operations of the Public Health Service during the year and covered into the Treasury as miscellaneous receipts were as follows:

Source	Amount
General fund receipts:	
Quarantine charges.....	\$237,847.21
Hospital charges and expenses.....	25,106.92
Sale of subsistence.....	11,843.09
Sale of occupational therapy products.....	600.55
Sale of obsolete, condemned, and unserviceable equipment.....	4,868.14
Rents.....	3,640.50
Reimbursement for Government property lost or damaged.....	79.90
Commissions on telephone pay stations installed in service buildings.....	1,420.15
Sale of refuse, garbage, and other byproducts.....	1,050.83
Sale of livestock and livestock products.....	210.88
Other revenues.....	1,159.00
Total.....	287,827.17
Trust-fund receipts:	
Sale of effects of deceased patients.....	2,458.47
Inmates' funds.....	25,618.17
Grand total.....	315,903.81

QUARANTINE SERVICE—EXPENDITURES BY STATIONS

Name of station	Pay of officers and employees	Maintenance	Total
CONTINENTAL QUARANTINE STATIONS			
Baltimore, Md.....	\$35,503.49	\$16,060.58	\$51,564.07
Biscayne Bay (Miami), Fla.....	21,697.79	7,327.78	29,025.57
Boca Grande, Fla.....	1,325.00	65.00	1,390.00
Boston, Mass.....	45,112.59	14,364.84	59,477.43
Brownsville, Tex.....	18,653.78	2,926.66	21,580.44
Brunswick, Ga.....	3,005.00	408.15	3,413.15
Calexico, Calif.....	1,444.00	29.60	1,473.60
Cape Fear (Southport), N. C.....	10,082.42	2,170.11	12,252.53
Charleston, S. C.....	24,645.27	8,559.01	33,204.28
Columbia River (Astoria), Oreg.....	9,620.00	1,305.16	10,925.16
Corpus Christi, Tex.....	1,980.00	69.37	2,049.37
Cumberland Sound (Fernandina), Fla.....	605.00	-----	605.00
Del Rio, Tex.....	5,840.00	1,040.08	6,880.08
Eagle Pass, Tex.....	12,836.59	1,135.75	13,972.34
El Paso, Tex.....	32,173.73	3,266.86	35,440.59
Eureka, Calif.....	1,560.00	19.00	1,579.00
Galveston, Tex.....	26,304.15	6,023.46	32,327.61
Gulfport, Miss.....	5,610.00	486.13	6,096.13
Hidalgo, Tex.....	7,015.09	538.53	7,553.62
Key West, Fla.....	2,682.88	208.84	2,891.72
Laredo, Tex.....	25,646.56	2,499.82	28,146.38
Marcus Hook, Pa.....	56,437.91	42,798.03	99,235.94
Mercedes, Tex.....	-----	634.99	634.99
Mobile, Ala.....	27,349.73	8,319.24	35,668.97
New Bedford, Mass.....	-----	10.00	10.00
New Orleans, La.....	63,954.50	19,179.47	83,133.97
Newport, R. I.....	-----	15.00	15.00
New York (Rosebank), N. Y.....	192,424.45	50,590.98	243,015.43
Nogales, Ariz.....	4,090.00	184.87	4,274.87
Norfolk (Fort Monroe), Va.....	36,618.42	9,786.66	46,405.08
Pascagoula, Miss.....	1,200.00	-----	1,200.00
Pensacola, Fla.....	14,244.40	2,500.87	16,745.27
Porto Amboy, N. J.....	1,725.95	600.00	2,325.95
Portland, Maine.....	14,199.92	1,935.64	16,135.56
Portland, Oreg.....	1,695.00	690.02	2,385.02
Port Townsend, Wash.....	21,356.11	7,217.41	28,573.52
Presidio, Tex.....	5,584.82	702.88	6,287.70
Providence, R. I.....	-----	280.00	280.00
Rio Grande, Tex.....	3,156.66	117.97	3,274.63
Roma, Tex.....	4,725.00	631.15	5,356.15
Sabine, Tex.....	14,236.58	5,130.07	19,366.65
St. Andrews (Panama City), Fla.....	1,200.00	72.00	1,272.00
St. George Sound, Fla.....	325.00	-----	325.00
St. Johns River (Jacksonville), Fla.....	7,365.84	727.13	8,092.97
San Diego (Point Loma), Calif.....	23,864.02	5,535.88	29,399.90
San Francisco, Calif.....	73,777.04	21,207.34	94,984.38
San Pedro (Los Angeles), Calif.....	42,283.58	8,722.63	51,006.21
Savannah, Ga.....	18,232.73	5,129.65	23,362.38
Seattle, Wash.....	13,889.96	4,331.38	18,221.34
Tampa, Fla.....	16,173.21	3,236.85	19,410.06
Thayer, Tex.....	2,118.00	-----	2,118.00
Ysleta, Tex.....	1,680.00	15.65	1,695.65
Zapata, Tex.....	2,340.00	360.00	2,700.00
Freight and miscellaneous.....	-----	27,005.75	27,005.75
Total, continental quarantine stations.....	959,592.17	296,173.04	1,255,765.21
INSULAR QUARANTINE STATIONS			
Hawaii.....	40,015.40	8,389.04	48,404.44
Philippine Islands.....	20,295.40	-----	20,295.40
Puerto Rico.....	37,261.92	9,081.86	46,343.78
Virgin Islands.....	13,759.20	3,506.06	17,265.26
Total, insular quarantine stations.....	111,331.92	20,976.96	132,308.88
Grand total, all stations.....	1,070,924.09	317,150.00	1,388,074.09

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