

ANNUAL REPORT
OF THE
SURGEON GENERAL OF THE
PUBLIC HEALTH SERVICE
OF THE UNITED STATES

FOR THE FISCAL YEAR

1930



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1930

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OF THE
SURGEON-GENERAL OF THE
PUBLIC HEALTH SERVICE
OF THE UNITED STATES

FOR THE FISCAL YEAR

1903
TREASURY DEPARTMENT

Document No. 3028

Public Health Service



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LETTER OF TRANSMITTAL

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, December 1, 1930.

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 1930.

Respectfully,

A. W. MELLON,
Secretary.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

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CHARTER

LETTER OF TRANSMITTAL

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ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE

TREASURY DEPARTMENT,
BUREAU OF THE PUBLIC HEALTH SERVICE,
Washington, October 15, 1930.

SIR: In accordance with the act approved July 1, 1902, I have the honor to submit for transmission to Congress the following report of the transactions of the United States Public Health Service for the fiscal year ended June 30, 1930. This is the fifty-ninth annual report of this service, covering the one hundred and thirty-second year of its existence.

The prevention of the introduction and spread of infectious diseases from foreign countries into the United States is one of the important public health duties of the Federal Government. The close relation of commerce in connection with the spread of epidemic diseases has been known since ancient times. In order properly to protect the United States against the introduction of infectious diseases, especially in view of the widespread general interest awakened by the rapid increase of international aerial transportation, it is necessary to keep advised currently as to the prevalence of disease not only in the United States but, in so far as practicable, throughout the world.

WORLD HEALTH CONDITIONS

During the fiscal year there was a constant interchange of sanitary information with other nations of the world through the International Office of Public Hygiene of Paris, the Pan American Sanitary Bureau, and the health section of the secretariat of the League of Nations. Valuable epidemiological intelligence was also received by the Public Health Service through American consuls, officers of the service stationed abroad, and directly from foreign governments.

The International Sanitary Convention, signed at Paris June 22, 1926, and the Pan American Sanitary Code, signed on November 14, 1924, at Habana, have operated greatly to improve the promptness and completeness of the information relating to the prevalence of disease received from various foreign governments.

Any generalization as to the mortality rate for the world must be in relative terms, since the rate of mortality varies so widely in different countries. The year ended June 30, 1930, was a relatively favorable year, the general death rate being, as a rule, less for that period than for the corresponding period ending in the preceding year and approaching the unusually low death rate of the year ended June 30, 1927.

Throughout the Northern Hemisphere influenza and pneumonia were at low levels. In this hemisphere the epidemic which occurred

in the last months of 1928 and the early months of 1929 had subsided before the beginning of the present fiscal year. In the Southern Hemisphere, particularly in South America, there were epidemics of influenza in the last half of the calendar year 1929.

Of minor importance with regard to the total number of cases, but of great interest because of the nature and severity of the disease, was the epidemic of psittacosis which occurred in the winter of 1929-30. Approximately 350 to 400 cases were reported throughout the world, with a case fatality of 35 to 40 per cent. The disease appeared more or less simultaneously on three continents—Europe, South America, and North America—apparently being associated with the importation of consignments of infected parrots. By January, 1930, a number of countries had prohibited the importation of parrots and the epidemic subsided.

The cholera situation has been relatively favorable during the present year. Cholera is of more frequent occurrence in Asiatic ports than plague, according to information supplied by the health section of the League of Nations, it being present in 1929 in 32 Asiatic ports, while plague cases were reported in only 18 ports. A considerable epidemic of cholera occurred in April, 1930, in the central Provinces of India, but the situation elsewhere in India was relatively favorable.

Cholera was reported in the Philippine Islands in May, 1930. At the close of the fiscal year the disease had appeared in Manila and in several islands in the central part of the archipelago, and the number of cases was increasing. Cholera has appeared in the Philippine Islands frequently during recent years, but the epidemics have not assumed the devastating proportions which formerly characterized the disease there.

In recent years the situation relative to plague has improved in most ports of the world, and in many inland centers the number of cases has declined considerably. During the present fiscal year, however, plague appeared in certain African centers near Mediterranean trade routes. In northern India, which has hitherto furnished more cases than all the remainder of the world combined, there has been almost constant improvement since 1924, and the first quarter of 1930 showed lower rates than those of any corresponding quarter since that time.

Yellow fever was reported from the West Coast of Africa and also from Brazil and Colombia during the year.

In a number of countries, including India, England and Wales, and the United States, a larger number of smallpox cases was reported than during recent preceding years.

Available reports on typhus fever indicate that in the first quarter of 1930 no country was appreciably above the first quarter of 1929 and the great majority of them was considerably below the first quarter of 1929 in the number of cases reported. The general situation with respect to typhus fever was unusually favorable.

HEALTH CONDITIONS IN THE UNITED STATES

The reports to the Public Health Service for the calendar year 1929 showed generally good health conditions in the United States except for the epidemic of influenza which was at its peak about the

first of January, 1929. This epidemic raised the general death rate and the rates for influenza, pneumonia, and some other diseases considerably above the normal during the early part of the year, but there were comparatively few deaths from influenza and pneumonia during the fiscal year ended June 30, 1930.

Yellow fever did not appear in the United States or its possessions during the year. Wonderful progress has been made in the control of this disease, which has not appeared in epidemic form in the United States since 1905, but the presence of yellow fever in Brazil and Colombia during the year shows that its introduction into the United States is possible, and the *Aedes aegypti* mosquito, which spreads the disease, abounds in parts of this country.

Plague-infected rodents were found in California and in the island of Hawaii during the fiscal year, but no human case of plague was reported in the United States or its possessions. Cases are likely to occur, however, as long as the infection exists in rodents. Plague was reported in many of the ports with which we have commerce. It was present during the year in all of the grand divisions of the world except Australia.

Preliminary figures for the calendar year 1929 show a decrease in both the birth rate and the death rate as compared with 1928. This is a continuation of the trend which has been noted in the statistics for most civilized countries for several decades. The rates for 43 States are as follows: Births, 1928, 19.7 per 1,000 population; 1929, 18.8 per 1,000; deaths, 1928, 12.1 per 1,000; 1929, 11.9 per 1,000. In 1929 there was also a reduction in the infant mortality, there being 67.3 deaths of infants under 1 year of age per 1,000 live births in 1929, as compared with 68.8 deaths per 1,000 births in 1928.

In 1928 there was an increase in the incidence of malaria. This disease has been disappearing from many parts of the United States where it was once prevalent. The evidence that malaria was increasing in sections where it had been hoped that it would disappear was disconcerting. For 1929 the reports from 45 States showed a slight decrease in malaria deaths from the high figures for 1928, but in some of the Southern States where malaria is a serious problem, the reports of cases and deaths show increased prevalence in 1929 as compared with 1928.

The case and death rates for diphtheria have been decreasing for many years, and in the calendar year 1929 these rates reached new low records. Forty-five States reported 71.4 cases of diphtheria and 6.6 deaths per 100,000 population. Ten years ago, in 1919, 37 States reported 137 cases of diphtheria per 100,000 population and the diphtheria death rate in 32 States was 13 per 100,000. These were low rates at that time, but the 1929 rates are nearly 50 per cent lower. There is no doubt that the use of antitoxin and immunization against diphtheria have contributed to the remarkable decline in the number of diphtheria cases and deaths. If these agencies had been more generally used, the improvement would have been greater.

In 1927 about 3,000 cases of meningococcus meningitis were reported to the Public Health Service by 35 States, in 1928 about 5,000 cases, and in 1929 about 9,000 cases. The incidence of this disease increased steadily from 1924 to the winter of 1930, but in the spring of 1930 the number of cases dropped below the figures for

1929. The decrease was especially noticeable in the Mountain and Pacific States, where high rates had prevailed for several years. At the same time there was an increase in the incidence of meningococcus meningitis in some States where the rates had been comparatively low, especially Tennessee, Mississippi, Indiana, and Massachusetts.

The prevalence of pellagra has been increasing for several years. In 1924 the pellagra death rate, computed from reports to the Public Health Service, was 2.5 per 100,000 population. The rate rose steadily until 1928, when it was 5.7 per 100,000 (based on reports from 45 States). For the calendar year 1929 the pellagra death rate was 5.5 per 100,000 population.

Poliomyelitis, commonly known as infantile paralysis, arouses serious apprehension in the minds of parents and others responsible for the care of children, because of the possibility of serious after effects, although the number of recognized cases and of deaths is small when compared with the reported cases and deaths of some other diseases. During the calendar year 1929 the incidence of poliomyelitis was lower than it had been since 1926, but just before the close of the fiscal year there was a marked increase in the number of cases in California and Louisiana. By the end of June, 1930, reports showing more than the usual prevalence of poliomyelitis were being received from communities in widely separated parts of the country. This disease normally reaches its greatest incidence in the United States in the late summer and early fall.

For three years at least the incidence of smallpox in the United States has been increasing. Forty-five States reported 34,685 cases of smallpox in 1927, 38,114 cases in 1928, and 41,458 cases in 1929. The disease was of the mild type, and in the 45 States only 442 deaths were recorded during the three years. Yet the 114,000 cases of smallpox represent an incalculable amount of suffering and a large economic loss to the country, all of which could have been avoided by vaccination and revaccination. One danger from smallpox lies in the fact that the virulent type of the disease may appear at any time in a community not protected by vaccination, and before the disease can be checked it may take many lives. In Los Angeles, Calif., in 1924 there were 3,401 cases of smallpox, with 12 deaths—1 death for each 283 cases; in 1925 there were 1,278 cases of smallpox and 33 deaths—1 death for each 39 cases; in 1926 Los Angeles had 1,014 cases and 178 deaths—1 death for each 6 cases. In 1929 in 45 States there were 292 cases of smallpox for each death from the disease.

For the year 1929, 44 States reported 74.4 deaths from tuberculosis (all forms) per 100,000 population. This is another low rate for tuberculosis in the records of the Public Health Service. Ten years ago, in 1919, the reports from 36 States gave a death rate for tuberculosis of 112.3 per 100,000 population. This rate, when compared with rates for the preceding years, showed gratifying progress. Few were so optimistic as to expect a reduction of one-third in the tuberculosis death rate in 10 years, yet this reduction has occurred.

Even greater progress has been made in checking the ravages of typhoid fever. In 1929 reports from 45 States gave a typhoid fever

death rate of 5 per 100,000 population. At the beginning of this century typhoid fever death rates of more than 100 per 100,000 population were not infrequent in cities where typhoid fever prevailed. For the five years from 1900 to 1904, Pittsburgh had an annual typhoid fever death rate of 133.7 per 100,000. In 1928 the highest rate reported to the Public Health Service by cities of 100,000 population or over was 15 per 100,000, and for that year Pittsburgh had a typhoid death rate of 3 per 100,000.

Nine hundred and seventy-five cases of undulant (Malta) fever were reported to the Public Health Service for the calendar year 1929, with 41 deaths. The importance of undulant fever becomes more apparent as more is learned of the disease.

Tularaemia is much more widespread than it was supposed to be when the disease was discovered. The reports are not complete, but in 1929 there were 461 cases and 36 deaths reported to the Public Health Service.

The mild type of typhus fever, which differs in some respects from the Old World typhus exanthematicus and also from the form of typhus which is endemic in Mexico, was reported during the year 1929 in a number of States, especially in the southeastern part of the United States. Incomplete reports showed 239 cases of typhus fever and 16 deaths from this disease in 18 States during 1929.

No outbreak of dengue was reported in the United States during the calendar year 1929, although cases were reported by a number of the Southern States.

PREVENTION OF THE INTRODUCTION OF DISEASES FROM ABROAD

No instance of the importation from abroad of any quarantinable disease into the United States occurred during the fiscal year. Four vessels arrived upon which smallpox had occurred; vessels arrived also upon which meningococcus meningitis (cerebrospinal meningitis) had occurred. Upon arrival at quarantine the cases of meningococcus meningitis were removed from the vessel and isolated at quarantine station hospitals, while those who were ascertained to have been in contact with these cases were detained for observation at the quarantine stations. Among those detained for observation several cases of the disease developed.

Toward the latter part of May, 1930, an outbreak of cholera occurred in the Philippine Islands. This outbreak began in and principally involved rural communities, centering in the south central part of the Philippine Archipelago. The port of Cebu became infected and interisland quarantine was declared against that port; Manila remained uninfected in the port proper, although several isolated cases occurred in the outlying adjacent countryside about the end of the fiscal year. At the close of the fiscal year the situation had become so threatening that a maritime quarantine against the Philippine Islands was being contemplated as a measure of protection against the transmission of the infection, particularly through oriental steerage passengers to the Hawaiian Islands and the Pacific coast ports of the United States.

Yellow fever continues to be reported from the Gold Coast of Africa, one case having occurred in Liberia where an officer of the

Public Health Service has been especially detailed for duty in connection with the control of this disease. There have also been cases of yellow fever reported from the port of Para at the mouth of the Amazon River, and several interior Brazilian places. This situation warranted the declaration of a yellow-fever quarantine against Para and the issuance of an advisory warning notice respecting the possibility of other Brazilian ports being infected from outbreaks occurring in the interior. The *Aedes aegypti* mosquito, which transmits yellow fever, has been reported exceedingly prevalent in the South Atlantic and Gulf coast territory of the United States and the undetected arrival and subsequent entry of a single case of yellow fever might result in a serious outbreak.

Beginning in November, 1929, the occurrence, with a high mortality rate, of an unusual sickness, resembling both influenza and typhoid fever, began to be reported in various sections of the United States. Investigation revealed that the disease was psittacosis and that the cases were associated with recently imported and acquired parrots. It was deemed advisable to stop the importation of all species of parrots from all countries for the time being until the identity of the causative organism and the unknown means of the transmission of the disease could be studied. As a result, Executive Order No. 5264, dated January 24, 1930, was issued restricting for the time being the introduction of parrots into the United States. In accordance with this Executive order the Secretary of the Treasury, upon the recommendation of the Surgeon General of the Public Health Service, issued regulations under date of February 3, 1930, governing the importation of parrots into ports of the United States and its possessions.

The special regulations of the Secretary of the Treasury governing the transportation of passengers from oriental ports to United States ports, prescribed in accordance with Executive Order No. 5143, dated June 21, 1929, continued in force during the fiscal year and have proved effectual in attaining the essential control of the danger theretofore presented by the introduction of epidemic cerebrospinal meningitis into the United States from oriental ports.

At domestic ports during the year 17,619 vessels, 914,878 passengers, and 1,163,915 seamen were inspected on arrival by quarantine officers; at insular ports 3,026 vessels, 141,416 passengers, and 216,326 seamen were inspected; and at foreign ports 4,926 vessels, 514,590 passengers, and 410,604 seamen were inspected prior to embarking for the United States.

Of the passengers who embarked at European ports, 56,115 were vaccinated and 74,509 were deloused under the supervision of medical officers of the service. Clothing and baggage of these passengers amounting to 96,381 pieces were disinfected.

A total of 5,189 vessels were fumigated either because of the occurrence of disease aboard or for the destruction of rodents as a plague-preventive measure. Of the rodents recovered following fumigation, 14,047 were examined for evidence of plague infection.

In addition to the widespread general interest awakened by the rapid increase of international aerial transportation, its importance from the standpoint of the transmission of communicable diseases has become a matter of serious interest not only to this country but

also to the countries of Latin America and the countries of Europe, Africa, and Asia. As a consequence, a preliminary draft of a proposed international agreement for the sanitary control of aerial navigation was prepared by a special international commission known as the Quarantine Commission of Air Navigation which met in Paris on March 11, 1930, and was submitted to the Permanent Committee of the Office International d'Hygiene Publique during its May, 1930, session. The Surgeon General, who represents the United States on that committee, was requested to ascertain the views of the Pan American countries with reference to any technical changes deemed advisable in the proposed draft. This subject will probably be a major one for discussion at the autumn meeting of this committee in Paris, in October, 1930.

During the past year the new Nationalist Government of China was reported to have under consideration the assumption of control of maritime quarantine in Chinese ports. All maritime countries of the world are deeply interested in such proposed change. The Public Health Service received a request from designing architects in the employ of the Nationalist Government of China for plans and specifications for typical quarantine stations, and such plans and sketches were sent covering the quarantine plants at the ports of New York and San Francisco.

MEDICAL EXAMINATION OF ALIENS

At domestic ports 1,211,796 alien passengers and 988,759 alien seamen were examined by medical officers under the immigration laws. Of this number 25,659 passengers and 1,797 seamen were certified for various diseases and disabilities. The most important causes and the numbers of aliens certified therefor, were as follows: Trachoma, 380; tuberculosis, 135; feeble-mindedness, 163; insanity, 114; syphilis, 163; gonorrhea, 386. Of the alien seamen examined, 37 were certified for trachoma, 21 for tuberculosis, 264 for syphilis, 339 for chancroid, and 611 for gonorrhea.

There has been no material change during the past year in the system of making, in the principal European countries, medical examination of applicants for immigration visas in their countries of origin. This system of the examination of intending immigrants has proved so satisfactory that it is proposed to extend it to additional foreign countries as soon as trained medical officers are available for this purpose.

During the fiscal year ended June 30, 1930, a total of 156,370 applicants for immigration visas were given medical examination in their country of origin. Of the total examined 20,167, or 12.9 per cent, were found to have mental or physical defects; 8,608, or 5.5 per cent of the total examined, were refused visas for medical reasons. Of 147,762 aliens who had been given a preliminary medical examination abroad and to whom visas had been issued, only 23 were finally certified upon arrival at a United States port as being afflicted with class A diseases, resulting in mandatory deportation. The medical examination of aliens abroad is conducted in cooperation with the State Department and the Immigration Service of the Department of Labor.

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

Demonstration projects in rural sanitation were carried on in 202 counties in 24 States. As the rural population in general is not aware of the advantages to be gained through the application of public health measures, outside stimulus and assistance are essential in order to secure the establishment of adequate and properly organized local health service. While rural health work is applicable to communities in the United States comprising about 60 per cent of our total population, only about 23 per cent of the rural population is so provided. Among the remainder there is a sacrifice each year of the health and lives and material resources of many people—a sacrifice which is needless because preventable, and preventable by measures readily within our means. It is the opinion of the Public Health Service and of the State health authorities, as well as of outstanding leaders in the field of public health in our principal educational institutions and elsewhere, that the development of efficient whole-time local health organizations through which all necessary public health activities may be conducted in proper sequence and in proper relation one to the other is the program which will yield a far greater return on the dollar invested in lives saved and sickness prevented among all age groups of both sexes than any program limited to special diseases or to particular elements of the population that has ever been tried out or suggested.

On January 1, 1930, the number of counties or comparable jurisdictions which were provided with whole-time local health service under the direction of whole-time county or district health officers was 505, as compared with 467 on January 1, 1929, and with 109 on January 1, 1920. There are in the United States approximately 2,500 counties or other similar jurisdictions in which such service is applicable.

In connection with the prevention of the interstate spread of disease, 81 per cent of the 2,526 sources of drinking water supply used on interstate trains have been brought under sanitary supervision and control, as have 78 per cent of the 282 sources used on interstate vessels. It will be difficult to increase these percentages since it is not possible in some States for annual inspections to be made, particularly of small supplies which have been found to be satisfactory on previous inspections. At the present time it is believed that all supplies used by interstate carriers are reasonably safe and well under control.

The control of shellfish sanitation has been maintained under the system which proved satisfactory in previous years. Through the efforts of the sanitary engineers of the Public Health Service who are engaged in this work, the effectiveness of control measures exercised by the States themselves is gradually increasing, and the difficulties which were encountered at the beginning of the work are constantly diminishing. A new plant for the cleansing of clams in chlorinated water is operating under State supervision at Plymouth, Mass., and the results are being carefully observed. The clams subjected to this treatment are taken in part from polluted waters. The conclusions regarding the efficacy of this method of cleansing will be announced after the requisite study has been completed.

Supervision of sanitation in the national parks has been continued at the request of the National Park Service. Plans and specifications for sewerage systems, disposal plants, and water supply systems have been worked out in numerous parks. Other activities have consisted of general inspections of all hotels, lodges, cafeterias, house-keeping units, swimming pools, and places handling, selling, or serving food products. Inspections have also been made of Government automobile tourist camps and other operations of the Government in the parks where problems of sanitation were involved.

Owing to the constant threat of the spread of bubonic plague from the plague-infected ground squirrels in California, field activities directed against these rodents have continued as for years past. The work is not conducted on a sufficient scale to eradicate the infection among the squirrels, but it is of value in affording information as to the extent to which the infection exists in various localities and in preventing its spread to the rat population of the cities, thus averting the necessity of the imposition of quarantine measures by foreign countries. Assistance has also been given to city health authorities of California in examining rats in order to insure that plague does not exist among them. The county horticultural commissions and the State and municipal health departments have also engaged in various phases of the plague suppression work.

Trachoma activities have also been conducted as formerly through small hospitals provided by the State and local health authorities at Rolla, Mo., Knoxville, Tenn., and Richmond, Ky.

The Twenty-Eighth Annual Conference of State and Territorial Health Authorities with the Public Health Service was held in Washington, D. C., June 18-20, 1930. Delegates from many of the States and from the District of Columbia and the Territory of Hawaii were present.

INVESTIGATIONS OF PUBLIC HEALTH PROBLEMS

During the year further study has been made of the action on tissue cells of oscillating currents of very high frequency. The apparent resistance to reinoculation noted in mice inoculated with the strain of mouse sarcoma, known as No. 180, was made the subject of observation, and it was determined from experiments that this immunity is caused by the growth of the tumor itself and not by the method of treatment. The effects of the high-frequency electrostatic field upon the isolated batrachian heart were studied. It seems probable from these experiments that this action of the high-frequency field on the batrachian heart is a thermal action. Treatments for cancer as reported by other workers in the field have been carefully followed, and where the results warrant such action similar experiments have been conducted at this field station.

At the leprosy investigation station in Hawaii, particular efforts have been centered on the removing of contributing causes of aggravations and recrudescences of the disease and of applying measures to foster the general health. Experimental work at this station has included observations on the results of the intramuscular

injection of the derivatives of chaulmoogric acid and the confirmation of previous findings that they remain *in situ* for many months; Röntgenologic study of the earlier bone changes in leprosy; efforts to cultivate *in vitro* the bacillus of human leprosy and rat leprosy; and attempts to establish immunity in rats to inoculations of the bacillus of rat leprosy when suspended in the specific granulomatous tissue ground in saline.

The continuous and intermittent dusting studies for the control of anopheline mosquitoes by the use of Paris green, which were under way at the end of the last fiscal year, have been in progress during the entire fiscal year. During the progress of this work no screening was urged and no quinization practiced other than that normally given by the local physicians. Although it is expected that a minimum of two years will be necessary before an accurate evaluation of results can be made, it is interesting to note that, although *Anopheles* mosquitoes were not eradicated, their numbers were materially reduced, and that the malaria rate, as determined by blood examinations in 17 rural schools in one of the counties where continuous dusting is being applied, which had been 40.4 per cent before the work commenced, had fallen to 25.3 per cent 12 months later. Screening studies have been continued in west Tennessee, and economies have been devised in mosquito-proofing methods. The practicability of county-wide screening has been demonstrated and the procedure introduced into many new counties.

The test of the pellagra-preventive value of individual foodstuffs as originally planned and initiated by the late Surg. Joseph Goldberger has been continued. During the course of these investigations two interesting ramifications of the investigations have been developed: (a) In connection with the study of onions a severe anemia of dogs was observed. Further studies of this condition are in progress. (b) A fatty degeneration of the liver was observed in connection with the dog experiments and a preliminary report of these observations has been published.

The work at the Rocky Mountain spotted fever field laboratory has been continued as indicated in the following activities: (1) The manufacture and distribution of the vaccine for the prevention of Rocky Mountain spotted fever. During the year 55 liters of vaccine were prepared and distributed directly to local physicians with certain small amounts in some instances being placed at the disposal of State health departments. (2) Epidemiological studies relating to the occurrence of this infection in man and in nature. Data collected over a period of 16 years indicate a 7-year cycle in prevalence. A quite definite northward and southward extension of the area in which Rocky Mountain spotted fever is endemic has been noted, cases having been reported in Saskatchewan, Canada, and New Mexico for the first time. (3) The collecting of data concerning other pathological conditions of man caused by ticks of the Rocky Mountain region and experimental studies of same. These have included studies of tick paralysis, Colorado tick fever, and tularaemia. It is gratifying to record that Surg. R. R. Spencer was awarded the gold medal by the American Medical Association at the annual session in June, 1930, for original work in the preparation of a vaccine against Rocky Mountain spotted fever.

Three additional investigations in child hygiene have been inaugurated during the year as follows: Studies of the effect on the mental health of the child of various types of birth, such as prolonged labor, forceps delivery, and Cæsarean section; studies of the mental hygiene of childhood to be used as a background for comparison with the many studies now available of the so-called problem children; and studies of the relation of dental caries to nutrition and health. The study of the vision of school children in the schools of the District of Columbia has been continued with special emphasis placed on the reexamination of the children.

In addition, a number of studies undertaken outside of the child-hygiene office and described elsewhere in this report have an intimate bearing on child-health problems; for example, the studies on natural illumination, on infectious-disease incidence in rural and urban areas, on scarlet fever and the standardization of biologics relating thereto, on milk sanitation, and a number of other topics.

The industrial hygiene studies have continued and have yielded valuable information. Ventilation studies have been conducted along two general lines, viz, (1) studies of natural and artificial ventilation as they relate to air conditioning, and (2) the study of the practical efficiency of ventilating devices in the removal of dusts, gases, and fumes. A field study of the health hazards connected with radium-dial painting has been made in seven plants in the States of Connecticut, Illinois, and Pennsylvania. Measurements of natural illumination at the experimental daylight building erected at Arlington, Va., although not completed, have been sufficiently worked out so that the results can be applied to buildings in any section of the country for winter or summer and for cloudy and bright days. This information should be helpful in the planning of buildings. Statistical studies of the office of Industrial Hygiene and Sanitation have included occupational mortality for the years 1915-1926 based on life insurance records, duration of the effect of medical selection in life insurance records, physical impairment in broad occupational groups, rates of physical impairment in specific occupation, and postural studies.

A complete milk-sanitation survey has been made in 405 cities located in 22 States. The number of cities which have thus far adopted the standard milk ordinance recommended by the Public Health Service has increased to 379. These cities are located in 22 States.

The tabulation and analysis of data collected in influenza surveys in 10 large cities and in several small towns and rural areas has been continued by the statistical office. A morbidity field study of a rural population and one of a moderate-sized manufacturing town, for comparison, was begun during the fiscal year to determine the extent and character of illness that occurs in such populations. It has included a census of the members of the household including a brief history of past attacks of communicable diseases, a census of chronic diseases, a record of current illness by periodic household recanvassing, and a few special inquiries.

The major studies in progress at the close of the fiscal year at the stream-pollution investigations station include a resurvey of the pollution and natural purification of the Ohio River between Cin-

cinnati, Ohio, and Louisville, Ky.; experimental studies of certain basic factors operative in the process of natural purification of polluted water; and studies of the efficiency of artificial water-purification processes. The resurvey of the Ohio River is expected to yield information as to the present condition of this section of the river, a comparison of past with present conditions of pollution, the limit of probable future permissible increase in pollution, and the rates of natural purification.

The passage by Congress of two acts bearing upon the work and expansion of the Hygienic Laboratory has been of outstanding importance. By the act of April 9, 1930, authorization was given for the establishment of additional divisions as may be necessary for the study of the diseases of man, and the enlargement of the functions of the Hygienic Laboratory Advisory Board, the appointment of five additional members, and a change of designation to the National Advisory Health Council. By the act approved May 26, 1930, the name of the Hygienic Laboratory was changed to the National Institute of Health, and provisions were made for additional buildings, the establishment of fellowships, and the acceptance of gifts for the study of fundamental problems relating to the diseases of man.

The Division of Pathology and Bacteriology has continued its researches on nutritional diseases and on various infectious diseases, and has examined a large amount of pathological material for microscopic diagnosis. Work on typhus fever has been carried out along three definite branches, viz, (1) the identification of animals which may serve as reservoirs for the disease; (2) the study of insects (other than the body louse) which may act as vectors either from animal to man or from man to man; and (3) an epidemiological study.

The outbreak of psittacosis which occurred during December, 1929, and early in January, 1930, has been studied epidemiologically and laboratory investigations have been in progress since January 16, 1930. There is now a record of 169 cases with 33 deaths, extending over the period November 23, 1929, to May 7, 1930. These cases occurred in 16 States and the District of Columbia and are exclusive of 16 laboratory infections, with two deaths, and 12 probable cases removed from merchant vessels entering our ports. During the course of the investigations at the National Institute of Health there were 11 accidental infections, with 1 death. Only two of those infected had contact with infected birds, and in the remaining nine cases the manner of infection was not determined, though the source was undoubtedly the same. To minimize the danger of infection the laboratory investigations of this disease were removed to the United States quarantine station at Baltimore, Md. The medical officer in charge of the work and his laboratory assistant both contracted the disease and recovered and are now presumably immune.

Undulant fever has been reported in every State in the Union during the calendar year 1929, a total of 1,305 cases having been reported either officially or unofficially. Epidemiological data on 442 cases have been collected, and the evidence shows that about 47 per cent probably contracted the disease through the use of raw dairy products, 9 per cent as a result of their daily occupation, and

44 per cent as a result of contact with infected livestock on farms, combined with the use of raw dairy products.

Tularaemia was reported from the States of Washington and Massachusetts during the year, bringing the known area of distribution up to 43 States of the United States, and the District of Columbia, Japan, Russia, Norway, and Canada.

During an epidemic of cerebrospinal meningitis in which all four of the usual types of meningococci were involved an apparently new form was isolated from the spinal fluid of 14 cases. The name *Neisseria flavescens* n. sp. has been proposed for this new form. The work of controlling the importation and sale of biologic products under the act of July 1, 1902, has continued and is a valuable service.

In the Division of Pharmacology a new method for the continuous measurement of the hydrogen ion concentration of the circulating blood has been worked out; a comprehensive cytological study of cultures of fibroblasts and embryonic heart in connection with cancer studies has been completed; and a new colorimetric method for the standardization of ergot preparations has been developed.

The epidemic of Jamaica ginger paralysis which occurred during the months of February and March of this year following the drinking of an adulterated fluid of ginger extract has been investigated by laboratory experimentation, and it has been shown that the specific cause of the paralysis is a phosphoric acid ester of one or possibly more than one of the cresols (tri-ortho cresyl phosphate).

The Division of Chemistry has been engaged in important researches on sugar, in studies of sulphur metabolism, and in general analytical work.

The work of examination of intestinal parasites for diagnosis has been continued by the Division of Zoology. Two bulletins on the parasites of man and their relation to animal hosts have been published and two others are nearly completed.

MEDICAL SERVICES AT MARINE HOSPITALS AND OTHER RELIEF STATIONS

The most important medical-service functions are hospital and out-patient treatment for seamen from merchant vessels and other legal beneficiaries, and the cooperative services performed for the Employees' Compensation Commission, Civil Service Commission, and the Veterans' Bureau. The determination to develop and encourage the maintenance of a merchant marine, necessary for the national defense and the proper growth of foreign and domestic commerce, makes the marine hospitals and other relief stations even more essential than in 1798 when the Marine Hospital Service was inaugurated. Medical facilities are provided in 155 ports of the continental United States and its insular and territorial possessions; and when the building program is completed the marine hospitals will be prepared to meet all probable requirements.

For the Coast Guard, with a personnel of about 13,000, all medical services and supplies are provided, afloat and ashore. The physical examinations of Coast Guard personnel in recruiting, promoting, and for retirement are considerable. In addition to the general facilities provided at the marine hospitals and other relief stations,

24 medical and dental officers and 109 part-time physicians are assigned exclusively to Coast Guard duties. As the chief medical agent of the Employees' Compensation Commission, the Public Health Service admits injured Federal employees to all marine hospitals and out-patient offices and makes available for use, through contracts, 210 private hospitals. It is a distinct advantage that the examinations of injured Government employees are performed by competent and disinterested medical officers following accepted standards, and that the duration of disability is determined and rating for compensation made from data thus furnished. The Civil Service Commission continues to increase its requirements for the examination of applicants and employees, and the Veterans' Bureau, because of the liberalization of medical treatment, has greatly increased its requirements for beds in ports where the marine hospital is the only Government hospital. A total of 1,547,000 hospital days relief and 871,780 out-patient treatments were furnished at the marine hospitals and other relief stations, and 115,892 persons were given physical examinations not related to treatment. One thousand one hundred and twenty deaths occurred among hospital patients.

PREVENTION AND CONTROL OF VENEREAL DISEASES

During the fiscal year 1930 State health authorities reported to the Public Health Service 213,309 cases of syphilis and 155,875 cases of gonorrhea. The total of venereal infections thus reported exceeded the number of cases recorded during the calendar year for any other single communicable disease, omniprevalent measles not excepted. While it may be assumed that the reporting for all notifiable diseases probably is far from complete, there is no reason to believe that cases of venereal disease are being reported any more completely than cases of other diseases. On the other hand, data obtained from prevalence studies which have been made up to the present time appear to show that the incidence of syphilis and gonorrhea in the United States probably is much higher than that indicated by the State reports. Estimates worked out from the results of these surveys place the probable number of new infections for which treatment is sought during the course of a year at more than 1,000,000.

Realizing the serious nature and tremendous extent of the venereal-disease problem in this country, the service has continued its efforts to improve methods of treatment for syphilis and gonorrhea and to stimulate greater interest in the control of these infections. Special surveys have brought to light the true prevalence of syphilis in certain population groups in several States. Demonstration projects, financed almost entirely with funds obtained from outside philanthropic agencies and from State and local sources, have been carried out under service guidance to show what may be accomplished in the control of syphilis through the effect of treatment applied to large numbers of infected individuals in a single locality at one time.

The campaign against venereal diseases among seamen in the American merchant marine has been continued. Through the medium of weekly talks given by medical officers to patients in hos-

pitals of the service, thousands of men have been advised during the past two years concerning the serious nature of syphilis and gonorrhea, the danger of neglecting treatment of these infections and the means of preventing their occurrence. Splendid cooperation has been received from the shipping industry in carrying out the plan to make prophylactic materials readily available to men on vessels.

Research activities inaugurated during the preceding year, in cooperation with the health section of the League of Nations and the Committee on Research in Syphilis (Inc.), in the United States, were continued. The studies conducted in relation to the efficacy of modern treatment of syphilis already have yielded valuable information which can be applied in a practical way in the management of the disease in the future. Also an increased amount of authoritative health educational material and special reports has been distributed during the year in the aid of scientific research and for the enlightenment and guidance of all those seeking health information.

NAME OF NARCOTICS DIVISION CHANGED TO DIVISION OF MENTAL HYGIENE

The year ended June 30, 1930, has been characterized by additional legislation seeking to coordinate and crystallize the functions of the Narcotics Division. At the close of the year, the functions of the division included the administration of the two United States narcotic farms authorized in the act of January 19, 1929; studies and investigations of the nature of drug addiction and the best methods of treatment and rehabilitation of persons addicted to the use of habit-forming drugs; the dissemination of information on methods of treatment and research in this particular field; cooperation with State and local jurisdictions with a view to their providing facilities for the care and treatment of narcotic addicts; the supervising and furnishing of medical and psychiatric service in Federal penal and correctional institutions; studies and investigations of the abusive use of narcotic drugs and the quantities of such drugs necessary to supply the normal and emergency medicinal and scientific requirements of the United States; and, lastly, studies and investigations of the causes, prevalence, and means for the prevention and treatment of mental and nervous diseases.

The widening scope of service activities, as illustrated above, again calls attention to the increasing tendency for diversification of service work and to a pressing need for enlarging the regular medical corps so as to permit and promote specialization in certain lines of its essential work.

COOPERATION WITH OFFICIAL AND UNOFFICIAL AGENCIES

In consonance with the policy of the Public Health Service for the past several years cooperation with official and unofficial organizations in matters concerning public health was continued during the past fiscal year. A number of these cooperative activities are required by law and the remainder are deemed necessary in the interest of economical and efficient administration. By means of this cooperation similar or related activities are coordinated and duplication of effort is avoided. The volume of this cooperative

work, although heretofore extensive, was further increased during the fiscal year 1930, by the provision, through the Public Health Service, of medical service for Federal prisons. Among the more important cooperative activities of the service the following may be mentioned:

1. With the Department of State in the medical examination of intending immigrants abroad for visa purposes, and in the issuance of bills of health by American consuls and related quarantine matters, and in the treatment of sick destitute seamen returned from abroad.

2. With other branches of the Treasury Department in the hospital care and medical and hospital services to the Coast Guard, including retired personnel, in the development of venereal-disease control activities among seamen, and in making sanitary surveys of Coast Guard stations; in aiding the Bureau of Customs in the matter of violations of the act of February 15, 1893, because of failure of masters of vessels to present American consular bills of health; in issuing port sanitary statements to outbound vessels, and in standardizing and administering procedures required of aircraft arriving in the United States from foreign countries; in the issuance of permits to ships for medicinal liquor and narcotics; in service on committees for the examination and disposition of narcotic drugs; with the Office of the Supervising Architect in the preparation of plans for water supply and sewage disposal systems at border customs stations.

3. With the War and Navy Departments in the physical examination of applicants for Officers' Reserve Corps and citizens' military training camps; medical and hospital services for civilians employed on vessels of the Mississippi River Commission, Army Engineer Corps, and Army transports; treatment of officers and enlisted men of the armed forces (as pay patients); the Chemical Warfare Service in furnishing consultation service on pharmacological subjects.

4. With the Department of Justice in making sanitary surveys of water and sewerage systems and pasteurization of milk at penal institutions; in matters related to the protection of the interests of the United States in which the administration of the quarantine laws and regulations are concerned, or in which the proper care and preservation of public property is concerned; in the treatment of Federal prisoners retained in jails at certain ports; in furnishing personnel for medical and psychiatric work in Federal prisons, and with the Prohibition Bureau in the study of the cause of Jamaica ginger paralysis.

5. With the Post Office Department by first aid and special physical examinations; inoculation of employees handling mails against typhoid fever and vaccination against smallpox; medical testimony in the suppression of frauds; in ventilation and illumination studies at the substation post office at the Graybar Building, New York City, and the post office at Iowa City, Iowa.

6. With the Department of the Interior by making, for the Bureau of Pensions, physical examinations of applicants for civil-service retirement and for military pensions; the Office of Indian Affairs in the investigation of water and sewerage systems on Indian jurisdictions, and in a study of the relation of dental caries to nutrition

and climate; by the detail of medical officers to supervise the medical work of the Office of Indian Affairs; with the National Park Service in the supervision of sanitation in national parks and monuments, in maintaining the joint venereal-disease clinic for indigents at Hot Springs, Ark., and in an epidemiological study of the various phases of an intestinal illness of unknown origin which has occurred for the past few summers in the national parks of the Rocky Mountain region.

7. With the Department of Agriculture by the inoculation of certain field employees against typhoid fever and vaccination against smallpox; by assisting in the enforcement of plant and animal quarantine; with the Food and Drug Administration in the standardization of ergot preparations and in the enforcement of the pure food law in relation to the adulteration of shellfish.

8. With the Department of Commerce in the matter of standardizing and administering procedures required of aircraft arriving in the United States from foreign countries; by the physical examination and instruction and examination in the principles of first aid of applicants for license as ships' officers, at the request of the Steamboat Inspection Service; by the treatment of lighthouse keepers and seamen from vessels of the lighthouse establishment, Coast and Geodetic Survey, and Bureau of Fisheries; by furnishing medical supplies to lighthouse vessels; by the physical examination of commercial air pilots; by making sanitary surveys for the Bureau of Lighthouses; with the Bureau of Mines by assisting with the organization of venereal disease treatment activities in the clinic at Picher, Okla., and also by the detail of medical personnel to that bureau; with the Bureau of Standards, the Chemical Warfare Service, and the Bureau of Mines in connection with the health hazards arising from the use of refrigerating gases; and with the American Marine Standards Committee in the preparation of standard specifications for the rat proofing of ships.

9. With the Department of Labor by the examination of immigrants in the United States and abroad and treatment of detained aliens; in standardizing and administering procedures required of aircraft arriving in the United States from foreign countries; in the medical examination of arriving immigrants, and the medical examination of intending immigrants abroad.

10. With the Civil Service Commission in the physical examination of applicants and employees, and for reinstatement and retirement.

11. With the Bureau of Efficiency in furnishing assistance in the preparation of a plumbing code.

12. With the United States Shipping Board in the physical examination of crews and in the development of a program for prevention of venereal diseases among seamen in the American merchant marine.

13. With the United States Employees' Compensation Commission in the hospital and out-patient treatment of disabled Federal employees; physical examinations and special investigations; by the detail of a permanent board of medical officers for disputed and difficult claims and providing medical assistance in carrying out the

longshoremen's and harbor workers' compensation act and the District of Columbia workmen's compensation act.

14. With the United States Veterans' Bureau by the physical examination and hospital and out-patient treatment of patients, and in furnishing advice to the engineers on water supply and sewage disposal systems at the veterans' hospitals at Castle Point and Northport, N. Y.

15. With the United States Senate and House of Representatives in the installation and testing of adequate ventilating systems in the Senate and House chambers, and with the Committee on Claims of the House of Representatives by the physical examination of subjects of special bills.

16. With the Office of Public Buildings and Public Parks of the National Capital in the sanitary inspection of Government office buildings in Washington, and in making a survey to determine the extent of mosquito infestation on Government reservations in the District of Columbia.

17. With the Office International d'Hygiene Publique, Paris, and the Pan American Sanitary Bureau, Washington, D. C., in matters relating to maritime quarantine and the exchange of information relative to the prevalence of quarantinable diseases.

18. With the health section of the League of Nations, by collecting data requested for this country, to be used in a world-wide clinical study of syphilis; in supplying information as to the prevalence of diseases in the United States and in the detail of an officer as a member of an interchange group for the study of malaria conditions in India.

19. With the office of Chief Coordinator by service on committees of the Federal Specifications Board and service on the Federal Standard Stock Catalogue Board.

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

21. With all States in the supervision and certification of water supplies used by common carriers in interstate traffic.

22. With State departments of health in securing reports of cases of venereal diseases and compiling and publishing reports of State control and clinic activities.

23. With 22 States in milk sanitation surveys of 405 cities in those States.

24. With State departments of health by removing and segregating lepers at the National Leper Home.

25. With State and local departments of health in conducting surveys to determine the completeness of morbidity reports.

26. With State and local departments of health in testing sera for the agglutination reaction as an aid in the diagnosis of undulant fever.

27. With Alabama, Arkansas, California, Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Mississippi, Missouri, Montana, New Mexico, North Carolina, Oklahoma, South Dakota, Tennessee, Texas, Virginia, West Virginia, and Washington in cooperative demonstrations of county health work in 202 counties in these States.

28. With Alabama, Connecticut, Delaware, Florida, Georgia, Louisiana, Maine, Maryland, Mississippi, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Texas, Virginia, and Washington in the investigation of shell-fish growing areas and the development of local sanitary control machinery.

29. With Kentucky, Missouri, and Tennessee in the maintenance of hospitals for the prevention and control of trachoma, and in Oklahoma and Georgia, in holding clinics to determine the prevalence of trachoma.

30. With Mississippi, Tennessee, Georgia, Alabama, and North Carolina in the development of State venereal-disease control activities.

31. With New Jersey, New York, and Indiana in the development of educational work on the prevention of venereal diseases.

32. With Illinois, Arkansas, West Virginia, and Kentucky on venereal disease prevalence surveys.

33. With Arkansas, Illinois, Kentucky, Louisiana, Mississippi, and Tennessee in making sanitary surveys of labor camps for flood-control work along the Mississippi River.

34. With Arkansas, California, Iowa, and Tennessee in studies of public health administration.

35. With Georgia, Kentucky, Florida, and New Mexico by the conduct of malaria surveys.

36. With South Carolina and Pennsylvania in the investigation of cases of suspected typhus fever.

37. With North Carolina and Kansas by the detail of personnel to present papers on water purification at schools held by those States for sewage and water-works operators.

38. With Ohio and Tennessee, in an investigation of cases of paralysis caused by drinking Jamaica ginger.

39. With Massachusetts and North Carolina by the conduct of a mosquito survey.

40. With Georgia and Tennessee by county-wide dusting experiments for the control of *Anopheles* mosquitoes.

41. With Utah and Montana in studies of water supplies following typhoid outbreaks.

42. With Arizona in a study of pollution of irrigation canals.

43. With South Carolina, in flood sanitation and study of the effect of flooding on malaria prevalence.

44. With Connecticut in studies relating to industrial hygiene.

45. With Maine in the study of the pollution of the rivers of that State by paper-mill wastes and a survey of administrative health practice in the city of Augusta.

46. With Tennessee in planning an epidemiological study of tuberculosis.

47. With Virginia by the detail of an officer to study an outbreak of poliomyelitis.

48. With Kansas in the detail of an officer to present papers at the school for health officers and public-health workers.

49. With Wisconsin by the investigation of complications reported to have followed vaccinations at Eau Claire.

50. With Maryland in an investigation of an outbreak of psittacosis.

51. With Ohio by the detail of a member of the stream pollution staff to attend a conference on sewage disposal and water purification and to discuss methods for the determination of the biochemical oxygen demand of polluted water.

52. With the District of Columbia in a study of causes for the disintegration of a concrete sewer and in making a survey to determine the extent of mosquito infestation in the District of Columbia, and with the health department and board of education in the continuation of the study of the vision of school children.

53. With the cities of Baltimore, Md., and Charleston, W. Va., in venereal-disease prevalence surveys.

54. With San Francisco, Calif., and with the cities and counties in the vicinity of San Francisco Bay in rodent control and in the operation of the plague laboratory at San Francisco.

55. With Hawaii in the study of leprosy.

56. With Alaska in the physical examination and vaccination of nonresidents of Alaska, especially persons employed in the Alaskan fisheries and canneries.

57. With the Canadian Health Department in the enforcement of Canadian and American regulations concerning water supplies used by foreign vessels operating on the Great Lakes, and in shellfish sanitation work.

Cooperation has also been carried on with a number of organizations engaged in public-health activities, namely, the American Railway Association, in the formulation of regulations concerning the sanitation of railway water supplies and coach-yard sanitation; the Rockefeller Foundation in cooperative rural health work, and the continuation of child and maternal health work in rural communities; the American Standards Association by detail of a service representative on the exhaust committee for the purpose of developing a safety code; the American Social Hygiene Association in the conduct of venereal-disease prevalence surveys and the publication and distribution of scientific literature on the management of syphilis and gonorrhea and the prevalence of these diseases; the Pacific Steamship Owners' Association and the Lake Carriers' Association in the development of a program for prevention of venereal diseases among American seamen; the Marine Library Association in the distribution of educational material to seamen in the merchant marine; the Julius Rosenwald fund in the promotion of syphilis control demonstrations among rural negroes in the Southern States; the Committee on Research in Syphilis (Inc.), through the appointment of a service officer as director of research for the committee; the Milbank memorial fund in statistical studies of physical impairment in broad occupational groups and in connection with an epidemiological study of a rural population, and a moderate sized urban population, including the collection of comparable morbidity statistics; the Illuminating Engineering Society by membership on the committee on lighting legislation and natural lighting in the preparation of a new edition of the code of lighting factories, mills, and other work places; the National Safety Council by officers serving on several commit-

tees; the Conference of State Sanitary Engineers by the conduct of a school of instruction in the technique employed in stream pollution studies and in the interpretation of results; the General Federation of Women's Clubs in the preparation of an exhibit pertaining to stream pollution; the American Society for the Control of Cancer by representation on the board of directors; the White House Conference on Child Health and Protection by the collection and compilation of data on varied subjects relating to public health; the Girl Scouts of the District of Columbia, the Manhattan Council of Girl Scouts, and the Neighborhood House in making physical examinations; the committee on drug addiction of the National Research Council in chemical and biological research studies concerning opium and its derivatives, and in connection with the evolution of an educational program on the indispensable uses of opium and its derivatives in medical practice.

Cordial cooperation has been maintained between the several divisions of the bureau. By this means advantage is taken of facilities, including hospital and laboratory, for the prosecution of the special work of a particular division.

Cooperative assistance has been received from a number of unofficial organizations and laboratories. Laboratory facilities and other valuable assistance have been furnished in connection with service investigations of trachoma, cancer, leprosy, alkaloids, and child hygiene by the following-named universities: Missouri School of Mines, Harvard University, University of Hawaii, University of Michigan, University of Virginia, and Johns Hopkins University for office space and records in the study of mental health of the child of various types of birth. In addition, the Public Health Service desires to acknowledge assistance received from the following agencies: Massachusetts State Department of Health, Indiana State Board of Health, Florida State Board of Health, Washington State Board of Health, Buffalo City Health Department, and the University of Kentucky for Wassermann tests performed; the New York State Institute for the Study of Malignant Diseases, for care and study of cases of suspected cancer; the William Beaumont Army General Hospital, for complement fixation tests (Kahn) performed; and the Department of Health of Porto Rico, for the use of its laboratories. The cooperation rendered by these several agencies is hereby acknowledged. Through this means the conduct of important activities has been made practicable. This mutual relationship on the part of official and unofficial agencies is to be encouraged in the interest of public health.

PERSONNEL

The provisions of Public Act No. 106, approved April 9, 1930, relating to service personnel will unquestionably promote the upbuilding of a strong and efficient organization in the years to come. Prior to the enactment of this legislation, relatively few officers in the regular commissioned corps of the service could hope to attain a grade above that of surgeon, corresponding to the grade of major in the Medical Corps of the Army, until very late in active service life. Under the new law the periods of service required for pro-

motion, up to the grade of medical director, which corresponds to the grade of colonel, are definitely fixed. A commissioned officer entering the grade of assistant surgeon may now definitely look forward to attaining the grades of passed assistant surgeon, surgeon, senior surgeon, and medical director after periods of 3 years, 12 years, 20 years, and 26 years, respectively. Promotion is, of course, conditioned upon passing the physical and professional examinations prescribed by law and regulations.

The provisions of the law granting commissions to dental, sanitary engineer, and pharmacist personnel, upon passing the required examinations, is also a definite step toward the development of a well-trained officer corps for future public health needs, and the authority contained in the act to commission a limited number of the personnel now in the service in these professions is but just recognition of the part these officers have taken in the development of the Federal public health organization as it exists to-day.

It is pertinent, however, to invite attention again to the compensation received by commissioned officers in the entrance grade of assistant surgeon. Under present pay legislation, the maximum pay and allowances for an officer in this grade is \$3,158 per annum. An officer without dependents receives a maximum of \$2,699 per annum. When it is considered that a medical officer must have had at least 2 years' premedical training, 4 years in medical school, and 1 year's internship—a total of 7 years—the difficulty of securing candidates willing to enter the service at this compensation is better understood. Furthermore, young physicians who successfully pass the rigid entrance examination for a commission frequently receive offers of employment or for practice on the outside during the three years they must serve as assistant surgeon. During the fiscal year just closed, 40 applicants passed the entrance examination. In the same period, 13 resignations occurred in the grade of assistant surgeon, and, in addition, 2 of the men who passed the examination subsequently declined their commissions. In nearly every case where a reason for resignation has been given, it has been offers or guarantees of much higher income from sources outside the service.

It is therefore felt that while recent legislation materially improves the future offered commissioned officers, the question of increased compensation, especially in the lower grades, is highly important in attracting and retaining the services of young men well trained for their professions.

A joint resolution of Congress, approved February 3, 1930, provided for the appointment of a joint committee of the Senate and House of Representatives to investigate and report recommendations, by bill or otherwise, to their respective houses, relative to the readjustment of pay and allowances for commissioned and enlisted personnel of the Army, Navy, Marine Corps, Coast and Geodetic Survey, and the Public Health Service. The members of this joint committee were subsequently named and a committee organization was formed. From time to time information and data requested by the joint committee relative to the commissioned personnel of the Public Health Service have been furnished.

RECOMMENDATIONS

The prevention of disease and promotion of the health are of great importance to the Nation. Recommendations as to the means of protecting the public health in the most economical and efficient manner are advisable from time to time.

It is, therefore, desired not only to recommend additional measures relative to the prevention of the introduction and spread of diseases, but to conduct investigations as to the cause, mode of spread, and methods of prevention of diseases of public-health importance. Each year the study of public-health problems becomes increasingly complex. The following recommendations concerning the most important needs are submitted herewith.

SCIENTIFIC RESEARCH

The legislation enacted during the year provided for the creation of the National Institute of Health, with the Hygienic Laboratory as a nucleus, and authorized the appropriation of \$750,000, or so much thereof as may be necessary, for the construction and equipment of additional buildings. The present organization of the institute furnishes a sound basis for the expansion contemplated. The appropriation of the funds authorized is urgently needed in order to meet the immediate requirements and to put into effect the provisions of the law.

At least two new divisions are required in the institute in the conduct of the fundamental research work relative to diseases of man and in the underlying basic sciences; facilities are also needed for the organization of a number of special research units for the investigations of specific public-health problems.

Additional funds have been made available for the coming fiscal year for an expansion in the cancer and industrial hygiene work. Still further extension of the cancer work is needed. Among other important studies which it is desired to take up are the following: Investigation of heart disease as one of the major causes of premature death; ventilation studies; studies of mental hygiene from the standpoint of biochemistry and endocrinology; and further studies of the epidemiology and prevention of undulant fever.

RURAL HEALTH WORK

The development of efficient whole-time local health organizations through which all necessary public-health activities may be conducted in proper sequence and in proper relation one to the other is a program which should be enlarged and extended. As has been indicated by the President in a message to Congress, this should be based on local and State responsibility, but the Federal Government has an obligation of contributing to the establishment of such agencies. It is agreed by experienced public-health authorities that any program limited to special diseases or particular elements of the population is not economical and leads to confusion. There is no doubt that adequate local health organizations provide the machinery through which all public-health activities may be conducted,

thereby insuring to communities a well-balanced, comprehensive, and general public-health program adapted to their needs. It is believed that it would be of advantage to place such cooperative work on a more permanent basis, and to provide for it for a term of years rather than from year to year.

LEGISLATION

It is desired to renew the recommendation heretofore made that legislation be secured which will increase the compensation of commissioned officers in the service. The situation with regard to resignations, especially in the entrance grade of assistant surgeon, does not improve, and the relatively small number of applicants for the entrance examination demonstrates that the opportunity for a permanent career in Federal public health work does not appear attractive to well-qualified graduates when compared with the returns afforded by practice or other employment.

There is need also of legislative authority for paying the expenses of the return to this country of the dependents and personal effects of officers who die while on duty abroad. At the present time the service has on duty in Europe, Asia, Africa, South America, the Philippines, Hawaii, Panama, and Porto Rico between 40 and 50 officers. These officers go abroad under official orders, for tours of duty averaging three years. At the present time, in the event of an officer's death, only the expense of preparation and shipment of his body to his home is authorized. The cost of bringing home his dependents and personal belongings must necessarily be borne from private funds. It is felt that this is a financial obligation which should be assumed by the service which has ordered him abroad in the discharge of its official functions.

MARITIME QUARANTINE

Since the acquisition of the Virgin Islands by the United States, by purchase from Denmark in 1917, quarantine activities have been conducted there from quite inadequate rented facilities; title to these facilities did not pass to the United States with the acquisition of the island. They have since been rented at a cost of \$1,650 per annum. These facilities are not only inadequate but are extremely isolated and obsolete. St. Thomas is building up a fuel-bunkering trade and is becoming a crossroads to the Caribbean. As such its quarantine importance is considerably augmented, and suitable provision should be made for modest detention and housing facilities for the care of persons arriving with quarantinable disease as well as for personnel and equipment.

The act of Congress approved June 5, 1920, transferring the quarantine operations at the port of New York from State to Federal control, prescribed that the schedule of fees and rates of charges in effect at the time of transfer should remain in force. It is believed that the rates of charges prescribed by the Secretary of the Treasury for quarantine services rendered at national quarantine stations, pursuant to the provisions of the appropriation acts approved April 17, 1917, and June 16, 1921, should apply also at the port of New York. It will require legislation to correct this condi-

tion, however. Such enabling legislation should be secured at the earliest practicable date in order that these charges may be uniform at all quarantine stations, particularly in view of complaints which are being received of the marked discrepancy in the higher rate of charges for quarantine services rendered at the port of New York, obtaining under the existing law.

In order to carry out existing provisions of quarantine and immigration laws relating to the medical examination of persons from foreign countries, airplanes from foreign countries should be required to undergo quarantine and medical immigration inspections upon arrival at designated airports of entry, and it is believed that the designation of airports as airports of entry should be limited in number and confined to the principal airports along the frontiers, at many of which locations personnel and facilities are already available. The designation of numerous airports as airports of entry, particularly those in interior locations, practically prevents the proper and necessary medical inspection of planes and their passengers, inasmuch as medical personnel are not available for this work.

Properly to maintain the boarding and fumigating vessels required at the various quarantine stations, some 70 in number, a continuous replacement program is necessary. These vessels are engaged in arduous duty, which requires special design for boarding and fumigation work, as well as especially rugged construction. A minimum replacement program of two vessels per year, based upon a useful life of 30 years, would be required properly to maintain this floating equipment, the major part of which is attaining advanced age and an additional portion of which was of war-time construction, subsequently transferred to the Public Health Service without cost.

MAINTENANCE AND CONSTRUCTION OF MARINE HOSPITALS AND RELIEF STATIONS

The building program should be completed to enable the marine hospitals to meet the increased obligations arising from the growth of the American merchant marine and resulting from improved medical standards.

H. S. CUMMING,
Surgeon General.

Hon. A. W. MELLON,
Secretary of the Treasury.

17261-30-3

DIVISION OF SCIENTIFIC RESEARCH

In charge of Asst. Surg. Gen. A. M. STIMSON

CANCER

Surg. J. W. Schereschewsky has continued in charge of the office of field investigations of cancer with headquarters at the Harvard Medical School, Boston, Mass.

Investigation of the action of high-frequency currents on tissue cells.—During the first part of the past fiscal year, work was continued in the investigation of the action of high-frequency currents on tissue cells.

In the 1929 annual report attention was called to the observation that mice bearing mouse sarcoma No. 180, which had recovered as a result of treatment of high-frequency currents, were frequently found to be resistant to reinoculation—about 50 per cent of mice so treated showing this resistance.

During the year further study was made of this observation, which appeared interesting, inasmuch as other methods of immunization, such as the preinjection of defibrinated blood, emulsion of embryo skin, organ extracts, and the like, by which resistance against certain other laboratory tumors may be secured, are ineffective in the case of mouse sarcoma No. 180.

In the previous annual report it was reported that the action of ultra high-frequency currents on tissue cells is essentially thermal, as indicated by measurement of the actual temperature in the interior of the tumor immediately after treatment, by means of a thermocouple inserted into the tumor. This thermal action of the high-frequency currents on the tumor was further tested by means of applying heat to the tumors through the action of hot water circulating through hollow copper applicators placed one on either side of the tumor, the interior temperature of the tumor being measured by means of a thermocouple placed in situ, the current resulting from the potential difference between the hot and cold junction of the thermocouple being measured by a Rawson microammeter, in which the deflection per degree centigrade had previously been calibrated. Previous experiments had already shown that the thermal death point of mouse sarcoma No. 180, with a 3-minute exposure, was about 48° C.

As the result of these heating experiments, it was found possible to cause the recession of the tumor in a manner quite similar to the results obtained by the action of high-frequency currents, although the percentage of recoveries was not so high. Nevertheless, the percentage of the recovered animals resistant to reinoculation, among those which were treated by means of the hot water, was the same as among those which recovered through the action of the high-frequency currents, namely about 50 per cent. This apparent resist-

ance to reinoculation occurring after recovery through heat treatment seemed inconsistent with the results obtained by previous investigators, who found that it was impracticable to confer resistance to the implantation of tumors in laboratory animals by injections of heated tumor cells.

A possible explanation of the observed resistance to reinoculation present in about one-half the treated animals might be that the tumor itself, by its growth, produced a certain amount of resistance, which, though inadequate to halt the growth or cause the recession of the implanted tumor, nevertheless might be sufficient to prevent the development of a graft.

In order to test this assumption, tumors of about two to three weeks' growth, having average diameters of about 20 millimeters, were removed surgically from about 50 mice. Some 30 recoveries free from recurrence were secured. Forty-seven per cent of these mice were found to be resistant to reinoculation.

On the basis of this experiment, it therefore seems possible to ascribe the apparent resistance to reinoculation found in mice which had recovered after treatment, either with high-frequency currents or with hot water, to an immunity reaction caused by growth of the tumor itself and not to the method of treatment.

Action of high-frequency currents on the isolated batrachian heart.—In the previous annual report some reference was made to the effects of the high-frequency electrostatic field upon the isolated batrachian heart. During the first part of the fiscal year some further studies were made on this subject.

Isolated frogs' hearts, prepared according to Straub and perfused with Ringer's solution, were suspended between the plates of a condenser forming part of a tuned circuit excited at frequencies varying from 90,000,000 to 100,000,000 cycles.

A thermoammeter symmetrically placed in the tuned circuit indicated the current flow. Kymographic tracings were taken of the action of the isolated frog's heart in the usual way. Upon turning on the current, the heart rate was first greatly increased, approximately double, and the force of the pulsations also seemed to be increased in the majority of instances. This was usually followed by a fall in the rate, due to the supervention of a two to one heart block, the auricles beating twice to one beat of the ventricles. The heart would then be arrested in diastole while circus movements of the auricles took place.

Upon cutting off the current, after a period of quiescence, lasting sometimes as much as 30 seconds, the heart would resume regular beating, slowly at first, and then returning practically to normal. Continuance of the application of the current resulted in a similar cycle of events, the interval between the coming on of the heart block and the arrest of the heart in diastole becoming shorter and shorter until turning on the current would produce almost instant arrest of the heart. Eventually the heart failed to recover, after interrupting the current, even under adrenalin stimulation.

The effect noted on the heart was found to be roughly proportional to the current circulating in the auxiliary circuit. This effect could be produced on the heart, even if the circulating Ringer's solution, which was normally at 20° C., were cooled down by means of ice, to 3° or 4° C.

In view of all the circumstances, it seems probable that this action of the high-frequency field on the batrachian heart is a thermal action, although suspension of the heart in the interior of a tube which was heated by the circulation of hot water to various temperatures, did not produce quite the same type of kymographic tracings.

Experiments with Rous fowl sarcoma.—During the year attempts were made to make chickens immune to the Rous fowl sarcoma by means of the treatment of skin tumors by high-frequency currents and reinoculation and retreatment upon recovery.

While spontaneous recessions of the Rous fowl sarcoma are exceedingly rare, nevertheless they occasionally occur. Chickens in which the tumors have receded are found to be resistant to subsequent reinoculation. The growth of the tumor, therefore, produces an immune reaction in the chicken which, however, is sufficiently developed, only on rare occasions, to bring about the recession of the tumor.

By this method of treatment and reinoculation, it has been possible up to the present time to render immune approximately 17 chickens, the test for immunity being resistance to two consecutive tumor implantations in the breast muscle, followed by resistance to an intravenous injection of 3 cubic centimeters of a centrifuged suspension of tumor tissue made by grinding 1 gram of tumor in 25 cubic centimeters of salt solution.

The object of securing a considerable number of immune chickens was to study the protective action of the serum of immune chickens against the tumor virus.

Owing to intercurrent infections, however, only five immune chickens have remained alive, but steps are being taken to increase this number as preliminary experiments have shown considerable power of neutralization of tumor virus by serum of such immune chickens.

These experiments have been conducted in collaboration with Dr. Howard B. Andervont, of the Department of Preventive Medicine and Hygiene, Harvard Medical School.

"Oxygen treatment" of cancer.—In August, 1929, Dr. B. Fischer-Wasels, of Frankfurt, Germany, gave an address at the Harvard Medical School, in which he detailed the effects observed by him on the growth both of laboratory tumors in mice, and on cancer in two human cases, of an exposure of several hours daily to an atmosphere containing 95 per cent oxygen and 5 per cent carbon dioxide, a condition of relative acidosis being maintained during the treatment by appropriate medication. Doctor Fischer-Wasels reported, at the address, apparent recovery by this treatment in two human cases, one an inoperable carcinoma of the oesophagus and the other an inoperable carcinoma of the stomach.

As a result of this address, it was understood that Doctor Lund, of the staff of the Boston City Hospital, intended to carry out this method of treatment in human subjects suffering from inoperable carcinoma.

It was thought that it might also be of interest to test the effect of such treatment on laboratory tumors. In the case of mouse sarcoma No. 180 it may be stated that inhalation of this gas mixture, lasting from three and one-half to four hours daily, had no influence

upon the tumor. Here and there an occasional tumor receded, but the percentage of recessions was not greater than occurred in controls.

The effect of inhalations of the gas, when accompanied by a state of relative acidosis caused by the intravenous injection of a 1 per cent solution of hydrochloric acid, seemed more effective, as in a group of seven mice so treated complete necrosis of the tumor took place in four cases. However, the mice succumbed to diplococcus infection.

A combined form of treatment seemed more effective in the case of two rats suffering from spontaneous adenoma of the breast, which was probably malignant. Complete recession took place by the use of a mild application of high-frequency currents in the usual way, intravenous injection of hydrochloric acid, and exposure to the oxygen-carbon-dioxide mixture.

Attempts were made to treat chickens suffering from Rous fowl sarcoma in the breast muscle in this way. In only one instance, however, was it possible to secure complete recession of the tumor, the chicken subsequently proving to be immune.

In other instances it was possible to cause complete necrosis of the tumor, but the chickens died as a result of the injections of the hydrochloric acid.

On the whole it could not be said, on the basis of the experiments conducted at this station, that the oxygen-carbon-dioxide treatment of malignant growths, either alone or in combination with other methods, produced encouraging results.

Effects of extracts of adrenal cortex on the growth of transplantable tumors.—Early in 1930 reports from the Pacific coast were printed in the newspapers of favorable effects on human cancer of an extract of suprarenal cortex developed by Doctors Coffey and Humber.

Moreover, at the Thirteenth International Physiological Congress, held at Boston, August 19–24, 1929, Dr. Boris Sokoloff reported the favorable effects on laboratory tumors in rats of the direct injection into the tumor of an extract of suprarenal cortex combined with iron and Isamine Blue.

Dr. Karl Meyer, director of the Hooker Foundation of the University of California, on a visit East, reported to Prof. M. J. Rosenau, of the Harvard Medical School, some apparently favorable effects which he had observed in human cases as the result of the injection of the adrenal cortex extract developed by Doctors Coffey and Humber.

Although it was impossible to obtain any details as to the method of preparation of the extract, it was thought that it might be of interest to study the effects, if any, of extracts prepared of suprarenal cortex.

It was understood that the suprarenal cortex extract, used by Doctors Coffey and Humber, was an aqueous extract. Such extracts were prepared, both from bullocks' and sheep's adrenals, and the effects of their injection were tested upon laboratory tumors.

It may be said that the extracts prepared in this laboratory were without noticeable effect upon the growth of mouse sarcoma No. 180, although when combined with Isamin Blue, as suggested both

by Sokoloff's experiments and the reports published in Germany on the inhibiting effects on the growth of human tumors of the intravenous injection of this dye, some restraining effects on the growth of mouse sarcoma No. 180 were observed. In only one of two instances, however, did complete recession of the tumor take place, and this may have been due to natural resistance on the part of the animal.

Effects of thymus extract.—In conjunction with the investigation of the effects of adrenal cortex extracts, an extract of calf thymus, prepared in accordance with Hansen's directions, was also studied. Although Hansen has claimed some encouraging results in the treatment of human cases of cancer with this extract, the effect on transplantable laboratory tumors was negative.

Other studies with glandular extracts.—In addition to the studies with glandular extracts just summarized, other collateral studies were made of the combination with adrenal cortex extract of the intravenous injection of various organic salts, of iron and ammonium chloride, and a modified diet. Under these conditions some restraint in the growth of mouse sarcoma No. 180 could be secured, but the results were negative so far as producing recession of the tumor.

Spontaneous tumor strain.—In August, 1929, request was made of the director of the State Institute for the Study of Malignant Disease at Buffalo, N. Y., for some of their strain of mice which show, in females, a high incidence of spontaneous tumor. These were duly received from the director, cages were ordered to breed the colony, and during the fiscal year propagation from the members of this strain has been continued.

At the present time the colony numbers 278 individuals. This number would have been considerably larger had it not been for losses through an epidemic of diplococcus infection which affected mainly the young mice just before they were weaned. The object of breeding this colony is to secure material for investigating means of modifying the spontaneous tumor rate in susceptible strains. It is hoped to increase this colony to 2,000 or more during the coming year.

LEPROSY

The leprosy investigation station has been conducted under the direction of Surg. N. E. Wayson, with Asst. Surg. John R. Murdock assisting, especially in the detailed medical relief to the patients at Kalihi Hospital, near Honolulu, Hawaii.

The cooperative arrangement with the Territorial authorities for the relief and study of the patients has been continued. Improvements in the medical administration of the hospital have been accomplished by the Territorial board of health principally through the provision of two nurses. This provision has reacted favorably in the care of patients, and has permitted more individual study by the two medical officers.

The volume of the medical activities is reflected in the statistical data. The medical officers either assist with or conduct all official examinations for admission, assist with those for temporary release and transfer, and conduct all examinations and treatments necessitated in the supervision of the out-patients (temporary releases) who report to Kalihi Hospital.

Inpatients of Kalihi Hospital remaining July 1, 1929, numbered 177; new admissions during the year, 49; readmissions because of relapse, 17; readmissions for conditions coincidental with quiescent leprosy, 8; transferred to Kalaupapa, 98; temporarily released (paroled) to outpatient status, 22; deaths, 4; left the Territory for the Orient, 1; patients remaining June 30, 1930, numbered 118. During the year there have been 67 outpatients on temporary release who have been reporting for examination and treatment at intervals of varying length.

Patients from among the people of the Hawaiian race constitute the majority of the admissions. The number of Filipinos admitted is slowly increasing.

The extent of the care and treatment administered by the two medical officers is indicated by the following data: Number of hospital days, 48,433; number of intramuscular injections, 2,272; number of cutaneous injections, 500; number of physiotherapy treatments, including the application of heat, light, and massage, 4,114; number of surgical operations, 25; number of surgical dressings, 8,279; number of physical examinations, 416; number of clinico-microscopical examinations, 664; number of obstetrical deliveries, 3.

Clinical studies.—Additional effort has been made to individualize in the observation and care of patients, with the particular object of removing possible contributing causes of aggravations and recrudescences and of applying measures to foster the general health. It has been found that between 10 and 12 per cent of the resident patients have manifest tuberculosis, usually pulmonary, complicating the leprosy; approximately 12 per cent are infested with ankylostoma, including native-born Hawaiians who have never traveled outside the Territory, and about 40 per cent have abscessed teeth. As previously reported, approximately 29 per cent of all patients react positively to either the Wassermann or Kahn serum tests. However, other signs of syphilis among these have not been determined, and evidence has been obtained which suggests that the serum reactions are phenomena of leprosy in some patients, at least. The frequency with which some febrile leprosy reactions are followed by subsidence of clinical manifestations and fibrous changes in the specific lesions suggests that these reactions are beneficial, if they are not overwhelming. Clinical experiments have been performed to precipitate such reactions in those patients whose adjustment to the parasite is such that their general health is not seriously affected, and who seem to be lacking in immunizing responses to the infection. This has been done by producing local inflammations either in individual lesions or intramuscularly. The injection of sterile preparations of oils, or the esters of fatty acids, in which iodine or sulphur has been incorporated, are effective in producing the inflammatory reactions with systemic responses. The oily substances are disseminated (or absorbed) slowly in the tissues, and a febrile reaction of 100° to 102° F. is often prolonged for at least three to four days. A series of cases has been under such treatment for several months, without apparent deleterious effects. The ultimate results can not be determined at this time, but the method seems to have therapeutic promise.

A small series of cases was treated for six months by the administration of calcium lactate and cod-liver oil to which ergosterol was

added. The serum calcium and phosphorus in some of these patients was increased slightly over that which obtained when the treatment was started, but no significant modifications of the clinical course of the disease were noted.

Studies were made of 159 patients by 287 tests to determine the correlation between the speed of sedimentation of their red-blood cells in vitro, and the clinical course of leprosy. No correlation of practical value was obtained, and the results of the test were so aberrant that it was considered of very little value in specific diagnosis or in prognosis when the patient is under continued supervision in the hospital.

The relationship of tuberculosis and leprosy in the same individual is of importance in the treatment of leprosy in Hawaii. Studies to determine the frequency and course of these affections when concomitant have been begun. An initial tuberculin test by intradermal inoculation at intervals of three days of successive doses of 0.01 mg., 0.1 mg., and 1 mg. of old tuberculin has been given all patients who were not actually febrile. The results of the tests were appraised in consultation with the director of the Bureau of Tuberculosis of the Territorial board of health, who was conducting similar tests on 1,000 or more local school children. One hundred and ten patients were tested, among whom 24 were considered to have reacted positively to one of the three doses, and 8 exhibited indefinite reactions. Among the school children of the general community there were nearly 75 per cent who reacted positively. The average age of the patients with leprosy was greater than that of the school children. Thirty-three of our patients were 16 years of age or less. Six of these reacted positively and three indefinitely, or a total of less than 28 per cent. Thirteen patients were between 16 and 20 years of age, and three of these reacted positively, or indifferently. Twenty-eight patients were between 20 and 30 years of age, and eight of these reacted positively or indefinitely. Thirty-six patients were more than 30 years of age, and 12 of these reacted as above. The total number whose local reaction was of a degree which could be recognized was approximately 30 per cent. This proportion seems much less than that to be expected, when the morbidity and mortality from tuberculosis in the community, and the reactions among the thousand school children are considered. The interference with the reaction through damage by leprosy to the vasomotor system of the skin does not afford an absolute explanation, since some positive reactions occurred in severely damaged and edematous skins. The study will be carried further and reported in more detail.

Further observations on the results of the intramuscular injection of the derivatives of chaulmoogric acid confirm the previous findings, namely, that they remain in situ for many months. An infiltration of large and small mononuclear cells, many of the epithelioid type, and of giant cells develops around the oily deposits.

The Röntgenologic study of the earlier bone changes in leprosy has been continued.

Attempts have been made to establish immunity in rats to inoculations of the bacillus of rat leprosy when suspended in the specific granulomatous tissue ground in saline. Series of rats were treated for six months by the injection of formalinized suspensions of the

bacillus. These treated suspensions did not produce the characteristic lesions of rat leprosy, nor did they afford protection against the subsequent inoculation of fresh untreated suspensions.

During the year there have been several occasions in which it was essential to learn whether acid-fast bacilli in the secretions or tissues of patients were the bacilli of leprosy. Guinea pigs were inoculated in the manner which is customary for the detection of the bacillus of tuberculosis. The reactions obtained in some instances stimulated further study of this method. It was found that the subcutaneous injection into guinea pigs of tissue suspensions of the bacillus of rat leprosy, and of the bacillus of human leprosy will produce inflamed and enlarged superficial lymph nodes which contain acid-fast bacilli. Further, the injection into these pigs of tuberculin, suspensions in tissue of the bacillus of rat leprosy, heat-killed or saline suspensions of the mist and margarine bacillus, 10 days to 2 weeks subsequent to the initial injection will evoke an inflammatory reaction in the skin of the pig. The inflammatory reactions produced were not as intense as those produced by tuberculin in the tuberculous pig, and reactions produced by the injection of the tissue suspensions of the bacillus of rat leprosy were more intense in the guinea pigs previously inoculated with the homologous live suspensions, than those produced by tuberculin, or the mist and margarine bacillus vaccine. It is therefore concluded that the inoculation of the guinea pig with the production of swollen inflamed lymph glands containing acid-fast bacilli is not a reliable method per se for the differentiation of the bacillus of leprosy from that of tuberculosis.

A comparison of the responses of the cells of the skin of the rat to inoculation with fresh and heated tissue suspensions of the bacillus of rat leprosy was studied. Rats were inoculated with 0.2 ml. of the suspensions, and the sites of inoculation were excised and sectioned after intervals of 18 hours, 24 hours, 48 hours, and 72 hours, and of 1 week and 2 weeks. The reactions produced by the two inocula were similar to those found in other acute inflammations of the skin, and were characterized by the proliferation and infiltration of the same types of cells. The impression was obtained that the intensity of the reaction in the specimens taken in the first three days was greater in the tissues inoculated with the fresh material. In the specimens taken one week after injection this difference seemed definite. In those taken two weeks after injection the reaction to the heated inoculum was relatively localized and consisted almost entirely of the proliferation and heaping up of masses of the typical large endothelial cells which were crowded full of acid-fast bacilli. Many of these large cells were collected in lymph spaces, about hair follicles, and extending well up into the papilla of the skin. The reactions produced by the fresh inoculum appeared to be spreading, and to be accompanied by very much greater infiltration with leucocytes, lymphocytes, and with other evidences of progressive inflammation. The observations made thus far indicate the difficulties that may occur in the early interpretation of the results of the injection of rats with tissue suspension of leprosy material.

Continued efforts have been made to cultivate *in vitro* the bacillus of human leprosy and that of rat leprosy. The most encouraging

result thus far obtained has been that of finding the bacilli in smear preparations from the media in clumps as large as 25 by 90 microns, which were several times larger than any clumps seen in preparations from tissues, or from the material sowed on the media. In these clumps there was an arrangement in chains of as many as 15 to 18 bacilli. No visible colonies have been definitely determined.

Experiments concluded subsequent to the previous annual report on the disinfectant action of sodium chaulmoograte, in vitro, on the bacillus of rat leprosy suspended in tissue indicate that exposures of the suspensions to 1:1000 aqueous solutions of the soap for periods of 3 hours to 48 hours do not prevent the development of the typical lesions of rat leprosy when subsequent to the exposures the suspension is sedimented, washed, and injected.

MALARIA

The primary object of the field investigations of malaria, conducted under the direction of Surg. L. L. Williams, jr., has been to simplify the processes of control so that any organization could carry them out and to reduce the costs so that any community could afford their practice. In furtherance of this plan three major lines of investigation were carried on during the fiscal year 1930: (1) The prevention of *Anopheles* production with Paris green as the anopheline larvicide, (2) the prevention of access of mosquitoes to man by screening, and (3) researches with the new synthetic drug plasmochin which has the power to prevent infection of mosquitoes from human malaria cases.

PARIS GREEN

Continuous dusting.—The continuous dusting study to test the utility of Paris green in rural work, which was begun in Dougherty County, Ga., just prior to the close of the last fiscal year has been continued through the present fiscal year with Epidemiologist T. H. D. Griffiths in immediate charge. Sanitary Engineer W. H. W. Komp has been assigned to assist him, primarily to make an entomological check of the effectiveness of the operations. The county commissioners have appropriated a sum of money not to exceed a 1-mill tax for the purchase of equipment and the payment of labor.

The Public Health Service is interested in determining the feasibility of controlling malaria in a rural district by controlling the production of *Anopheles quadrimaculatus*. In order to determine the applicability of this method it is necessary to determine the minimum amount of transportation necessary, the number of laborers needed, the difficulties of application of Paris green, the number of dustings, the total cost of the operation and the results in malaria control.

Prior to the undertaking of this project malaria was increasing in Dougherty County, the production of *Anopheles quadrimaculatus* was heavy, the number and size of producing areas was excessive, and the difficulty of dusting many of the areas was above the average. If malaria could be successfully controlled in this type of county at a reasonable cost then it could be similarly done in a large proportion of the counties in the malarious area.

Prior to the commencement of this work a blood index of Dougherty County, taken from among the school children, showed a malaria infection rate of 40.4 per cent in the rural districts. Inspection of typical roosting places showed a heavy infestation of adult *Anopheles* and dipping of the ponds revealed the presence of heavy breeding.

Dougherty County is in the heart of the limestone region of south-west Georgia. Many of the lime sinks are quite large in area, with a very long shore line. It was uneconomical to dust the shores of these large areas by means of hand blowers, as used by laborers afoot. A separate force with special equipment was used for this purpose.

The county was divided into three approximately equal districts, each in charge of a foreman. The foreman operated a light truck for the purpose of transporting Paris green and diluting dust (hydrated lime), dust blowers, and three laborers. The foreman carried his men out each day, dropping them at strategic points from where each dusted afoot until his supply of dust was gone, when they were picked up, the dust gun was reloaded, and they were taken to another point. In this way Paris green was dusted on the breeding areas of the county, excepting the large ponds, at 10-day intervals throughout the summer.

The pond outfit consisted of two men with a light truck on which was loaded a 14-foot metal boat, an outboard motor, a generator, a power blower, and a quantity of Paris green and lime. The truck was driven to within a close proximity of each pond in succession, the boat quickly removed and placed on the water and equipped with the outboard motor, generator, and power blower. This operation seldom required over 30 minutes. By means of an outboard motor even the largest pond could be quickly circumnavigated, the power blower (as developed by Le Prince and Johnson¹) dusting the edges and the flottage-covered areas at any speed of the boat. The equipment, including the boat, could be reloaded on the truck almost as quickly as it could be unloaded, and the force was ready for the next pond. One such outfit was able to dust the 25 ponds at 10-day intervals within the 343 square miles of the county. Although many mixtures of dust were tested throughout the season, main reliance was placed upon a volumetric mixture of 15 per cent Paris green in hydrated lime. Approximately three-fourths of a pound of Paris green was dusted on each acre of breeding surface at each dusting. Although the county allowed an expenditure up to \$17,000, it was necessary to spend only approximately \$10,000 for the first year's work.

During the progress of this work no screening was urged, and no quininization practiced other than that normally given by the local practicing physicians. Therefore, it was expected that a minimum of two years would be necessary before an accurate evaluation of results could be made. However, it is of interest to note that although *Anopheles* were not eradicated, their numbers were materially reduced, and the malaria rate by blood examination in the 17 rural schools, which before the work commenced had been 40.4 per cent, fell to 25.3 per cent when taken 12 months later.

¹ Public Health Reports, Apr. 26, 1929. (Reprint No. 1280.)

Although this type of study had been long contemplated, opportunity for its commencement came quite suddenly. The area was unmapped, and most of the breeding sources were unknown. As the work progressed throughout the season, more and more breeding areas were discovered and treated. From the persistence of adult *quadrимaculatus* in certain areas it seemed certain that there were yet other breeding areas undiscovered. The interval between the first season's operations and the commencement of the new season has been largely spent in searching out these hidden breeding areas, and in making a complete and accurate map of the mosquito-production areas of the county. Although the results obtained to date seem to be good, it is thought that publication should be withheld until after the close of the summer of 1930, at which time a detailed preliminary report can be made. As an added check on this study the measurement of the malaria rate and amount of mosquito production in the adjoining county where no control operations are in force have been begun.

Intermittent dusting.—In the Dougherty County studies, as described above, the dusting interval was 10 days. This interval was determined upon as 10 to 12 days is the average duration of the water cycle of *Anopheles quadrимaculatus*. The studies in west Tennessee, which were begun soon after the Dougherty County experiment, are based upon a different theory, which, if proved practical, will more than double the interval between dustings and thus greatly reduce the cost of operations. It has been determined that when production from the breeding areas is artificially stopped the adult *quadrимaculatus* mosquitoes infesting the countryside rapidly disappear. This disappearance is practically complete within 10 to 12 days. If this holds true throughout the entire season, then after each dusting it is possible that adult mosquitoes incubating the infection will die out. The new crop subsequent to hatching must wait a minimum of 10 to 12 days before any of them become infective to human beings. Based upon this supposition, it was determined to test the effectiveness of dusting a rural area at 3-week intervals and to observe the effect upon the incidence of malaria.

A blood index of Dyer County in west Tennessee in the fall of 1928 showed that a portion of that county, in the overflow region of the Obion River, would be a good place for the experiment. An index of a part of the adjoining county of Lauderdale was made so that a check could be kept on the results. Through the cooperation of the Tennessee State Department of Health 525 square miles of Dyer County were surveyed and mapped, and the incidence of malaria was carefully measured. The State health department naturally was interested in knowing the effectiveness of the intermittent dusting, but at the same time wished to know also the effectiveness of more frequent dustings in the type of country as represented by overflow bottom lands. Therefore, this study was somewhat divided. Two small areas of approximately $8\frac{1}{2}$ and $3\frac{1}{2}$ square miles, respectively, were dusted at weekly intervals. The results of this cooperative study will be published separately at a later date. Eighty square miles of flood area and 127 square miles of hill country were reserved for time studies of single dustings. Analyses of these studies will be reported separately. One hundred and

thirty-nine square miles of territory subject to flood was set aside for the 3-week dusting interval and constituted the main study.

The method of dust application was similar to that described for Dougherty County. However, Senior Sanitary Engineer J. A. Le-Prince, who was in direct charge of the work, and Technical Assistant in Sanitary Engineering H. A. Johnson, who assisted, tested other measures for the distribution of Paris green. They tried, with success, the creation of a cloud by lightly beating a small sack of diluted dust, and found this a most effective method, applicable to country with heavy tangled underbrush, where the disturbance to balance produced by a dust gun resting on a chest slowed the laborer's progress tremendously. They were able to determine that mule-back dusters offered no advantage. Considerable success was obtained in dusting roadside borrow pits, and roadside marshes with a power duster in the body of an open truck.

In the course of these studies careful check of the incidence of Anopheles has been kept. Blood indices from school children have been taken in the fall of 1928, the spring and fall of 1929, and the spring of 1930. Similar blood indices will be taken in the fall of 1930 and the spring and fall of 1931. As no method other than the intermittent dusting is to be applied in this area, the definite measure of its effectiveness will be the malaria rate in the dusted area as compared to the rate in the undusted area. It is impossible to evaluate this study at the present time, and it must be considered as a continuing study, probably terminating at the end of the summer season in 1931.

Flotation experiments.—Under the immediate supervision of Entomologist Albert F. Dolloff, experiments were conducted at Williamsburg, Va., designed to make Paris green effective for a greater length of time than is at present possible. When Paris green and lime are blown over the surface of the water all anopheline larvæ therein die within one to six hours. Paris green becomes wet and sinks before another crop of larvæ comes on. We attempted to prolong the period of effectivity by mixing with the Paris green powders which resist wetting. Calcium and aluminum stearates were chosen for this purpose. When these powders are drifted over the surface of ponds they remain for relatively long periods of time. Various percentages of Paris green were mixed with the stearates, and these combinations diluted with varying quantities of lime. To date a mixture has been devised which appears to prolong the effectivity of Paris green six days. This consists of 10 per cent calcium stearate, 10 per cent Paris green, and 80 per cent lime. Although not a very great extension of time, this is sufficient to extend the county-wide interval from 10 to 15 days, and the intermittent dusting interval from 3 weeks to almost 4 weeks, and to reduce the number of applications per season by 2 or 3. This is a material saving when 300 to 600 square miles of territory are in question. This study is incomplete and will be continued, since it has shown that there are as yet unknown factors which, when known, should permit a still greater interval between dustings. A preliminary report by Entomologist A. F. Dolloff, entitled "The Use of Stearates (Calcium and Aluminum) as Diluents for Paris Green in Anopheles Control," was published in the Public Health Reports for October 25, 1929. (Reprint 1326.)

SCREENING

As a result of studies by the Public Health Service over a period of several years, farm tenant houses can now be screened against mosquitoes at a cost averaging less than \$10 a home. This cost can be reduced through better manufacturing processes and through improved methods of minor mosquito proofing. The problem of further reducing the manufacturing costs can be safely left to the counties which have embarked on screening programs and to the factories.

Minor but essential mosquito proofing studies have been carried on by Mr. LePrince and Mr. Johnson, who have conducted tests with special electrically operated saws to cut irregular floor cracks to a standard size for filling with standard strips. Compared with the cost of covering by tin strips, this method proved too expensive, and various tar and asphalt mixtures are now being tested as fillers.

Paper spills are quickly rolled on a metal rod and released after insertion into the floor crack. The spill unrolls and holds tightly enough to form a base on which to pour the melted filler. Several mixtures of tar and asphalt have been tried, all of which work very well in cold weather. This next summer will demonstrate which mixtures remain firm in normal summer temperatures. This method is the cheapest and fastest yet devised.

The cooperative screening study in Lake County, Tenn., is being continued. The county health department has practically completed the screening of the tenant homes and has nearly finished all minor mosquito proofing. Blood indices were taken before the work started in 1928 and have been followed with indices in 1929 and the spring of 1930 and will be continued for one or two years more before the final result can be reported.

During the past year three additional States in the malarious belt have added county-wide screening programs for their power counties, and our field workers have given their operatives training at the Public Health Service malaria stations.

PLASMOCHIN

Plasmochin assumed a place in preventive measures when Barber and Komp showed that if a small dose of this synthetic compound was given to a carrier it prevented the development of malignant tertian malaria (estivo autumnal) in the mosquitoes which fed on him. If the same holds true for benign tertian, which constitutes such a large proportion of the total malaria, plasmochin can be used in the Southern States with a reasonable expectation of reducing the malaria rate.

Under the direction of Sanitary Engineer W. H. W. Komp, this study has been commenced. *Anopheles quadrimaculatus* are reared and kept in large quantities to be fed on benign tertian carriers as they may be found. After such feeding the carriers will be given small doses of plasmochin and other mosquitoes allowed to feed. The greatest difficulty is encountered in securing the carriers. About 50 persons daily are subjected to examination and a blood smear taken for microscopical examination. Up to the end of the fiscal year only a few carriers had been found and none of these were infected heavily enough to prove infective. This study is being continued.

MEASURING MALARIA

During the course of these studies and in cooperative studies in four States it has been necessary to ascertain with some exactness the intensity of malarial infection in a number of areas. This has required a return to the thick film microscopic examination of the blood of large numbers of school children, as they offer the best index of endemic infection. Two microscopists have been giving their full time to this work and have examined over 29,000 slides during the year past, 7.5 per cent of which were positive.

Blood indices have been made in the fall and spring in three west Tennessee counties, and a single fall index in two additional counties; in Georgia fall and spring indexes were taken in one county, and an additional spring index in another; in Mississippi, Florida, and New Mexico a fall and spring index in a single county; and in Virginia a single index in seven counties.

In the counties where the most intensive studies took place the investigators were able to choose areas where school districts showed malaria rates varying between 38 and 69 per cent and others from 25 to 57 per cent. This showed ample malaria to measure the effectiveness of varying types and differing methods of control.

Incidental activities of the personnel have included mosquito surveys on Cape Cod, Mass., with recommendations and advice for control operations; malaria surveys about the Mayfield Ditch in Kentucky; Atlanta, Ga.; Tallahassee and Ocklocknee, Fla.; Eddy County, N. Mex.; many labor camps in Panama; and a malaria-study trip to India.

NUTRITIONAL DISEASES

The field studies in nutrition during the fiscal year 1930 were carried on, as for a number of years past, both at the Georgia State Sanitarium, Milledgeville, Ga., and at the National Institute of Health, Washington, D. C. The studies at the Georgia State Sanitarium were conducted by Surg. G. A. Wheeler, and those at the National Institute of Health by Passed Asst. Surg. W. H. Sebrell.

As for the past several years, the studies at the Georgia State Sanitarium have been concerned chiefly with tests of the pellagra-preventive value of individual foodstuffs, in a manner originally planned by the late Surg. Joseph Goldberger. A special report of the pellagra-preventive value of canned salmon was published during the fiscal year.² This study showed that 6 ounces of canned chum salmon is an adequate supplement for an otherwise pellagra-producing diet.

Studies of the pellagra-preventive value of canned haddock and autoclaved yeast, begun during the preceding fiscal year, were completed.

It was found that the addition of 4 ounces of canned haddock to a diet sufficient in all known respects, except for the pellagra-preventive factor, failed to prevent the development of pellagra; when 8 ounces were added, partial or incomplete protection was observed; but with the addition of 12 ounces, protection was complete.

The study of autoclaved yeast showed that dried yeast retains its pellagra-preventive value when subjected to the heat of the autoclave

² Public Health Reports, Nov. 15, 1929. (Reprint No. 1332.)

for 3½ hours at 15 pounds pressure, a process which destroyed practically all the antineuritic factor. The demonstration of the heat stable property of the antipellagra factor is of considerable general importance and opens up the field for the study of various vegetables which are available in the fresh state for too short a period to permit of satisfactory study by prolonged feeding tests.

The mature onion was tested for its pellagra-preventive potency. No appreciable protection was observed, even though as much as 1 pound of onions was incorporated in the daily basic diet.

Studies of the pellagra-preventive value of canned turnip greens, canned spinach, white potatoes and sweetpotatoes, begun during the fiscal year, are in progress, without indications, at its close.

The studies at the National Institute of Health were a continuation of the program inaugurated by the late Surg. Joseph Goldberger, and consisted principally of the testing of individual food-stuffs, particularly in the dog, with a view to determining their probable pellagra-preventive value.

During the fiscal year a special report was made of the tests on salt pork, lard, dried green peas, and canned haddock.³

Tests of sweetpotatoes, oatmeal, whole rye meal, and onions were completed. The results indicate that these substances contain very little, if any, of the antipellagic vitamin. A test of the blacktongue-preventive value of Minot's liver extract (Lilly No. 343) was completed and the result indicated that this substance contains the antipellagic vitamin.

Tests of rice polishings and Irish potatoes are in progress at the close of the fiscal year.

A study of the blacktongue-preventive value of leached commercial casein, together with a study of the effect of a high-protein diet was completed and the results embodied in a special report submitted during the fiscal year.⁴

In connection with the study of onions, a severe anemia of dogs was observed, and a study of this condition was made the subject of a special report during the fiscal year.⁵ Further studies of this condition are in progress at the end of the fiscal year.

A preliminary report⁶ was made on the fatty degeneration of the liver which has been observed in connection with the dog experiments, and further observations on this condition were reported in connection with the study of the blacktongue-preventive value of lard, salt pork, dried green peas, and haddock.⁷

The studies in the rat have, as heretofore, been concerned primarily with the development of a more rapid method of determining the presence of the antineuritic and antipellagic vitamins, and with attempts to concentrate and possibly isolate the antipellagic vitamin.

ROCKY MOUNTAIN SPOTTED FEVER

The work at the field station for the study of Rocky Mountain spotted fever, located at Hamilton, Mont., has been under the immediate charge of Special Expert R. R. Parker, and has been along

³ Public Health Reports, June 6, 1930. (Reprint No. 1381.)

⁴ Public Health Reports, Feb. 7, 1930. (Reprint No. 1350.)

⁵ Public Health Reports, May 23, 1930. (Reprint No. 1375.)

⁶ Public Health Reports, Nov. 8, 1929. (Reprint No. 1329.)

⁷ Public Health Reports, June 6, 1930. (Reprint No. 1381.)

the same lines as during the previous year, namely, (1) the manufacture and distribution of the Public Health Service vaccine for the prevention of Rocky Mountain spotted fever, (2) epidemiological studies relating to the occurrence of this infection in man and in nature, and (3) the collecting of data concerning other pathological conditions of man caused by ticks of the Rocky Mountain region and experimental studies of such conditions.

VACCINE

Manufacture.—Fifty-five liters of vaccine were prepared, as compared with 25.2 liters in 1929, and 12.8 liters in 1928. A considerable percentage, however, was below the minimum standard of potency, and hence not usable. Some saving in cost of manufacture was effected, chiefly by production in larger units.

Distribution and use.—A total of 31.2 liters of vaccine has thus far been distributed during the season of 1930 to nearly 500 physicians in the States of Montana, Idaho, Oregon, Wyoming, Nevada, Utah, New Mexico, Colorado, Washington, California, and South Dakota. In 1929, 20 liters were used. In the main, the same method of distribution was followed as during previous seasons; that is, direct by local physicians. In some instances, however, small supplies to meet emergency requests have been placed at the disposal of State health departments.

The vaccine was most extensively used in Oregon, Montana, Idaho, and Wyoming, in the order listed, the amount requested being 10.8, 9, 6.3, and 6.2 liters, respectively. The total amount distributed was sufficient to vaccinate 7,500 adults.

In areas where the relatively mild types of Rocky Mountain spotted fever prevail there appears to be an increasing use of the vaccine for treatment. Physicians who have so employed it are of the opinion that it has a definite value, shortening both the period of illness and the period of convalescence. There is no definite evidence, however, that these opinions are justified. Therapeutic use has not been recommended and has seemed to be contraindicated against the highly virulent strains.

Demand.—The demand for vaccine has increased each year since its first use in 1925, and, considering the restriction on distribution imposed by a limited supply, there is already a surprising degree of confidence in its preventive value among physicians and persons resident in affected areas, particularly in those sections where "mild" infections are the prevailing type. Wholesale vaccination of employees of companies and corporations engaged in industries involving a high occupational exposure, such as sheep and cattle raising, lumbering, road construction, and similar activities, is becoming more frequent each year. In fact, in some instances employment has been made contingent upon vaccination. A certain loan company operating in the Bitterroot Valley refuses loans to nonvaccinated persons.

Results.—The results of the continued and increasingly extensive use of the vaccine in areas of low mortality support the previous evidence that full protection is commonly conferred against the so-called "milder" strains of Rocky Mountain spotted fever. In

the Snake River Valley of southern Idaho, an old and extensive endemic area, local health officials attribute decreased spotted fever incidence to the wide-spread use of the vaccine by men employed in the sheep industry, among whom a considerable percentage of the local cases occur because of the unusually high occupational exposure. Vaccination among a road crew of some 200 men in Grant County, Oreg., during the spring of 1930, furnished a quite unexpected but valuable test. Approximately 50 per cent were vaccinated. No cases occurred in the vaccinated group and six in the nonvaccinated. During four years' use in areas of low mortality only one authentic case has been reported among persons vaccinated.

Against the very virulent strains, with high death rate (75 per cent or higher) such as occur in western Montana, the vaccine is less effective, but is nevertheless of great value, since it affords sufficient protection markedly to lower the death rate and cause definite amelioration of symptoms in those that recover. During six years' use in the Bitterroot Valley, there have been 28 cases and 22 deaths among nonvaccinated persons, and 15 cases with only 3 deaths among those vaccinated, the death rates for the two groups being, respectively 78.57 and 20 per cent. In the vaccinated cases that have recovered, the amelioration of symptoms has been an outstanding characteristic.

EPIDEMIOLOGICAL STUDIES

Incidence.—Case data for the past 16 years show that peaks of prevalence of Rocky Mountain spotted fever infection in man have occurred in 1915, 1922, and 1929, thus indicating a definite 7-year cycle in prevalence. During the second 7-year period (1923–1929) there has been an increased incidence over the one from 1915 to 1922, but it is not known whether this is due to an increasing prevalence of infected ticks or an increasing exposure on the part of the population resident in the affected areas. In 1930 a noticeable drop in cases has occurred, in spite of an unusual abundance of ticks.

Spread.—Data collected over a considerable period indicate a quite definite northward and southward extension of the area in which Rocky Mountain spotted fever is endemic. During the past year cases have been reported in Saskatchewan, Canada, and in New Mexico for the first time. Spread to the eastward, though definite, is less marked, but is of greater economic significance for the reason that apparent eastward spread of the Rocky Mountain spotted fever tick, *Dermacentor andersoni*, has resulted in the overlapping of the range of this tick with that of the American dog tick, *Dermacentor variabilis*, which also bites man, and the evidence at hand suggests that infection may already have become established in the latter tick. Since its range extends to the Atlantic seaboard and since laboratory experiments have demonstrated it to be a potential carrier of infection, the possibility of still further eastward spread is sufficiently great to be worthy of serious consideration.

Spread to the West has been less marked than in other directions, but is potentially possible since the western limit of *Dermacentor andersoni* overlaps the ranges of two other probable tick carriers in northern California and southern Oregon. One of these is the American dog tick mentioned above; the other is *Dermacentor occi-*

dentalis, which recent tests have demonstrated to be a potential host of this virus.

STUDIES OF ROCKY MOUNTAIN SPOTTED FEVER VIRUS IN NATURE

Ecological studies which are being conducted in carefully mapped areas on the east and west sides of the Bitterroot Valley, where extremely mild and extremely virulent phases of the virus respectively exist in nature, have suggested that the rickettsia of Rocky Mountain spotted fever may be a symbiotic microorganism, which is present in all ticks of the species *Dermacentor andersoni*, and that it is only in a small percentage that environmental factors, within or without the tick, cause it to assume sufficient virulence to produce human infection. Considerable data are at hand to support this point of view, which, if substantiated, will bring about radical changes in existing ideas of the means by which the virus is maintained in nature and of the means by which extensive spread is being accomplished. It would also have an important bearing on ideas relative to tick control as a means of reducing the danger of human infection.

In these studies field observations are being paralleled by laboratory experiments which not only serve in some measure as a guide for certain phases of the former, but also act as a check on the accuracy of deductions which the field data suggest. The most extensive of these experiments now under way concerns the effect of meteorological conditions on the virulence of the virus content in ticks.

TICK PARALYSIS

Tick paralysis, which is of most frequent occurrence in the northern portion of the range of *Dermacentor andersoni*, has been unusually prevalent during the season of 1930. Experimental studies of paralysis-producing ticks designed to throw light on the inciting agent have been abortive.

COLORADO TICK FEVER

Data have been collected for several years concerning a febrile, noneruptive infection of man which is rather frequent following tick-bite in parts of Colorado and Wyoming. This has recently been described as Colorado tick fever by Dr. F. E. Becker, of the University of Colorado School of Medicine. It has been an open question whether or not this infection is a mild type of Rocky Mountain spotted fever. Accumulated evidence of clinical observations and of laboratory tests suggest that it is likely a distinct disease entity.

TULAREMIA

Laboratory and field studies of this infection, of which *Dermacentor andersoni* is one of the important means of natural maintenance and of human infection, have been continued. Laboratory studies of domestic chickens, ducks, and turkeys indicate that these fowl are usually quite resistant to infection, although in occasional individuals (chickens and ducks) there is a more or less general

invasion by the organism which can be recovered from various tissues, although no clinical symptoms are produced.

Several tests have been made to determine whether tularæmia infection may be carried by blowflies, the larvæ of which have developed in the carcasses of animals dead of tularæmia. While indefinite, the results suggest that *Bacterium tularensis* is probably killed in the digestive tract of the larvæ and that such transmission is not likely.

Other experiments have shown that the Pacific-coast tick, *Dermacentor occidentalis*, is capable of transmitting tularæmia, thus supporting the apparent importance of the recovery of this organism from wild ticks of this species, as reported from this station in 1929. Similar tests made with *Dermacentor variabilis* have been suggestive of positive results, but are incomplete. Because of suggestive case reports, tests are under way to determine the possibility of transmission by mosquitoes. Thus far the survival of *Bacterium tularensis* in mosquitoes for a minimum period of 10 days has been shown, but actual transmission tests have not yet been tried.

The following animals not previously reported have been found susceptible to tularæmia: The beaver, *Castor castoris*, the side-striped squirrel, *Callospermophilus lateralis cineracensis*; and the green-winged teal, *Nettini carolinensis*.

One case of laboratory infection with tularæmia has occurred in the station staff.

EPIDEMIOLOGICAL STUDIES OF TRACHOMA

The field investigations of trachoma under the direction of Passed Asst. Surg. A. S. Rumreich were carried on in two widely separated areas in the Missouri Ozarks. Field work in the first area was completed during the winter, and a report is in course of preparation. Work in the second area was terminated because of the pressing demands of other work.

ADMINISTRATIVE HEALTH PRACTICE

The office of administrative health practice which was established September 3, 1923, under the direction of Surg. Paul Preble, for the collection of data and comparative studies of the various procedures and practices most useful to public health administrators, was discontinued December 9, 1929.

CHILD HYGIENE INVESTIGATIONS

The work of the Child Hygiene Office was continued under the direction of Acting Asst. Surg. E. Blanche Sterling. The present fiscal year has been one of increased activity and expansion. Three new research projects were inaugurated during the year, one of which (a study in mental hygiene) was practically completed. New studies in dental hygiene made considerable progress and an investigation of the mental status of children of various types of birth was well under way at the close of the year.

In addition, the study of the vision of school children was continued, the report of a study of the hearing of school children was

completed, marked progress was made in the statistical handling of the extensive data on the physical status, growth, and development of school children, and much work was done on cooperative studies with the statistical office.

THE MENTAL STATUS OF CHILDREN OF VARIOUS TYPES OF BIRTH

It is generally recognized that much of the vast amount of insanity found in adult life can be traced back to mental ill health in childhood. It is imperative, therefore, from the standpoint of prevention, that the mental hygiene of children be made the subject of serious study.

In March, 1930, it was decided to undertake an investigation of the effect on the mental health of the child of various types of birth, such as prolonged labor, forceps delivery, Cesarean section, and other forms of difficult labor.

No study of this kind could be carried out without the cooperation of an obstetrical service with well-kept records extending over a fairly long period. The Public Health Service has been able to secure such cooperation from the Johns Hopkins Hospital. Dr. J. Whitridge Williams, professor of obstetrics at the Johns Hopkins University School of Medicine, expressed his belief in the value of the investigation and placed the material at the hospital at the disposal of the Public Health Service. Office space at the hospital has been furnished and every facility offered for the conduct of the work. With such generous cooperation, the preliminary work of the study is progressing satisfactorily. This will be continued during the coming fiscal year.

MENTAL HYGIENE OF CHILDHOOD

During the past few years many studies have been made of so-called "problem children," those who have manifested difficulties of adjustment to home, school, or neighborhood environment. It became evident that some control material was needed for the study of these children, and the present investigation was undertaken to assemble material against which the present studies of problem children might be judged.

Through the cooperation of the Board of Education of Baltimore and the principal of the school, it was possible to conduct this investigation in one of the schools of that city. The study was under the immediate direction of Dr. George H. Preston, Maryland State commissioner of mental hygiene, who is cooperating with the Public Health Service for this purpose.

The investigation was undertaken with the feeling that some background was necessary to evaluate the types of behavior presented by children who appear in mental hygiene clinics. Very little effort seems to have been made, with techniques which are comparable, to present a picture of the usual behavior of an unselected group of children who could be called neither problem nor retarded nor delinquent nor overly endowed. The question which this study attempts to answer is: "What does an unselected group of children of the same age and school grade do and how does this behavior compare with that presented by a group of 'problem children' of the same age and school grade?" Within the limits of this study and

the limits set by existing reports as to groups of "problem children" this question can be answered. Individual records of the behavior of 83 children were obtained, 45 of which were in the third grade and 38 in the fifth grade of the same school. The records of this group present some actual and much needed proof of the commonly expressed belief that all children are potential "problem children."

It has been shown in the study that some prognostically significant traits occur in the majority of an unselected group of children. It is believed that we must tend to change our focus of attention from the actual traits themselves to a study of situations. A report of this study will soon be ready for publication.

THE PREVALENCE OF DENTAL CARIES

In cooperation with the statistical office, Acting Asst. Surg. Amanda L. Stoughton practically completed one study in dental decay and made considerable progress in two others. In the first of these—a study of dental decay and corrections among school children in Georgia, Illinois, Missouri, and Hagerstown, Md.—the following are among the facts brought out:

About 90 per cent of the children in each age group had one or more teeth decayed, missing, or filled.

The percentages of children having teeth with fistulæ are relatively high among children under 10 years of age. Six-year-old children have the highest percentage of teeth with fistulæ.

The number of filled temporary teeth is so small that the percentages of children having decayed teeth unfilled are practically the same as those having temporary teeth decayed and filled.

The percentage of children having 6-year molars decayed, missing, or filled increases rapidly with age.

The highest percentage of children having permanent teeth nearly destroyed by caries occurs among 14 and 15 year old children.

A report of this study will soon be submitted for publication.

THE RELATION OF DENTAL CARIES TO NUTRITION AND CLIMATE

The widespread and alarming prevalence of dental decay and the consequent suffering as well as ill health probably associated with the condition are compelling reasons for intensive study of the cause of dental caries. The work of many investigators points to a possible relationship of diet to dental decay, and through the valuable cooperation of the Bureau of Indian Affairs it has been possible to undertake a study of this problem. The children attending Indian schools were selected for this study for two reasons: (1) The diet on the reservations from which these children are drawn is supposed to be more or less restricted. (2) It was possible, through the courtesy of the Bureau of Indian Affairs, to obtain data regarding these diets. Children were selected in various parts of the country exhibiting marked variations in climate. This was done in order to study the effect, if any, of sunshine on dental health. The diet questionnaires were submitted to Dr. E. V. McCollum, of the Johns Hopkins School of Hygiene, for comment and criticism before being sent out to the Indian reservations.

Considerable progress has been made in this study, both in obtaining data on the condition of the teeth and in compiling the material sent in on the diet sheets.

The teeth of almost 1,800 children have been examined and reports on the diet from 96 reservations have been received and the data partially compiled.

The study will be continued during the coming fiscal year. At its conclusion it is believed that much interesting information will have been obtained.

THE HEARING OF SCHOOL CHILDREN

The analysis of the data obtained in a study of the hearing of school children was completed and published in May. In the group studied, slightly less than 4 per cent of the children showed a significant hearing loss. Among those actually hard of hearing the older children were in the majority, and there was slightly more significant impairment of hearing among the boys than among the girls.

In general, there was a higher proportion of left ears with good hearing than of right ears. No explanation of this difference is offered, but the element of chance may have been a factor.

The percentage of children with significant hearing loss was generally greater in the over-age-for-grade group, and among the children doing the poorest school work in the youngest and oldest groups there was the largest amount of significant hearing loss.

The highest percentage of children with significant hearing loss was found in the group with the lowest intelligence quotient.

The percentage of children with a discharge from one or both ears varied inversely with the grade of hearing.

THE VISION OF SCHOOL CHILDREN

The study of the vision of children in the schools of the District of Columbia, in cooperation with the department of health and the District board of education, was continued under the direction of Acting Asst. Surg. Bernard L. Jarman. As in the preceding year, the determination of the master eye and measurements of the interpupillary distance were a routine part of the examinations.

During the fiscal year special emphasis was placed on the re-examination of children who had been previously examined in the course of the study. It is highly desirable to learn something of the changes which may take place in the eyes during the period of a child's growth, and this can be determined only by reexaminations of the same child over a period of time.

During the year a total of 881 children were examined, of which 562 were retests of children who had been examined two or more years previously, and 144 were tested for the third time. The numbers of children reexamined will soon be large enough to comprise a valuable collection of data on this important subject.

COOPERATION WITH OTHER AGENCIES

During the fiscal year the cooperation of the child-hygiene office has been chiefly as follows:

With the Girl Scouts of the District of Columbia: As in the preceding nine years, physical examinations were conducted of the girls who registered for attendance at the Girl Scouts camp. At the close of the fiscal year 188 examinations had been made

With the Neighborhood House: Physical examinations of the children in the day nursery and kindergarten of the institution were made by a member of the child-hygiene staff.

With the Office International d'Hygiene Publique: A comparative study of urban and rural mortality in the United States was made by Acting Asst. Surg. Amanda L. Stoughton and published in the Bulletin Mensuel of the International Office of Public Hygiene, in August, 1929.

MISCELLANEOUS

Health-education material has been furnished upon request through direct correspondence from the child-hygiene office. During the fiscal year almost 14,500 letters on maternal, infant, and child hygiene were sent out from this office.

In addition to the studies mentioned, a number of other studies undertaken outside of the child-hygiene office and described elsewhere in this report have an intimate bearing on child-health problems; for example, the studies on natural illumination, on infectious-disease incidence in rural and urban areas, on scarlet fever and biologicals standardization relating thereto, on milk sanitation, and on a number of other topics.

INDUSTRIAL HYGIENE AND SANITATION

The activities of the office of industrial hygiene and sanitation have been carried on under the direction of Surg. L. R. Thompson. They have included (1) studies of the possible health and industrial hazards connected with the distribution and use of tetraethyl-lead gasoline; (2) studies of occupational health hazards; (3) studies of industrial poisons; (4) statistical studies relating to industrial hygiene; (5) cooperation with industrial and other agencies; (6) cooperation with the Bureau of Mines.

The investigation of possible injuries from tetraethyl lead added to gasoline for motor fuel has continued to yield negative results in spite of the increasing use of this substance. The committee appointed by the British Ministry of Health to inquire into the possible danger to health resulting from the use of this gasoline presented its final report. The British committee corroborated the findings of the American committee appointed for the same purpose by the Surgeon General, as given in the annual report for 1926. This was of particular value in showing that in England also a certain amount of lead is not abnormal in the excretions of persons who have in no way been exposed to a tetraethyl-lead hazard, or other known lead hazards. The same concentration in tetraethyl lead in gasoline was specified as not injurious for use in England as was recommended in the regulations proposed by the Surgeon General for adoption by the several States, and now maintained as a maximum in this country.

STUDIES OF OCCUPATIONAL HEALTH HAZARDS

Ventilation.—Investigations under this heading have been continued as in the past year under two general lines: (1) Studies of natural and artificial ventilation as they relate to air conditioning, and

(2) the study of the practical efficiency of ventilating devices in the removal of dusts, gases, and fumes.

In the study of natural and artificial ventilation as they relate to air conditioning, little progress has been made during the year, due to the absence of the sanitary engineer assigned to the study.

In the last annual report reference was made to the installation of ventilating systems in the chambers of the House of Representatives and the United States Senate. With the completion of the installation of this system in the Senate Chambers, it was necessary to make a study of the operation of the system under both summer and winter conditions. The result of this investigation showed that the new system was capable of maintaining desired temperatures throughout the course of the whole day, that it was possible to regulate and maintain the desired moisture content of the air, that adequate air changes were taking place in the Chamber at all times, and that the air velocity on the Senate floor ranged from 5 to 54 feet per minute, and averaged 24 feet per minute.

Because of the differences in opinions as to the relative value of different systems of ventilation in providing adequate air conditioning, especially in schoolrooms, an attempt has been made to get an agreement as to the fundamentals relating to schoolroom ventilation. It is the feeling that such an agreement coming from the leading ventilating engineers of the country and having the indorsement of Government agencies and those societies interested in the subject of ventilation would be most helpful in securing a uniform air conditioning in the schools in the several States.

Investigations of the practical efficiency of ventilating devices used in the removal of hazardous substances such as dust, fumes, gases, and sprays.—The first paper in the series of these studies relates to the efficiency of dust-removal systems in granite-cutting plants.⁸

In a study of the health of workers in dusty trades⁹ a detailed investigation was made of the average dust counts in millions of particles per cubic foot of air for various broad occupational groups. These findings were related to the health of the workers in the various groups. Using these related studies as a basis, it was possible to set down a tentative standard of dustiness for granite-cutting plants below which there seemed no indication that any serious health hazard would result. This tentative standard was set somewhere between 10,000,000 and 20,000,000 particles. In order to determine in actual practice whether or not it was possible to maintain such a limit of dustiness in granite plants in actual operation, a detailed study was conducted and the comparison of atmospheric dust conditions in plants without efficient local exhaust systems with plants with efficient local exhaust systems was made.

In addition to the study made under practical operating conditions, a further investigation was made of the proper maintenance and use of efficient systems under experimental conditions. As a result of this experimental study several things were indicated: (1) That dust determinations made at the breathing level of the operator

⁸ A Study of the Efficiency of Dust-Removal Systems in Granite-Cutting Plants. By Asst. Chemical Engineer J. J. Bloomfield. Public Health Reports, Oct. 18, 1929. (Reprint No. 1324.)

⁹ The Health of Workers in Dusty Trades. II. Exposure to Siliceous Dust (Granite Industry). A. E. Russell, R. H. Britten, L. R. Thompson, and J. J. Bloomfield. Public Health Bulletin No. 187.

showed that irrespective of the type of pneumatic tool used, an exhaust velocity at the surface of the ventilating hood of 1,500 feet per minute (as measured by a calibrated vane anemometer) served to keep the dust exposure of the operator below 10,000,000 particles per cubic foot of air; (2) it was established that by a proper maintenance of the system of ventilation used in these plants it was possible to maintain exhaust velocities at the dust removal hoods of 1,500 feet per minute.

The second investigation in this series related to conditions obtaining in the sand-blasting industry. The main object of the present study is to make a survey of sand-blasting operations in the United States, in order to evaluate the relative degree of hazardousness of sand-blasting operations as conducted in this country. This study was divided into three parts. The first is a preliminary investigation concerning sand-blasting conditions in the State of Connecticut, which was made primarily to establish standard technique and to give the investigator a better conception of what to expect in this industry as a whole. The second part of this investigation is to consist of field studies over a wide geographic area, and the last portion is to be work of an experimental nature on a large laboratory scale, in order to establish certain standards of ventilation and sand-blasting technique, whereby basic data may be established so that this occupation may be carried on with a certain degree of safety. At the present time only the first part of this investigation has been completed.

The actual dust exposure of workers in sand-blasting rooms varied from an average of 8,400,000 to 437,700,000 particles per cubic foot of air. The lower results were obtained when the worker was equipped with a satisfactory type of helmet and respirator. In connection with the exposure of workers near sand-blasting barrels, the dust content of the air actually respired by the workers varied from 7,800,000 to 26,500,000 particles per cubic foot of air, the lower figure being associated with well-designed and well-housed sand-blasting barrels. Although, as a rule, the dust to which sand-blast workers are exposed is higher in quartz content than the dust found in granite cutting establishments, for the present the Public Health Service tentative standard for the latter industry, namely, above 10,000,000 particles per cubic foot of air, will be used as a comparative figure with which to contrast the results of the present study. It becomes apparent that only those sand-blast rooms in which the worker is equipped with the most satisfactory type of personal protection, such as a respirator and helmet provided with a source of clean positive air supply, sand-blast barrels of the housed type and hygienic cabinets of the type so far encountered in this investigation compare favorably with our tentative comparative value of above 10,000,000 particles per cubic foot of air.

Dust studies.—The investigation of the health of workers in dusty trades has been continued under the general supervision of Passed Asst. Surg. Albert E. Russell. Four publications will be presented during the coming fiscal year. These relate to cotton dust, coal dust, municipal dust, and silver polishing.

Pneumonia among steel workers.—In connection with pneumonia among steel workers, a complete study of which will be issued during the fiscal year 1931, certain measurements were made as to the effect of radiant energy on the skin temperatures of a group of steel workers. This investigation was made by Assistant Sanitary Engineer J. J. Bloomfield, Physicist James E. Ives, and Associate Statistician Rollo H. Britten.¹⁰ This investigation indicated (1) that intense sources of radiant energy had a pronounced effect on skin temperatures of workers exposed to them, the forehead and cheeks showing the greatest increase; (2) great differences in skin temperatures of different parts of the body for an individual were found in workers exposed to radiant energy; (3) even under relatively cold atmospheric conditions, not far above freezing point, high skin temperatures were encountered in workers exposed to radiant energy; (4) for workers not exposed to radiant energy there was a definite relation between atmospheric conditions and skin temperatures, both for arduous and for moderate work, the skin temperatures increasing with the increase of effective temperature.

Studies of the hazards in the radium dial painting industry.—Under the supervision of Surg. Louis Schwartz, a field investigation of the health hazards connected with radium dial painting was made which covered a thorough study of sanitary conditions, methods of painting, general and particular exposure of workers to radium or its products, general physical examination with special reference to the blood, special dental examination, and carefully controlled instrumental examination to determine whether or not any workers were actually radioactive. This study was made in seven plants in the States of Connecticut, Illinois, and Pennsylvania. The first general field study has been completed and the data are in course of preparation.

Studies in illumination.—These studies have been continued during the present fiscal year under the supervision of Physicist James E. Ives, with the assistance of Junior Physicist F. L. Knowles.

Natural illumination in factories, hospitals, schools, etc.—The results of the measurements made at the experimental daylight building erected at Arlington, Va., described in the annual report for 1927, and of simultaneous measurements of the brightness of the sky illuminating the building have been correlated. This procedure has made the results independent of the brightness of the sky illuminating the building and they can be applied to buildings in any section of the country for winter or summer, and for cloudy and bright days. Although the study is not completed, the data already compiled and the curves obtained should be helpful in the planning of buildings.

Loss of light due to smoke in New York City.—The results of this study described in the Annual Report for 1927 have been published.¹¹

Records of daylight illumination are also being obtained at Baltimore, Md.

¹⁰ Effect of Radiant Energy on the Skin Temperatures of a Group of Steel Workers. (Reprint No. 1370.)

¹¹ Studies in Illumination, No. III. A Study of the Loss of Light Due to Smoke on Manhattan Island, New York City, During the Year 1927, Especially in Relation to the Nature of the Weather, the Relative Humidity of the Air, and Velocity and Direction of the Wind. Public Health Bulletin No. 197.

INDUSTRIAL POISONS

Lead poisoning.—Under the direction of Passed Asst. Surg. Albert E. Russell, studies of the nature and severity of the effects of exposure to a lead hazard which were begun in the last fiscal year have been continued. Besides the routine physical examinations and collection of morbidity data, special attention has been given to the laboratory side of the investigation, relating particularly to the nature and character of the changes in the blood in both mild and severe cases of lead poisoning, and in workers exposed to a moderate hazard over long periods of time. In this connection the occupational survey indicated that 25 per cent of the workers under observation were found to be exposed to an excessive amount of lead dust, 25 per cent more associated with a moderate exposure, and approximately 50 per cent exposed to a dust containing small amounts of lead. This sanitary survey indicated that practically no one in the plant escaped a certain amount of exposure, since the sanitary conditions, plant housekeeping, and method of ventilation left considerable room for improvement.

Further data relating to industrial poisons will be found in the section relating to the cooperation with the Bureau of Mines.

STATISTICAL STUDIES RELATING TO INDUSTRIAL HYGIENE

Studies of sickness among industrial workers have been carried on under the direction of Associate Statistician Rollo H. Britten and Associate Statistician Dean K. Brundage.

Study of industrial morbidity.—The average frequency of cases of disability lasting more than one week among members of a group of 35 industrial sick-benefit associations and company relief departments reporting periodically to the Public Health Service was studied for the year 1928 in comparison with each of the preceding seven years. These studies, which have been continued over a period of years, present practically the only information available in the United States as to the nature and cause of sickness causing disability for one week or longer, the trend of sickness from year to year, and the seasonal incidence.

The relative importance of different groups of diseases from the standpoint of the frequency of their occurrence shows that respiratory diseases were reported as the cause of 42.4 per cent of the cases; digestive causes, 13.5 per cent; external causes (nonindustrial accidents), 9.8 per cent. These three groups, accordingly, account for nearly 66 per cent of the cases of disability which were reported. With regard to the trend of disease from 1921 to 1928, inclusive, we find that in each of the three main groups, namely, nonrespiratory, respiratory, and external causes, there has been a gradual but persistent rise. In the respiratory group influenza and grippe seem to be of outstanding importance, accounting for 57.5 per cent of cases in the year 1928, as compared with 50 per cent from 1921 to 1928. The frequency of disability on account of respiratory tuberculosis, however, was lower in 1928 than in any of the preceding years of record. Five of the nine years covered by the record were marked with influenza epidemics. In the other four years the winter incidence of influenza or grippe was of no inconsiderable magnitude.

Occupational mortality, 1915-1926, based on life-insurance records.—An analysis was made of death rates by occupations during the years 1915-1926 among 12 life insurance companies, the material having been assembled by a committee of the Actuarial Society of America and the Association of Life Insurance Medical Directors for the purpose of establishing special rates of insurance for hazardous occupations. The great advantage of this material lay in the fact that the number of persons exposed to the risk of dying in one year was accurately known, so that true death rates could be calculated. Perhaps of chief interest were the annual rates obtained for deaths due definitely to occupational accidents. These varied from 5.19 per 1,000 to minimal amounts. The results of the analysis, relating also to mortality from causes other than accident, were published during the year.

Duration of the effect of medical selection in life insurance records.—A study was made of the duration of the effect of selection resulting from the physical examination of applicants for life insurance. Most of this effect was found to be dissipated in the first two years, but some continued for four or five, and it was suggested that for certain diseases the effect might be of greater duration. It was also found that at the present time the mortality rate among insured persons is more favorable than that for the general population, even after the effect of selection due to the examination has worn off. A paper covering these aspects of the data was submitted for publication.

Physical impairment and broad occupational groups.—Physical examinations of policyholders made by the Life Extension Institute as a part of the service rendered by the life insurance companies afforded an opportunity to contrast the rate of impairment in broad occupational groups, representative of various social or economic levels. The groups used were: Agricultural, professional, business, skilled trade. In general, it was found that the rates were low in the professional group, average in the business group, and high in the industrial group—more or less in conformity with mortality findings. Major conditions for which the rates in the industrial group were excessive are the following: Uncorrected defective vision, defective hearing, carious or septic teeth, definite pyorrhea, bronchitis, arterial thickening, constipation, varicose veins, albumin, and certain other urinalyses findings. A paper covering this investigation, which was conducted in cooperation with the Milbank memorial fund, has been submitted for publication.

Rate of physical impairment in specific occupations.—Since the industrial group was found to have higher rates of physical impairment, the study was extended to the specific occupations. Twenty-eight of these occupations had numbers sufficient for analysis. It was determined that the excess in the industrial group could not be explained by specific hazards in a few occupations. Whenever the difference was marked, a large proportion of the occupations were above the average level represented by business. For some conditions, such as carious teeth, for example, every one of the 28 occupations showed rates above that of business. On the other hand, the impairment rates in a few cases reflected definite occupational hazards. For instance, the highest rates for defective hearing were those

for blacksmiths, carpenters, foundry workers, ironworkers, mechanics, and textile workers—all subject to noise.

There was a tendency for certain occupations to be subject to higher rates than others. Garment workers, painters, waiters, factory workers (unclassified, light), tailors, and butchers were much more frequently above the average for the 28 occupations than below it.

A paper on this specific occupational study will be submitted for publication during the next fiscal year.

Postural studies.—Postural relations in 2,200 boys and men were considered in the second and final bulletin dealing with the special study relating to posture. This study was made under the direction of Surg. Louis Schwartz and Associate Statistician Rollo H. Britten.

COOPERATION WITH INDUSTRIAL AND OTHER AGENCIES

Members of the staff have represented the service on various technical committees engaged in the preparation of specifications and codes relating to industrial hygiene activities.

COOPERATION WITH THE BUREAU OF MINES

Cooperation with the Bureau of Mines of the Department of Commerce continued as in the past, Surg. R. R. Sayers, of the Public Health Service, remaining as chief of the health and safety branch and as chief surgeon of the health division. He was assisted by other officers detailed from the Public Health Service and by scientific and other personnel from the Bureau of Mines.

Health division.—Activities of the health division have included experimental studies in the problem of carbon monoxide, refrigerants, warning agents for manufactured gas, toxic gases and vapors, analysis of mine gases, approval of gas masks, acid coal mine drainage, causes of death among miners, medical organization and industrial hygiene, sanitary survey of mining camps, and incidence of silicosis and other diseases among miners.

Safety division.—Work in the safety division has concerned itself mainly with first aid and mine rescue instruction, which was given to 112,570 persons employed in the mining and allied industries, safety reports which are used in securing and disseminating data on safety in mining, and prevention of mine accidents.

At the request of the bureau of mines, Physicist James E. Ives made a preliminary survey of the lighting of three mines in the Pittsburgh area. The object of this survey was to determine whether the illumination now in use is the best possible under the circumstances, both to protect the eyesight of the miners and to prevent accidents. It is believed that the lighting of coal mines, both in the entries and at the working faces of the coal could be improved, resulting in less eye strain, fewer accidents, and increased production.

MILK INVESTIGATIONS

The activities of the office of milk investigations were carried on under the direction of Sanitary Engineer Leslie C. Frank, with headquarters at Washington, D. C. The activities included the following: (1) The preparation of the 1929 edition of the Standard Milk Ordinance and Code, containing all approved suggestions of

various public health and dairy industry organizations; (2) a study of a further development of the fundamental principles underlying the rating of municipal, State, and national milk supplies; (3) complete milk sanitation surveys of 405 cities located in 22 States; (4) participation in the work of the White House Conference on Child Health and Protection; (5) the extension of the adoption of the Standard Milk Ordinance by American cities; (6) an analysis of the results of the enforcement of the Standard Milk Ordinance in the State of Mississippi; (7) an improved definition of pasteurization formulated by the office of milk investigations; (8) a study of flash pasteurization; (9) a survey of milk-borne outbreaks of disease for the year 1929.

The 1929 edition of the Standard Milk Ordinance and Code prepared.—During the fiscal year a third edition of the Standard Milk Ordinance and Code was prepared and published in mimeographed form. The 1927 edition of the code was submitted to a large number of public health and dairy industry organizations with a request for suggestions as to any desirable modifications. The 1929 edition incorporates in the text all of these suggestions which the Public Health Service deemed desirable from a public health point of view, and incorporates as footnotes recommendations which the Public Health Service did not consider desirable. This edition of the code therefore brings to the health officers of the United States not only the official recommendations of the Public Health Service with respect to milk sanitation but also any counterrecommendations of other organizations.

Further development of the fundamental principles underlying the rating of municipal, State, and National milk supplies.—During the fiscal year further work was done upon the development of the fundamental principles of rating municipal, State, and federal milk supplies. A paper was read on this subject before the 1929 conference of State sanitary engineers. The principles developed are now being used in the surveys of the milk sanitation status of cities being conducted by the Public Health Service.

Milk sanitation surveys completed for 405 cities, located in 22 States.—During the fiscal year 1929, milk sanitation surveys were made and ratings computed for 405 cities in 22 States.

This work is being continued during the year 1931. It is planned to use the data furnished by these surveys as the basis for a report discussing the milk sanitation status of the United States, and of typical sections thereof. These surveys are also being used in connection with the activities of the White House Conference on Child Health and Protection.

Participation in the work of the White House Conference on Child Health and Protection.—Sanitary Engineer Leslie C. Frank has been appointed chairman of the subcommittee on the public health control of milk of Section II of the White House Conference on Child Health and Protection. This subcommittee was assigned the duty of making a special study of the problem of the public health control of milk supplies. The routine milk sanitation surveys being conducted by the office of milk investigations are being used as supporting data for the report on this subject. The report will cover (a) present status of milk control in the United States, (b) the fundamental principles of milk control, (c) legal aspects of milk control,

(d) the measurement of the results of milk control effort, and (e) recommendations.

These are subjects upon which the office of milk investigations has been engaged for the past seven years, and much of the material developed during this time will be made available to the subcommittee.

Extension of the adoption of the Standard Milk Ordinance by American cities.—The number of American cities which have thus far adopted the Standard Milk Ordinance recommended by the Public Health Service for the improvement of city milk supplies has increased to 579 (June, 1930). These cities are located in 22 States.

The milk-sanitation work of the Public Health Service during the past seven years constitutes a major national research intended to determine whether the advantages of centralized governmental milk control can not be largely secured in a decentralized form of government through voluntary adoption of a uniform plan, with periodic measurement of local progress by the central health agency.

The results of the enforcement of the Standard Milk Ordinance in Mississippi.—During the fiscal year a paper was prepared by Sanitary Engineer A. W. Fuchs of the office of milk investigations, and Mr. H. A. Kroeze, director of the division of sanitary engineering in the State health department of Mississippi, outlining the results secured in 24 Mississippi cities.¹² The summarized results of the study in Mississippi are as follows:

There are now 29 cities, containing over 75 per cent of the State's urban population, enjoying a high grade protection of their milk supplies, as against 6 cities formerly. The improvement in sanitary quality, as shown by Public Health Service, sanitation ratings made by the method previously referred to, has been as follows:

The retail raw milk has improved 91 per cent, the raw milk delivered to pasteurization plants has improved 89 per cent, and the pasteurization plants 109 per cent. Milk consumption increased 23 per cent. The number of cities having pasteurized milk has doubled, and the consumption of pasteurized milk has risen 117 per cent.

Development of an improved definition of pasteurization.—An improved definition of pasteurization was developed by the office of milk investigations and incorporated in the 1929 edition of the Standard Milk Ordinance and Code. A paper was read by Sanitary Engineer Leslie C. Frank, discussing the new definition, before the 1929 meeting of the American Public Health Association.

The wording of this definition is partly the result of the studies made by the Office of Milk Investigations upon the design and operation of pasteurization machinery. The definition follows:

The terms "pasteurization," "pasteurized," and similar terms shall be taken to refer to the process of heating every particle of milk or milk products to a temperature of not less than 142° F., and holding at such temperature for not less than 30 minutes in pasteurization apparatus approved by the health officer, provided that approval shall be limited to such apparatus which requires a combined holder and indicating thermometer temperature tolerance of not more than 1½° F., as shown by official tests with suitable testing equipment, and provided that such apparatus shall be operated as directed by the health officer and so that the indicating thermometers and the recording thermometer charts both indicate a temperature of not less than 143½° F. continuously throughout the holding period, provided that nothing contained

¹² Public Health Reports, June 20, 1930. (Reprint No. 1388.)

in this definition shall be construed as disbaring any other process which has been demonstrated as of at least equal efficiency and is approved by the State health authority.

A principal feature of the new definition is that it fixes $1\frac{1}{2}^{\circ}$ F. as the maximum design tolerance which the health officer shall allow in approving pasteurization machinery. The studies of the Public Health Service have indicated that such a tolerance is easily within the range of design precision. By incorporating such a design tolerance limit, the unknown design deviation heretofore more or less vaguely allowed for in definitions of pasteurization is replaced by a smaller, known, limiting deviation. Another principal feature of the new definition is that it, for the first time in the history of definitions of pasteurization, clearly differentiates between the actual minimum temperature which must be applied to every particle of milk and the necessarily higher thermometer reading which must be enforced in order to insure the "every particle" actual temperature.

A third principal feature of the definition is that it deliberately assumes that no "operation tolerance" will be allowed. In other words, that no "enforcement indulgence" is contemplated by the definition. Heretofore many definitions of pasteurization have been written upon the assumption that the plant operator "aims" at the temperature named in the definition and would not be considered as violating the law if he did not miss the temperature by too wide a margin on either side. No specific enforcement tolerance was designated, however, and therefore enforcement of all degrees of laxity naturally resulted. The new definition assumes that the operator will be required to "aim" at a temperature sufficiently above the legally required temperature to insure that his thermometer will not at any time during the holding period drop below the legal minimum.

Report completed upon studies of flash pasteurization.—A report has been completed upon the studies conducted by the office of milk investigations upon both electric and steam flash pasteurization. A summary of the report was read before the 1930 Conference of State and Territorial Health Officers with the United States Public Health Service.

The report outlined the experimental results secured in both methods of flash pasteurization and recommends that the health officer approve provisionally either electric or steam flash pasteurization provided that certain specifications of design and operation, which the studies demonstrated to be necessary, are satisfied.

Surveys of milk-borne outbreaks of disease for the year 1929.—During the year 1929 the following outbreaks of milk-borne disease were reported to the office of milk investigations by State and city health authorities:

Disease	Number of out-breaks	Number of cases	Number of deaths	Disease	Number of out-breaks	Number of cases	Number of deaths
Typhoid fever.....	28	529	36	Food poisoning....	1	24	0
Paratyphoid B.....	1	38	1	Undulant fever.....		125	0
Scarlet fever.....	11	1,052	1	Total.....	50	2,715	51
Septic sore throat...	8	939	13				
Dysentery.....	1	8	0				

STATISTICAL INVESTIGATIONS

The office of statistical investigations continued under the direction of Associate Statistician Selwyn D. Collins, with Statistician Edgar Sydenstricker in close touch with the work and acting as a consultant. The investigations include work carried on in the statistical office independently as well as in collaboration with other stations of the division of scientific research and with other divisions of the service.

STUDIES OF INFLUENZA AND OTHER RESPIRATORY DISEASES

As outlined in last year's report, a considerable volume of work was undertaken in studies of influenza and other respiratory diseases following the respiratory outbreak of 1928-29. The most extensive part of the work in this office was the tabulation and analysis of data collected in influenza surveys in 10 large cities and in several small towns and rural areas. As the tabulation of these data was not completed by July 1, 1929, arrangements were made for the continuation of a small allotment of funds during the present fiscal year to be used in completing the influenza studies. The conduct of these studies continued under the direction of a board consisting of Consultant W. H. Frost, Statistician Edgar Sydenstricker, and Associate Statistician Selwyn D. Collins. As in the preceding fiscal year, this board served in an advisory or consulting capacity, but the influenza work has, for the most part, been an integral part of the work of the office of statistical investigations. Although only two articles have been published during the present fiscal year, another is now in the process of publication and several others are nearly completed. The two published articles are (a) *Influenza-Pneumonia Mortality in a Group of about 95 Cities in the United States, 1920-1929*, Public Health Reports, February 21, 1930 (Reprint No. 1355), and (b) *The Influenza Epidemic of 1928-29, with Comparative Data for 1918-19*, American Journal of Public Health, February, 1930. The article now being published is on mortality from influenza and pneumonia in 50 large cities of the United States, 1910-1929. In this latter article, data are given by months from 1910 to 1929 for each of the 50 cities that were 100,000 or more in 1910 and by weeks during the three major epidemics of 1918-19, 1920, and 1928-29 for all of the cities for which weekly data were available. In addition, data are given by weeks from September, 1918, through 1929 for a group of 35 cities for which continuous weekly records were available throughout this period. The weekly data for this group of cities are supplemented by monthly data of the same kind for the period 1910-1919.

Articles giving the details of the results of the surveys of 1928-29 with comparative data of the same kind from the surveys of 1918-19 are practically complete.

Two articles on respiratory affections in years when influenza was not prevalent are practically complete. These articles have been prepared by Associate Statistician Mary Gover and they cover (a) chronology and (b) symptoms by age, sex, and chronology of the cases reported.

STUDIES IN MORBIDITY STATISTICS

In September, 1929, a field study of morbidity was inaugurated in six rural townships in Cattaraugus County, with a population of about 5,000 persons. The largest village in this area has a population of only about 900 inhabitants, and the great majority of the families who are included in the study are living on farms or in very small villages. This study was undertaken primarily to determine the extent and character of illness that occurs in such a farm population. As carried on to date, it has included the following phases: (a) A census of the members of the household including a history of past attacks of communicable diseases, (b) a census of chronic disease that has troubled the individuals in recent years, (c) a record of current illnesses obtained by recanvassing the households periodically, and (d) some special inquiries regarding rheumatism, neuralgia, and related conditions.

In February, 1930, a field study of morbidity was begun in the city of Syracuse, N. Y., similar to the Cattaraugus County study, to afford sickness data on a moderate-sized manufacturing city and to afford a comparison of illness among persons in such a city with that among persons living in the rural Cattaraugus County area. The same inquiries as those outlined above for Cattaraugus County are being made in the eight selected districts of Syracuse, except that to date the chronic-disease census has not been made. It is expected to do this some time within the next few months.

It is expected to continue both of these field studies for at least another year. The only data that have as yet been tabulated from them relate to the history of the communicable diseases of childhood. One interesting item from this tabulation is the fact that although a much smaller proportion of children 10 to 15 years of age in the rural area have been attacked by such diseases as measles and whooping cough, by 30 years of age nearly as many have been attacked in the rural area as in the urban area. In other words, the measles and whooping cough period is concentrated in the younger ages in the city, whereas in the country it is spread over the first 30 years of life.

By an arrangement with the Committee on the Cost of Medical Care, records of morbidity during a 12 months' period in a group of about 12,000 families scattered throughout the United States have been made available to the Public Health Service in return for tabulating cost data on this group of families for the committee. These data were collected in a manner quite similar to that used in the Hagerstown study, and taken with the results of that study will constitute a considerable mass of detailed data on the incidence of various types of illness among family groups of individuals of all ages and both sexes. Considerable morbidity data are now available for special groups, such as industrial employees and school children, but these two studies include nearly all of the data now in existence on the occurrence of illness over a period of time among unselected families including all ages and both sexes. These studies, it should be noted, refer to the *incidence* of illness over a period of time and not to the *prevalence* of illness on a given day, such as is secured by a single canvass of households with inquiry as to persons sick on the day of the canvass.

CURRENT MORTALITY AND DISEASE PREVALENCE STATISTICS

The collection and publication of monthly mortality statistics from such States as could furnish data to the Public Health Service was continued throughout the year, in cooperation with the division of sanitary reports and statistics. As more States have been included in this tabulation, the tables of monthly rates for each State were so increased in size that the method of publication has been changed. Instead of monthly rates for each cause of illness, the data are now published as rates for as many months of the current calendar year as are available for each State at the time of publication. In other words, the rates now represent "the year to date" period. In the instance of many of the causes of death there is so little variation from month to month that these rates for the year to date seem preferable. As the year progresses and the "year to date" figures approximate the calendar year they will become more valuable as representing conditions during that year.

The data collected for the monthly mortality compilations, as corrected and supplemented by such annual summaries as can be secured from the States, have been used as the basis for a preliminary annual summary of mortality in the various States in 1929. This summary, which was published in the Public Health Reports for May 2, 1930, includes death rates from 16 causes in addition to death rates from all causes, infant mortality from all causes, and infant mortality from causes other than malformations and early infancy. The data are for a maximum of 13 States with over 40,000,000 population, but for some of the causes of death data were available for only a few States. In addition to rates for 1929, rates for the same States were given for each of the years back to 1923. This gives an accurate idea of the trend of a given disease in recent years, even though the various causes of death were not strictly comparable, because they were based on varying numbers of States. In addition to this summary table, rates were given for the various causes by States. Although these annual summaries are preliminary and subject to change by reason of various corrections, it is believed that they serve a fairly useful purpose until final figures are compiled and published by the Bureau of the Census.

Monthly summaries have also been published on the prevalence of disease in the United States. These summaries are based on weekly telegraphic reports of cases of communicable diseases received from State health departments by the division of sanitary reports and statistics.

COOPERATION WITH OTHER OFFICES AND DIVISIONS OF THE SERVICE

A considerable part of the work of the office of statistical investigations consists of the rendering of assistance to other offices and divisions of the service. This assistance comprises the following: (1) Technical advice and criticism on statistical procedure, (2) temporary assignment of statistical personnel to assist other units, and (3) use of mechanical tabulating equipment and of operators. Active cooperation has been continued throughout the year with the child hygiene and industrial hygiene offices, and with the divisions of venereal diseases and mental hygiene.

STREAM POLLUTION

The maintenance of administrative headquarters and specially equipped laboratories at Cincinnati, Ohio, manned by a staff of experienced personnel, has permitted the continuation of stream-pollution studies along the lines followed for several years past. Following the resignation from the service of Surg. W. H. Frost on August 8, 1929, direction of these studies was assumed by Sanitary Engineer J. K. Hoskins, who had been for a number of years in immediate charge of the Cincinnati station. A board of special consultants gives advice at frequent intervals regarding the policy and general plans of research to be followed.

The principal activities for the year have included the following:

(a) A resurvey of the pollution and natural purification of the Ohio River between Cincinnati, Ohio, and Louisville, Ky., under the immediate supervision of Sanitary Engineer H. R. Crohurst.

(b) Experimental studies of certain basic factors operative in the process of natural purification of polluted water, by Bacteriologist C. T. Butterfield, Special Expert W. C. Purdy, and Chemist E. J. Theriault.

(c) Studies of the efficiency of artificial water-purification processes, by Sanitary Engineer H. W. Streeter.

(d) Miscellaneous studies and cooperative undertakings related to the general subject of stream sanitation.

SURVEY OF THE PRESENT POLLUTION AND NATURAL PURIFICATION OF THE OHIO RIVER
BETWEEN CINCINNATI, OHIO, AND LOUISVILLE, KY.

The Ohio River, draining an area of slightly more than 200,000 square miles, is one of the most important of our inland navigable streams. The population on the watershed, in excess of 15,000,000, together with the large volume of industrial wastes contributed, imposes a heavy burden of pollution on the stream, especially below the large metropolitan areas. The proper assimilation of this pollution is of importance, because the river constitutes the principal source of domestic water supply for urban communities along its course. For these reasons the Ohio River has been selected as a representative example for study of the fundamental principles of sewage disposal by dilution and of the natural processes of stream purification as such principles relate to the problem of safe water supplies.

The original survey of the pollution and natural purification of the Ohio River was conducted during the years 1914-1916, the results of which have been published.¹³ Extensive changes in the river channel have been made since the completion of this study. As a result of the canalization of the river throughout its entire length, it is now confined, in low stages, in a series of navigable pools which greatly retard the velocity of flow and probably modify the sanitary condition of the water at such times. Moreover, natural increases in population and industrial development in the interval would be expected to increase the pollution load contributed. To obtain some quantitative measure of these changes, a resurvey of a section of the river in the vicinity of Cincinnati was inaugurated.

¹³ Public Health Bulletins Nos. 131, 143, 146.

At the request of the Kentucky State Board of Health and the sewerage commission of the city of Louisville, Ky., and with their active cooperation, the resurvey was extended to include the Louisville area, so that at the close of the year a stretch of river approximately 165 miles in length is under observation.

The general scope of the present study includes the routine collection of water samples for chemical and bacteriological analysis at 10 main river points and from 4 of the larger tributaries between Cincinnati and Louisville and the collection and tabulation of essential hydrometric data and information relating to contributing population and sources of existing pollution.

The results expected to be obtained from this resurvey are as follows: (1) Definite knowledge of the present condition of this section of the river, both at times of open channel and at pool stage; (2) a comparison of past with present conditions of pollution carried by the Ohio River below the centers of population at Cincinnati and Louisville and the relative condition at low-water stages prior to and following canalization; (3) the limit of probable future permissible increase in pollution before objectionable conditions may be expected to result at low-water stages and before water-treatment plants may become overburdened; and (4) the rates of natural purification occurring as a result of the pollution contributed by Cincinnati during the time of flow from Cincinnati to Louisville.

EXPERIMENTAL STUDIES OF NATURAL PURIFICATION OF POLLUTED WATER

These studies, in progress for a number of years, have been continued throughout the past year along two separate but distinctly complementary lines: (1) An intensive investigation, under carefully controlled laboratory procedures, of the rôle of specific types of bacteria and of plankton, both in pure cultures and in combinations, in the oxidation of organic matter in liquids; and (2) observations of the rates of natural purification of polluted water flowing in a series of experimental channels where numerous factors such as velocity, depth, dilution, temperatures, and exposure to light may be controlled.

To investigate the fundamental rôle of biological life in the natural purification of polluted water, it has seemed essential to determine the activity of individual species of organisms in the process of oxidation of organic matter and then observe the changes that result by increasing, step by step, the complexity of the combination of species until the ultimate mixture of such organisms obtained is roughly similar to that found in nature. Exploratory work of this kind has been productive of most interesting results and has indicated that both bacteria and plankton are essential to normal biochemical oxidation and furthermore that if the life processes of either group are disturbed, such conditions are reflected in the rate of natural purification. Three reports dealing with the preliminary results obtained in this study have been published.¹⁴ Further articles of the series are in course of preparation at the close of the year.

¹⁴ Public Health Reports, Sept. 20, Nov. 1, and Nov. 22, 1929. (Reprints 1317, 1328, and 1336.)

Environmental conditions determine to a large extent the types of biological life predominating in flowing streams and hence influence the activity of such life in stream improvement. Observations of these biological relationships in flowing water have been continued in a series of experimental channels in which many factors are capable of control in contrast to conditions prevailing in natural streams. In this way, using water polluted with definite amounts of sewage, it has been possible to determine the cycles of biological life induced by individual changes in environment and to measure quantitatively the resulting effect on the purification rate. A correlative study has been concerned with the rate of deposition of sludge from known amounts of polluted water flowing through the channels and a comparison of the oxygen demand of this deposited sludge with the corresponding reduction observed in the partly purified effluent water. The results of these experiments are in course of preparation for publication.

STUDIES OF THE EFFICIENCY OF ARTIFICIAL WATER PURIFICATION PROCESSES

Collective and experimental studies of the efficiency of artificial water purification processes, begun during the summer of 1924, have been continued with the advice and cooperation of Special Consultant J. W. Ellms, of Cleveland.

The general purpose of these studies has been to determine, under conditions both of actual practice and of experimental control, the efficiencies and limitations of methods commonly used in this country for the purification of water supplies taken from polluted sources. Begun as an appraisal of purification processes already in general use, the investigation was extended subsequently to embrace experimental studies of various modifications and elaborations of the more simple processes which have been proposed and, in some cases, installed in full-scale plants for the purpose of increasing their efficiency in the treatment of water from highly polluted sources.

At the end of the fiscal year 1928 all of the field work connected with collective surveys of over 30 representative municipal water purification systems had been completed, and the results of these surveys published in part.¹⁵

During the fiscal year 1929 attention was devoted primarily to completing, as far as practicable, the program of experimental work involved in a study of current modifications and elaborations of ordinary water purification processes. In August, 1929, this phase of the study was brought to a conclusion with the discontinuance of operation of the experimental plant. The remainder of the fiscal year 1930 was devoted to preparing for publication the extensive data collected up to the time of completing the experimental work. Prior to the end of the year a report,¹⁶ dealing with the results of a collective survey of the efficiency of municipal water purification plants along the Great Lakes, had been published and the fourth of a series of reports on the results of the experimental studies was in press.

Broadly stated, the results of the study have indicated (*a*) that, in general, a fairly well-defined relation exists between the bacterial quality of raw waters, as delivered for treatment and the correspond-

¹⁵ Public Health Bulletin No. 172.

¹⁶ Public Health Bulletin No. 193.

ing quality of effluents produced by current processes of water purification; (b) that the existence of such a relationship imposes a practical limitation, capable of approximate evaluation, on the permissible density of raw water pollution under which the average water purification plant of a given type can produce a palatable effluent of specified bacterial quality; (c) that the average well-operated, rapid sand filtration plant of the more usual, simple design, when aided by postfilter chlorination, can produce a consistently palatable final effluent conforming to the revised Treasury Department *B. coli* standard if the average *B. coli* index of the raw water does not exceed approximately 5,000 per 100 cubic centimeters; and (d) that through the aid of certain elaborations and modifications of the more simple filtration methods, notably by the use of amplified and more highly intensified preliminary coagulation, sedimentation and chemical disinfection, the over-all efficiency of purification and, correspondingly, the permissible limit of raw water pollution, can be increased very materially. The more specific effects of various elaborations studied are being stated in the series of reports now in press and in the process of preparation.

MISCELLANEOUS

As the major research studies progress, certain minor correlative investigations are essential to the clarification of problems met with in the field work. Thus in the routine chemical examination of polluted streams, one of the tests most commonly used is that of the determination of the dissolved oxygen content either of the sample as withdrawn or after a definite period of incubation at a standard temperature. Throughout the years of stream pollution studies, attention has been devoted to improvements in the technique of this test and to the ascertainment of its limitations under special conditions. During the year, observations have disclosed the need for revision of the procedure as applied to waters polluted with sulphite pulp waste liquor. A suitably modified procedure was developed which appears to assure reasonably accurate results in the presence of this particular industrial waste.

A considerable amount of time has been required for the preparation of comprehensive reports on research studies, the field work on which had been completed previously. During the year the manuscript of a monograph on the the biological observations on the Illinois River was submitted for publication and is now in press. A text on the studies of the pollution of the upper Mississippi River was also completed.

A two weeks' school of instruction in the technique employed in stream pollution studies and in the methods of interpretation of results was held during the first half of March at the request of the Conference of State Sanitary Engineers. This course was a repetition of a similar one presented last year and was attended by a representative from the departments of health of each of 20 States. The information thus disseminated has been of assistance in focusing the attention of State authorities on their local stream pollution problems and in suggesting procedures for their economical solution.

There are also calls on the technical personnel from time to time for the performance of duties not directly connected with the principal research activities of the station but nevertheless related to the general subject of stream sanitation. An important phase of such duties is the representation of the service at conferences of State and other authorities engaged in similar activities and the presentation of technical papers discussing the research investigations in which the station is engaged.

During the year assistance was also rendered the Maine State Board of Health, cooperating with the American Paper and Pulp Association, in studies of the pollution of the rivers of that State by paper mill wastes. A revised method of the determination of the dissolved oxygen content of such polluted waters was demonstrated to the technicians who will be engaged in the field studies.

NATIONAL INSTITUTE OF HEALTH

The administration of the National Institute of Health for the fiscal year 1930 was continued under Director George W. McCoy and Asst. Director R. E. Dyer.

It is regretted to state that one employee, Harry B. Anderson, died on February 8, 1930, from psittacosis incurred in line of duty. Mr. Anderson was appointed as a laboratory attendant in 1921, and served most conscientiously and efficiently during the entire period of his service. Well knowing the dangers that confronted him in the psittacosis investigations he never had a thought of avoiding duty. The service has lost an excellent employee.

Publications.—A considerable number of papers by workers at the institute appeared throughout the year in various issues of the Public Health Reports and also in other professional publications. One bulletin was issued from the institute and the manuscripts of three additional bulletins were in press at the close of the fiscal year.

Legislation.—The fiscal year just closed was significant for the passage by the Congress of two acts bearing upon the work and expansion of the institute.

By an act to provide for the coordination of the public health activities of the Government and for other purposes, approved April 9, 1930,¹⁷ the Secretary of the Treasury was authorized to establish such additional divisions in the Hygienic Laboratory (National Institute of Health) as he might deem necessary.

An act approved May 26, 1930, changed the name of the Hygienic Laboratory to the National Institute of Health and provided for liberal expansion. Under this act the Secretary of the Treasury is authorized to utilize the present site of the laboratory buildings, or to acquire additional land, and to furnish and equip suitable buildings for the use of the institute. Gifts for the study of fundamental problems of diseases of man, and matters pertaining thereto, may be accepted, and donors of \$500,000 or over shall be acknowledged by suitable memorials permanently established within the institute. The Surgeon General is authorized to establish and maintain fellowships from funds donated for the purpose. Individual scientists may be appointed for duty in the institute under fellowships so estab-

¹⁷ For the text of this act see p. 316.

lished; scientists thus selected may be designated for the prosecution of investigations in other localities and institutions in the United States and abroad during the term of their fellowships. The facilities of the institute shall be made available to health authorities for purposes of instruction and investigation. Following is the text of the act:

[PUBLIC—No. 251—71st CONGRESS]

[S. 1171]

AN ACT To establish and operate a National Institute of Health, to create a system of fellowships in said institute, and to authorize the Government to accept donations for use in ascertaining the cause, prevention, and cure of disease, affecting human beings, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Hygienic Laboratory of the Public Health Service shall hereafter be known as the National Institute of Health, and all laws, authorizations, and appropriations pertaining to the Hygienic Laboratory shall hereafter be applicable for the operation and maintenance of the National Institute of Health. The Secretary of the Treasury is authorized to utilize the site now occupied by the Hygienic Laboratory and the land adjacent thereto owned by the Government and available for this purpose, or when funds are available therefor, to acquire sites by purchase, condemnation, or otherwise, in or near the District of Columbia, and to erect thereon and to furnish and equip suitable and adequate buildings for the use of such institute. In the administration and operation of this institute the Surgeon General shall select persons who show unusual aptitude in science. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$750,000, or so much thereof as may be necessary for construction and equipment of additional buildings at the present Hygienic Laboratory of the Public Health Service, Washington, District of Columbia.

SEC. 2. The Secretary of the Treasury is authorized to accept on behalf of the United States gifts made unconditionally by will or otherwise for study, investigation, and research in the fundamental problems of the diseases of man and matters pertaining thereto, and for the acquisition of grounds or for the erection, equipment, and maintenance of buildings and premises; *Provided*, That conditional gifts may be accepted if recommended by the Surgeon General and the National Advisory Health Council. Any such gifts shall be held in trusts and shall be invested by the Secretary of the Treasury in securities of the United States, and the principal or income thereof shall be expended by the Surgeon General, with the approval of the Secretary of the Treasury, for the purposes indicated in this act, subject to the same examination and audit as provided for appropriations made for the Public Health Service by Congress. Donations of \$500,000 or over in aid of research will be acknowledged permanently by the establishment within the institute of suitable memorials to the donors. The Surgeon General, with the approval of the Secretary of the Treasury, is authorized to establish and maintain fellowships in the National Institute of Health, from funds donated for that purpose.

SEC. 3. Individual scientists, other than commissioned officers of the Public Health Service, designated by the Surgeon General to receive fellowships may be appointed for duty in the National Institute of Health established by this act. During the period of such fellowship these appointees shall hold appointments under regulations promulgated by the Secretary of the Treasury and shall be subject to administrative regulations for the conduct of the Public Health Service. Scientists so selected may likewise be designated for the prosecution of investigations in other localities and institutions in this and other countries during the term of their fellowships.

SEC. 4. The Secretary of the Treasury, upon the recommendation of the Surgeon General, is authorized (1) to designate the titles and fix the compensation of the necessary scientific personnel under regulations approved by the President; (2) in accordance with the civil service laws to appoint, and in accordance with the classification act of 1923, and amendments thereto, fix the compensation of such clerical and other assistants; and (3) to make such expenditures (including expenditures for personal services and rent at the seat

of government, for books of reference, periodicals, and exhibits, and for printing and binding) as he deems necessary for the proper administration of such institution.

SEC. 5. The facilities of the institute shall from time to time be made available to bona fide health authorities of States, counties, or municipalities for purposes of instruction and investigation.

SEC. 6. That hereafter the Director of the National Institute of Health while so serving shall have the rank and shall receive the pay and allowances of a medical director of the Public Health Service.

Approved, May 26, 1930.

Library.—There were 733 bound volumes acquired by purchase and gift during the fiscal year 1930, making the total accessions 14,468. The number of periodicals received was 319.

DIVISION OF PATHOLOGY AND BACTERIOLOGY

STUDIES OF NUTRITIONAL DISEASES

The laboratory investigations of nutritional diseases were carried out under the direction of Passed Asst. Surg. W. H. Sebrell, with the supervision of Surg. G. A. Wheeler, who has had charge of the field investigations of nutritional diseases since the death of Surg. Joseph Goldberger. The work has followed the general plan inaugurated by Surgeon Goldberger and has consisted principally of tests of individual foodstuffs in the dog and albino rat to determine their probable pellagra-preventive value.

A severe anemia of dogs was observed in connection with the study of onions, and further studies of this condition are in progress at the close of the fiscal year.

A fatty degeneration of the liver of the dog, apparently of dietary origin, was studied.

A more comprehensive report of the studies of nutritional diseases is to be found on page 39.

STUDIES OF INFECTIOUS DISEASES

Typhus fever.—Studies on endemic typhus fever were continued under Asst. Director R. E. Dyer, with the assistance of Passed Asst. Surgs. A. S. Rumreich and L. F. Badger.

The investigations of the past few years have shown that typhus fever is a relatively common disease in certain sections of the United States, notably in the Southeastern States. Further, the body louse has been found in only a few of the cases, warranting the assumption as a working hypothesis that some other insect vector is responsible for the transmission of many of the cases.

Work during the past year has been carried out along three definite lines: (1) The identification of animals which may serve as reservoirs for the disease; (2) the study of insects (other than the body louse) which may act as vectors either from animal to man or from man to man; (3) an epidemiological study of cases of typhus fever.

Since it is known to be possible for rats to harbor the virus of typhus fever, laboratory experiments have been made during the past year to determine the ability of the rat flea to transmit the virus. So far these experiments have proved negative. Common eastern ticks (*D. variabilis*) have been gathered in large numbers

from districts in which typhus fever cases are occurring. These ticks have been used in the laboratory in attempts to transmit typhus from typhus-infected guinea pigs to normal guinea pigs. Other field samples of ticks have been injected into guinea pigs in an effort to discover the virus of typhus in ticks as found in nature. The same type of experiments are being carried out with the rat mite (*L. bacoti*), which feeds upon both rat and man.

The epidemiological study of cases was begun in April. Cases are being reported earlier this year and in greater numbers than in previous years. For instance, in the first six months of 1930, 15 cases and 4 deaths have been reported in Maryland. In the same period of this year 55 cases have been reported in Georgia, while 14 cases were reported in the corresponding period and area last year. Part of the increase in number of cases is undoubtedly due to increased familiarity with the disease on the part of physicians. However, it seems probable that the number of cases has actually increased.

Psittacosis.—During December, 1929, and early in January, 1930, reports of cases of psittacosis, a disease hitherto almost unknown in the United States, were received at the institute. Epidemiological investigations were immediately undertaken and experimental laboratory work was begun on January 16, 1930. Surg. Charles Armstrong was placed in charge of the psittacosis investigation, assisted by Bacteriologist Sara E. Branham, Passed Asst. Surgs. R. D. Lillie and L. F. Badger, and Medical Director G. W. McCoy.

It appeared from the epidemiological findings that the cases were due almost entirely to infected parrots which had been imported for the Christmas trade. There is now a record of 169 cases with 33 deaths, extending over the period from November 23, 1919, to May 7, 1930. These cases occurred in 16 States and the District of Columbia and do not include 16 laboratory infections with 2 deaths, nor 12 probable cases removed from merchant vessels entering our ports. Sixty-three per cent of the cases were in females, a fact probably explained by the closer or more prolonged contact with birds which is experienced by the women in the home. All ages seem to be susceptible, but the higher age groups suffer more severe attacks. There were no deaths among 35 cases under 30 years of age.

Parrots were associated with the development of 55 foci of disease, parrakeets and "love birds" with 7, and canaries with 3, while in 9 outbreaks the exposure was to more than one species. The incriminated birds were newly acquired in all instances and were definitely ill in all but a few instances.

An extensive outbreak of psittacosis which occurred among the employees of a department store was investigated by Passed Asst. Surg. L. F. Badger. From 500 to 600 persons had been more or less intimately exposed to 12 parrots. The parrots were in poor condition and eight died while in the store; the other four had been sold. Twenty-five cases of illness among employees occurred, lasting four weeks or longer. The onset of illness in each instance took place between December 14 and January 13. Brief histories of 17 of the cases were secured, but it was impossible to secure data on

the remaining 8. The symptoms were approximately the same in the 17 cases and were typically those of psittacosis. Parrots obtained from the importer who supplied the department store are known to have caused cases of psittacosis in other sections of the country.

The experimental researches carried on at the institute have yielded the following results:

An intensive search for the "*Bacillus psittacosis*" of Nocard was made in the carcasses and feces of parrots that were shipped into the laboratory, in experimentally infected and normal parrots and parrakeets, and in material obtained from human cases. No strain of "*B. psittacosis*" was found.

In 57 convalescent sera studied, no agglutinins for "*B. psittacosis*" or other organisms of the *Salmonella* group were demonstrable in dilutions that could be considered significant.

Evidence was secured suggesting that the causative agent of psittacosis in birds is filtrable.

During the course of the experimental work at the institute 11 cases of psittacosis developed among the personnel. Two of those infected had contact with infected birds, but in the remaining nine cases the manner of infection was not determined, though the source was undoubtedly the same. There was no ground for believing that any of the 11 cases was due to contact with persons in the incubation stage of, or sick with, psittacosis, a view that is strengthened by the fact that no case developed in the families of the victims or in persons caring for the sick.

All the cases occurred in the North Building, in which 54 persons were employed, establishing an infection rate of 20 per cent among the personnel of that building.

Owing to the danger of infection of personnel the laboratory investigations were transferred to the United States quarantine station, Baltimore, Md. Surgeon Armstrong and Laboratory Attendant Lanham, both recovered cases and presumably immune, were assigned to conduct the investigations at that place.

Undulant fever.—Field investigations have been continued under the direction of Surg. H. E. Hasseltine.

During the calendar year 1929 undulant fever was reported, officially or unofficially, in every State of the Union. From all sources a total of 1,305 cases were obtained, and 968 of these were reported officially through State and local health departments. It is noted that the disease is reported much more frequently from States in which one or more professional men have shown an active interest in its detection.

Acting Asst. Surg. A. V. Hardy completed an intensive epidemiologic study of 333 cases in the State of Iowa, over 200 of these occurring in 1929. He found that in Iowa about 12 per cent had probably contracted the disease from working with infected hogs in packing houses and butcher shops. About 50 per cent occurred in persons living upon farms; nearly all of this group had been employed on farms that harbored infected livestock and all of this group also used raw milk. The remaining 38 per cent were chiefly urban residents that had little or no contact with livestock and probably received their infection through the use of raw dairy products.

Surgeon Hasseltine made a general survey of the disease in 20 different States, and incident to this survey he investigated 109 cases epidemiologically. In States that are chiefly agricultural the disease has been recognized more in the rural districts than in the cities. In States made up chiefly of urban communities, a considerable proportion of the cases apparently receive their infection through the use of raw milk. In communities that have a part of their milk supply pasteurized the disease appears with striking consistency in the portion of the population using raw milk.

Combining the individual-case investigations of Surgeon Hasseltine and Acting Assistant Surgeon Hardy, there is epidemiologic data on 442 cases. They may be divided into three groups as follows:

Group I: One hundred and ninety-eight cases (103 males, 95 females) that had little or no contact with livestock and whose probable source of infection was raw dairy products.

Group II: Forty-four cases (43 males, 1 female) living in cities and having direct contact with livestock in slaughterhouses or meat-packing establishments, whose most probable source of infection was contact with carcasses of infected hogs.

Group III: Two hundred cases (191 males, 9 females) living on farms and having frequent contact with livestock and also using raw dairy products, whose probable source of infection is attributable to contact with infected livestock and the use of raw dairy products.

From these figures it appears that about 47 per cent probably contracted the disease through the use of raw dairy products; 9 per cent contracted the disease as a result of their daily occupations in the meat and associated industries; and 44 per cent received their infection as a result of contact with infected livestock on farms, combined with the use of raw dairy products.

Of 49 cultures isolated from human beings, 35 were of the porcine variety, 14 of the bovine. An epidemiological study of nine cases of undulant fever occurring in 1929, in Waycross, Ga., shows very strong epidemiologic evidence of the transmission of the porcine strain of the organism through the milk of cows.

A serologic study of a group of veterinarians, conducted in conjunction with the laboratory of animal pathology of the University of Illinois, indicated that it is possible for individuals to show a positive agglutination test without having had clinically recognized undulant fever.

Smallpox vaccination.—Work under this head has been carried on by Surg. Charles Armstrong, but the investigations have been seriously delayed by the need for work on psittacosis. Five cases of *postvaccinal tetanus* have been reported since the last annual report was submitted. Each one of these vaccinations was covered by some type of dressing and therefore confirms the conclusions formerly published concerning the deleterious influence of coverings.

The experimental work being conducted on *postvaccinal encephalitis* has thus far led to no results of practical application. To date five probable cases of this complication have been reported as having occurred in the United States during the fiscal year 1929–30.

Tularaemia.—Studies of tularaemia under Surg. Edward Francis may be summarized as follows: (1) The States of Washington and Massachusetts were added during the year to the area of

distribution which now comprises 43 States of the United States, the District of Columbia, Japan, Russia, Norway, and Canada. (2) During the calendar year 1929 the number of serums received from 33 States and found positive for tularaemia in the laboratory was 178. (3) Two new sources of human infection were noted—skunk and tree squirrel. (4) Wild rabbits of the cottontail and jack varieties were found to be more susceptible to tularaemia than the domesticated laboratory rabbit. (5) Tularense antigen sent to Norway served to diagnose three cases—the first for that country. (6) A human serum received from Canada was found positive for tularaemia—the first for that country. (7) Surg. R. R. Spencer published the new observation that a turbid suspension of *Bacterium tularense* is rendered clear by the addition of castor-oil soap (sodium ricinoleate).

Researches on tularaemia conducted in the Rocky Mountain spotted fever laboratory at Hamilton, Mont., are reported on page 43.

Plague.—Studies on plague were carried on by Surgeon Francis. Plague cultures were tested for viability and virulence after remaining six and a half years in the cold room at approximately 10° C. in culture tubes plugged with paraffined cork stoppers and not transferred during that time. At the end of six and a half years, 13 such cultures grew readily when transferred to fresh culture medium; and 1, which was selected for virulence tests, was found fully virulent when rubbed on the shaven abraded skin of the abdomen of a white rat and of four guinea pigs, killing the rat on the sixth day and the guinea pigs on the 5th, 5th, 6th, and 11th days, respectively, with typical lesions of plague, from which *B. pestis* was cultured.

Trachoma.—The work for the fiscal year has been continued by Bacteriologist Ida A. Bengtson, at Rolla, Mo., and has been confined largely to a search for the etiological agent. A number of organisms have been isolated from the conjunctival lesions of patients and submitted to a study without, however, encouraging results.

Rocky Mountain spotted fever.—The work on this subject was carried on chiefly by Special Expert R. R. Parker at the field station at Hamilton, Mont., and will be found reported on pages 40-43.

PATHOLOGY

Work in the section of pathology has been carried on chiefly by Passed Asst. Surg. R. D. Lillie. The histologic diagnostic service to marine hospitals and other agencies has been continued; 1,128 specimens were examined and reports submitted. This represents an increase of 496 over the preceding year and nearly equals the sum of the examinations in the last two fiscal years.

In addition to this diagnostic work, 522 partial or complete animal autopsies were made, and histologic studies were completed or are in progress. These comprised material from tularaemia, vaccinia, nutritional diseases and conditions, and studies on the histologic reaction in laboratory animals to a microorganism regarded by some workers as related to cancer. Observations were also made on experimental Jamaica ginger paralysis, psittacosis, toxicologic histology of

alcohol and chloroform, neoarsphenamine, mercurochrome, mercurophen and metaphen, scarlet fever streptococcus toxin, experimental encephalitis, and a few other conditions.

Sections from 44 specimens have been prepared for detailed study by various research workers in other divisions of the laboratory.

Histologic studies in vaccine virus pneumonia in rabbits have been completed and published.

The following is a brief summary of this study:

Employing a virulent, heat-resistant, testicular vaccine virus and the respiratory route of inoculation, a highly fatal heretofore undescribed vaccinal pneumonia, usually lobar in type, was produced in rabbits and carried in series through eight generations.

This pneumonia is essentially serofibrinous in nature, without leucocyte exudation, with focal coagulation necroses in bronchial and alveolar epithelium, and with a lymphangitis and peribronchial lymphadenitis identical histologically with that produced in regional lymph nodes by skin vaccination of both rabbits and monkeys with this virus.

The vaccinal nature of the lung lesions is indicated by the character of the reaction, including the occurrence of Guarnieri bodies in the alveolar and bronchial epithelium; by the demonstration of the rich virus content of the affected lungs; by the fact that animals immune to commercial calf virus are relatively highly resistant to pneumonic infection when the macerated pneumonic lung tissue is employed as the inoculum; and by the existence of mutual cross protection between the rabbit lung virus and commercial calf virus, employing the customary cutaneous vaccinations.

While the concept that vaccine is able to produce lung lesions is not entirely new, this is believed to be the first experimental production of a definite pneumonia readily distinguishable from the ordinary types.

A study of experimental vaccinia in rabbits and a review of the pathologic histology of smallpox and vaccinia have been completed and are in press, and studies in the pathologic histology of experimental blacktongue and "yellow liver" of dogs, and in the pathology of human and experimental tularaemia, are in course of preparation for publication.

There follows a tabulation of the specimens examined in the division of pathology and bacteriology during the fiscal year:

A. Tissue specimens of human origin:	
Hospitals and relief station of the service.....	1, 012
Field investigations of the service.....	40
Other Federal agencies.....	24
In cooperation with State health agencies.....	24
Miscellaneous.....	28
Total human.....	1, 128
B. Pathology of experimental diseases.....	
	522
Total.....	1, 650
Specimens prepared for other divisions but not examined in section on pathology.....	44
Total specimens prepared for histologic examination.....	1, 694

C. Routine examinations and tests:

Wassermann tests (blood and spinal fluid)-----	2,720
Blood—	
Count-----	46
Tularaemia-----	776
Undulant fever-----	1,081
Typhus fever-----	103
Typhoid fever, para A and para B-----	117
Urinalyses-----	61
Cultures—	
Meningococcus-----	8
Diphtheria-----	37
Miscellaneous-----	21
Sputum-----	20
Brain for rabies, human-----	1
Brain for rabies, animal-----	14
Smears, miscellaneous-----	6
Feces-----	21
Water-----	31
Total-----	5,063

STUDIES OF BIOLOGIC PRODUCTS, INCLUDING THE ARSPHENAMINES

All of the work embraced in this field is carried on under the direct supervision of the director of the laboratory.

Antimeningococcus serum.—Studies on epidemic meningitis were continued by Bacteriologist Sara E. Branham. The meningitis situation has been serious for several years, and a number of serious outbreaks have occurred in widely scattered sections. The case fatality rate was very high, being 50 per cent and over in some places. The use of therapeutic serum was not as effective in many localities as early experience with it had promised.

Studies have been conducted to determine whether or not there are differences between meningococci involved in these cases and those which were prevalent during epidemics of former years. With the cooperation of many persons approximately 250 strains of meningococci have been collected. One hundred and fifty-five strains have been typed according to the classification of Gordon, and of these 90.8 per cent fall into Gordon's four groups, and 9.2 per cent do not appear to be represented in that classification.

During an epidemic of cerebrospinal meningitis in which all four of the usual types of meningococci were involved, an apparently new form was isolated from the spinal fluid of 14 cases. In morphology this microorganism is indistinguishable from the other members of the genus *Neisseria*. It differs from the meningococcus in pigment production, lack of fermentative action, and in antigenic relationship. These strains form a homogeneous group culturally, biochemically, and serologically. The name *Neisseria flavescens* n. sp., has been proposed for this new form by Doctor Branham.

The studies carried on have been designed primarily to improve the quality of the serum used in the treatment of epidemic meningitis. Whether any of the results obtained will prove important in this connection can not be determined at the present time.

Diphtheria toxin-antitoxin mixture and diphtheria toxin.—Further work on the standardization of the diphtheria prophylactics has been carried on by Surg. W. T. Harrison. Reports from the

field of severe local reactions following the use of diphtheria toxin-antitoxin mixtures led to an investigation of the effect of freezing 0.1 L+ mixtures, since it was shown that freezing sometimes occurs in automatic refrigerators.

Low temperatures just sufficient to freeze for short periods have caused several preparations to become more toxic as shown by local reaction, acute death, and late paralysis in guinea pigs. Some mixtures require freezing for longer periods to increase the toxicity, while others subjected to the same treatment became less toxic. Sufficient information has been obtained to warrant a warning to manufacturers and users to avoid freezing. Studies on the immunizing value of frozen mixtures are in progress.

A comparison of the immunizing value of commercial toxin-antitoxin mixture and toxoid in school children showed that the latter was more effective than the former as measured by the change in the Schick reaction from positive to negative.

Standardization of scarlet-fever preparations.—Studies on the scarlet-fever preparations were continued during the fiscal year by Surg. M. V. Veldee. Further investigations of the lethal effect of scarlet fever streptococcus toxin in rabbits has been made in the hope of developing an antitoxin potency test permitting the use of laboratory animals. These studies are being continued.

Formalin and heat have been used in reducing the toxicity of scarlet fever streptococcus toxin to the point where larger doses may be given without undue discomfort to the patient. This work so far indicates that, as measured by a subsequent Dick test, these formalinized toxins are antigenic.

Experiments are being conducted with concentrated toxins in the immunization of horses in an effort to produce serums of higher antitoxic value.

Arsphenamine.—Studies in the activity of neoarsphenamines, on experimental syphilis in rabbits, using the therapeutic dose, indicated a lack of agreement between the spirocheticidal activity in rabbits and the trypanocidal activity in rats. The prophylactic dose of this drug to prevent syphilitic development in rabbits indicates that products varying in their trypanocidal activity are equally effective in preventing the development of the disease at 20, 30, and 40 milligrams per kilogram. A series of experiments on the sterilizing dose has been initiated. The routine testing of arsenical preparations has continued to indicate excellent quality of commercial products.

DIVISION OF ZOOLOGY

The following work has been pursued by the Division of Zoology, under the direction of Prof. C. W. Stiles:

International Commission on Zoological Nomenclature.—Cooperation with the International Commission on Zoological Nomenclature has continued as in preceding years. The various governmental departments and various universities in the United States and in foreign countries have frequently referred questions to the Division of Zoology for opinion.

During the fiscal year 1930, the International Commission has sent to press nine opinions on nomenclature, namely, Opinions 115-123. Of these, two opinions have a direct bearing in stabilizing nomenclature used in public-health work.

Bulletins—Hygienic Laboratory Bulletin 152, on the Relation of Parasitic Diseases of Primates (apes, monkeys, lemurs) to the Diseases of Man, has been issued from the press.

National Institute of Health Bulletin 155, on the Parasitic Diseases of Rats in Relation to the Diseases of Man, is in press.

One additional bulletin, on the Parasitic Diseases of Insectivora in Relation to the Diseases of Man, is practically ready for press, and a bulletin, on the Parasitic Diseases of the Carnivora, is far advanced in manuscript form.

Examination of intestinal parasites for diagnosis.—This part of the routine work of the division has been continued throughout the year, and 306 specimens have been examined for various Government hospitals, State health departments, universities, and for practicing physicians.

DIVISION OF PHARMACOLOGY

The following work was pursued by the Division of Pharmacology under the direction of Prof. Carl Voegtlin:

Mechanism of chemotherapeutic action of arsenicals.—Investigations of the intricate and important mechanism whereby arsenicals produce their therapeutic and toxic effects have been continued by Prof. Carl Voegtlin, Chemist J. M. Johnson, and Pharmacologist S. M. Rosenthal. Previous researches of this division had shown that arsenic in its physiologically active form of arsenious oxide and derivatives exerts its action on living cells due to its chemical affinity for a sulphur containing cell constituent, i. e., glutathione. This substance is now available in crystalline, chemically pure form, whereas formerly it could only be obtained as an amorphous impure product. Using the pure chemical it was shown that trypanosomes and rats could be protected against the toxic action of arsenic simply by furnishing these organisms with an extra supply of pure glutathione. In a similar manner the local inflammation and necrosis following subcutaneous arsenic injections could be prevented by glutathione. Chemical studies on the rate of oxidation of reduced glutathione by molecular oxygen in the presence of catalytically active iron, showed that arsenic in adequate amounts markedly inhibits this oxidation. It was furthermore found that the greatly reduced rate of oxygen consumption of living cells in the presence of arsenic could be brought back to the normal rate by the addition of glutathione. These observations furnish a substantial basis for explaining the pharmacological arsenic action. They clearly show the indispensable glutathione requirement of living cells for purposes of proper utilization of oxygen and thus throw some light on the physiological function of glutathione.

New method for the continuous measurement of the hydrogen ion concentration of the circulating blood.—The maintenance of a proper acid-base equilibrium in the blood of animals and man is a well-recognized fact. Satisfactory methods for the estimation of the pH of blood are therefore very much needed. The available methods (indicators, hydrogen and quinhydrone electrodes) have several defects and are not suited for the measurement of the pH of the blood while circulating in the animal body. The glass electrode (glass bulb with thin membrane) mentioned in last year's report was therefore adapted for this purpose. This necessitated a compre-

hensive physical and physicochemical study of the glass electrode with respect to its temperature coefficient, calibration, and general theory of behavior, which was conducted by Professor Voegtlin, Pharmacologist Floyd DeEds, and Biophysicist H. Kahler. The results obtained indicate that the glass electrode has great advantages over other pH electrodes in biological work, as it is specific for the hydrogen ion and is not influenced by the oxidizing and reducing substances contained in biological material. The new method was applied to the continuous measurement of the hydrogen ion concentration of dogs with results indicating that the pH of circulating blood varies within narrow limits, but showing definite fluctuation as a result of asphyxia, hyperventilation, or depth of anesthesia. The pH at time of death of the animal from the anesthetic is about 6.90. Work was done on the development of a microelectrode for the estimation of pH in tissues, but this study has not yet been completed. This work is part of a comprehensive study of the chemical potential changes in living organisms and their relation to physiological function.

Cancer studies.—A comprehensive cytological study of cultures of fibroblasts and embryonic heart has been completed. The results show clearly that while the standard culture medium will sustain cellular growth and normal morphological appearance of relatively *large* tissue fragments, the same medium used under exactly the same conditions fails to produce growth of *small* fragments and leads to fatty degeneration and early death of the transplant. It is reasonable to suppose that the composition of the standard medium is unsuited for the growth of single cells, whereas the larger transplants through their own metabolic products, influence the medium so as to make it serviceable. To study this phenomenon more closely a new technique was developed by Cytologist W. R. Earle and Associate Chemist J. W. Thompson to permit the implantation in the same standard medium of a few cells separated by a semipermeable membrane from a large explant. Preliminary observations have shown that under these conditions the explants containing few cells survive for a much longer time than when the old technique was used. These observations appear to be of considerable value in deciding the question whether or not cell contact is an essential requirement for survival and growth of fibroblasts and they may lead to a technique for the production of cultures starting from single cells, an object which heretofore has not been realized.

In view of the apparent importance of the use of diathermy and heat produced by extremely high frequency currents in the local treatment of malignant growths, a systematic study by Physiologist H. W. Chalkley has dealt with the influence of variation in the pH, calcium potassium, and sodium content of the suspension medium of *Paramecium* on the resistance of this organism to heat death. The results have been incorporated in a paper and indicate that the above-mentioned factors markedly influence heat resistance.

During the latter half of the year a study was begun by Professor Voegtlin and Doctor Chalkley on the fundamental problem of the chemistry of cell and nuclear division. It is amazing that, while the morphological changes accompanying nuclear and cell division have been elucidated in great detail by an enormous amount of re-

search, the present knowledge of the chemical side is practically negligible. Not only is there a complete lack of information of the chemical factors which very likely cause the rapid multiplication of malignant cells in the body, but even in the case of normal cells the necessary data are not available. Several observations recently made by other workers suggested that exposure of certain plant and animal cells to low concentrations of certain sulphur compounds is accompanied by an increase in the rate of cell division. In view of the fact that glutathione is the principal water-soluble cellular compound belonging to this class, experiments were made under carefully controlled conditions which indicate that this substance increases the rate of nuclear and cell division of *Ameba proteus*. Certain physicochemical factors influencing this effect have been studied but the research is not yet completed.

Standardization of ergot.—A new colorimetric method for the standardization of ergot preparations has been developed by Senior Pharmacologist M. I. Smith, and Junior Pharmacologist E. H. Stohlman and was controlled with a biological method. In view of the fact that the results obtained by the two methods agreed quite satisfactorily, it is believed that this new method will overcome the defects of the official cockscomb method and will put this subject on a much-needed firmer basis. It should now be possible to assure the marketing of really potent fluid extract of ergot of constant therapeutic activity. Work is in progress on the deterioration of fluid extracts of ergot due to storage.

Method for the standardization of the antineuritic vitamin.—A new method was elaborated by Senior Pharmacologist M. I. Smith for the standardization of the antineuritic vitamin, using albino rats as test animals. The principle of the method is based on the gain in weight and recovery from symptoms of polyneuritis in rats kept on a diet adequate in all respects, but lacking the antineuritic vitamin.

Dietary value of raw starch in diabetes.—Observations were made by Pharmacologist S. M. Rosenthal on patients with diabetes, indicating that the feeding of raw starch does not lead to a rise in blood sugar.

Effect of alcohol on the normal and damaged liver.—Experiments on dogs carried on by Doctor Rosenthal showed that animals whose liver had been damaged by alcohol were more susceptible to the lethal effect of prolonged chloroform anaesthesia.

"Ginger paralysis."—In connection with the serious outbreak of so-called ginger paralysis involving, according to the Director of Prohibition, over 10,000 persons in various parts of the country, a systematic toxicological study is being pursued with a view to producing the condition in animals and if possible to identifying chemically the toxic material in suspected ginger extract. This study has been made by Senior Pharmacologist M. I. Smith, in collaboration with Chemist E. Elvove, of the National Institute of Health, and P. J. Valaer, jr., William H. Frazier, and G. E. Mallory, chemists, of the Bureau of Prohibition. While a great deal of work has been done, these problems have not yet been completely solved. It can be stated with certainty that all samples of ginger extract which were suspected on epidemiological grounds of being responsible for human cases of paralysis invariably gave on proper treatment chemi-

cal tests for the presence of some as yet unidentified phenolic compound. Genuine, unadulterated ginger extract produces in animals only temporary symptoms of alcohol intoxications, whereas the suspected ginger extract as such or after chemical treatment has produced in some animals what appears to be a symptom complex analogous to that observed in man, i. e., hand and foot drop. A striking result is the difference in the reaction of different species of animals. The present hypothesis is that a phosphoric acid ester of cresol was used as an adulterant of the ginger extract. Should further experimental evidence confirm this view, it would represent a unique toxicological finding, as heretofore no similar clinical condition has been described as resulting from poisoning with cresols. Whether or not the phosphoric acid esters as such are to be held responsible for the epidemic of paralysis remains to be determined.

Miscellaneous.—The chief of the division, as in former years, acted as consultant of the Chemical Warfare Service of the United States Army. He was also a delegate to the Eleventh United States Pharmacopoeal Convention.

Aid was given the Post Office Department in the suppression of frauds.

DIVISION OF CHEMISTRY

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

Sugar researches.—In the furtherance of knowledge pertaining to the carbohydrates so important in the welfare of man, investigations on the rarer sugars occurring in nature or prepared synthetically and on new derivatives of the more common sugars were continued by Professor Hudson, assisted by Chemists Raymond M. Hann and Ernest L. Jackson, Asst. Chemist Edna M. Montgomery, and Senior Microanalyst Ralph T. K. Cornwell, of the regular staff, and by Drs. Robert C. Hockett and Andrew J. Watters, fellows, who have been accorded the privileges of the laboratory.

Numerous derivatives were made of rhamnose, mannose, glucose, lactose, and galactose. These derivatives, for the most part crystalline, were subjected to thorough purification, and in many cases precise data were obtained on their rotation and other physical constants. In a number of cases judgment was made as to the ring structure. The mannose derivative, dextromannoketoheptose, prepared synthetically by Assistant Chemist Edna M. Montgomery, was found to agree in melting point, solubility, and specific rotation with the natural product obtained by La Forge from the avocado pear. For a number of years there has been interest in the possibility of making a 13 carbon-sugar acid. Fischer named this acid lactose carboxylic, and obtained it as a sirup. By applying the Kiliani reaction to lactose, Chemist Raymond M. Hann succeeded, by suitable procedure, in isolating the 13 carbon sugar acid, 5-galactosido- α -glucoheptonic acid in crystalline condition. This represents the first isolation of an acid from the application of the Kiliani reaction to a reducing disaccharide.

Various derivatives of rhamnose were made by Chemist Ernest L. Jackson, and rotation data and other physical constants were obtained on each of the compounds. Pure anhydrous rhamnose was prepared by a more rapid and more convenient method than that

used by Fisher. Rotation studies showed the sugar to be beta 1-rhamnose possessing the 1, 5 ring structure. The redetermination of the initial specific rotation of 1-rhamnose monohydrate gave a higher value than that recorded in the literature.

Dr. Robert C. Hockett, fellow of the National Research Council, prepared, purified, and analyzed the amides and phenylhydrazides corresponding to alpha alpha and alpha beta gluco-octonic lactones. Their specific rotation was accurately measured. Hudson's amide and phenylhydrazide rules were found to apply to these compounds. This is the first time such rules have been applied to derivatives of eight carbon sugars.

Dr. Andrew J. Watters, fellow of the Commonwealth Fund, repeated Bergmann's oxidation of lactal with perbenzoic acid. Where Bergmann reported the production of one sugar, 4-galactosido manose, Watters found a mixture of at least two sugars. Junior Chemist William D. Chase assisted in part of this investigation.

Sulphur metabolism.—Studies of sulphur metabolism were continued by Biochemist M. X. Sullivan assisted by Junior Chemists Walter C. Hess and William D. Chase. The specific tests for cysteine and cystine, developed by Sullivan, were applied to the estimation of these sulphur-containing amino acids in isolated proteins, in foodstuffs, and in a survey of various tissues, organs, and excretions of normal and diseased animals. Serum albumin was found to have the highest cystine content of any of the proteins examined, aside from keratins. It contained approximately 6 per cent cystine. Some 10 grams of glutathione were extracted from yeast and found to have the theoretical cystine content for a tripeptide, cystine, glycine, and glutamic acid. It was found that normally there occurs a cystine complex in the urine but, contrary to other investigators, little free cystine as a rule.

Analytical work.—The general analytical work of the division was under the direction of Chemist Elias Elvove, assisted by Assistant Chemist C. G. Remsburg.

About 275 various analyses on miscellaneous material were carried out. In addition, there were examined about 78 arsenicals.

Cooperation was given in the work on the relation of diet to pellagra. Analyses were carried out of the salts used, the standard acids required were prepared and chemical examinations were conducted on some of the foodstuffs used.

Special chemical examinations were carried out by Chemist Elias Elvove on a number of so-called fluid extracts of ginger which were suspected of having caused paralysis.

In this work a procedure was worked out for applying the Millon reagent, whereby it appears possible to distinguish between the ginger extracts which cause paralysis and those which do not.

Study of lead hazards.—The division continued its cooperation with the office of industrial hygiene in the investigations of lead hazards. Junior Chemist Walter C. Hess made lead analyses of numerous samples of urine and feces and of some 60 air-dust samples from storage-battery plants.

Microanalysis.—In association with work on various sugar derivatives a microanalytical laboratory was established. Senior Microanalyst Ralph T. K. Cornwell made 180 analyses including carbon, hydrogen, halogens, sulphur, methoxyl, moisture, and nitrogen.

VIRUSES, SERUMS, TOXINS, AND ANALOGOUS PRODUCTS

The provisions of the law of July 1, 1902, governing the manufacture, importation, and sale of viruses, serums, toxins, and analogous products, have been enforced under the supervision of the director of the National Institute of Health. The number of establishments holding license for biological products, including the arsphenamines, on June 30, 1930, was 47, and the number of different preparations for which licenses were held was 126.

All of the establishments in the United States holding license for preparations coming under the biologics act have been inspected during the year.

An account of the investigations relating to these products conducted at the National Institute of Health will be found on pages 73-74.

The following is a summary of the routine tests carried on at the institute during the year in the control of biological products:

Action on biological products

Product	Tested for sterility	Tested for potency	Released on manufacturer's protocols
Diphtheria antitoxin.....	48	67	.....
Diphtheria toxin (Schick test).....	15	29	59
Diphtheria toxin-antitoxin mixture.....	25	24	238
Diphtheria toxoid.....	20	16	26
Tetanus antitoxin.....	29	39	.....
Scarlet fever streptococcus antitoxin.....	26	10	.....
Scarlet fever streptococcus toxin (Dick test).....	13	.....	.....
Erysipelas streptococcus antitoxin.....	6	.....	.....
Antipneumococcic serum.....	41	6	32
Antimeningococcic serum.....	130	128	7
Antidysenteric serum.....	13	5	.....
Miscellaneous serums.....	79	.....	.....
Vaccine virus.....	11	.....	.....
Rabies vaccine.....	23	.....	.....
Antityphoid vaccine (mixed).....	46	18	.....
Miscellaneous vaccines.....	483	.....	.....
Tuberculin.....	40	.....	.....
Pollen extracts.....	57	.....	.....
Catgut.....	14	.....	.....

Action on arsphenamine preparations

Product	Tested for toxicity	Tested for solubility and stability	Released on manufacturer's protocols
Arsphenamine.....	36	67	31
Neorsphenamine.....	431	804	373
Sulpharsphenamine.....	58	101	43
Silver arsphenamine.....	5	9	4
Sodium arsphenamine.....	2	3	1
Other arsenicals.....	22	23	1

MISCELLANEOUS

All scientific papers for publication by the service or in outside journals are submitted through this division for approval before such publication. Eight public health bulletins, 4 bulletins of the National Institute of Health (formerly Hygienic Laboratory bulletins), and 151 articles for the Public Health Reports or for outside publication have been reviewed during the fiscal year.

DIVISION OF DOMESTIC (INTERSTATE) QUARANTINE

In charge of Asst. Surg. Gen. W. F. DRAPER

PLAGUE SUPPRESSIVE MEASURES IN CALIFORNIA

The procedure carried out in plague suppressive measures during the fiscal year, particularly in relation to rodents, falls in the following divisions: (a) Plague in ground squirrels and control measures directed against these rodents; (b) rodent surveys and sanitary inspections in San Francisco; and (c) work performed in the United States Public Health Service laboratory.

No case of human plague was reported during the year.

PLAGUE IN GROUND SQUIRRELS

The control of squirrel infestation has both an economic and a public-health bearing. The work of the Public Health Service relates to the latter, but as most of the squirrel control measures carried out under State laws by the county horticultural commissioners pertains to the economic phase of this question, this at times receives more consideration than the public-health aspect.

The work is twofold in character; the determination of foci of plague infection and intensive work around such centers for the eradication of ground squirrels, and general control measures over large areas for reduction of infestation. Plague still exists in ground squirrels over large areas in the central and coast counties and has been demonstrated in 14 of these counties in a continuous chain from the Carquinez Straits on the north to San Diego County on the south.

During the year 1929 foci of plague in ground squirrels was proved in Alameda, Contra Costa, Monterey, San Benito, San Luis Obispo, Ventura, and Santa Barbara Counties. During the present year plague has been confirmed again in Monterey, San Luis Obispo, and Santa Clara Counties.

The determination of foci of infection has been accomplished mainly by the California State Department of Health through shooting operations, but there are not enough hunters to provide an adequate number of ground squirrels to make an accurate determination of the extent to which plague infection exists. It is believed that plague infection is still present in most of the 14 counties in which it has been demonstrated. During the year the Public Health Service engaged in limited shooting operations in Santa Clara County and plague was proved in two remote localities.

FIELD OPERATIONS FOR CONTROL OF GROUND SQUIRRELS

The work of this office has been continued in the counties of Alameda, Contra Costa, San Francisco, and San Mateo. All of the work in San Mateo and San Francisco Counties is conducted by

Public Health Service employees. In the counties of Alameda and Contra Costa the operations are carried out conjointly with the horticultural commissioners. The Public Health Service has operated in the western end of the counties around centers of population and other portions of the counties have been covered by county employees. In the counties specified the continuous operations have yielded good results and the amount of infestation has been materially reduced.

In the other counties the work is carried out by the horticultural commissioners, and the operations during the past 2 years have been more active than at any time in the preceding 10 years. This is especially true of operations in San Benito, Monterey, San Luis Obispo, Ventura, Santa Barbara, and Los Angeles Counties. While these measures are now practiced more intensively than formerly, at the same time the activities fall short of requirements for pronounced and lasting results. The difficulty is to secure the eradication of ground squirrels in grazing lands in the hills where the infestation is most pronounced, and as long as any degree of infestation exists in a territory there is danger of reinfestation of areas in which they have been destroyed and the persistence of bubonic plague in definite foci.

The field operations are tabulated as follows:

Number of inspections	1, 134
Number of reinspections	4, 559
Number of acres inspected	209, 721
Number of acres reinspected	1, 205, 995
Number of acres treated with waste balls	25, 828
Number of acres treated with poison grain	247, 527
Number of burrows treated with carbon bisulphide	124, 418

Material used

Number of pounds of poisoned grain:	
Thallium	32, 173
Strychnine	39, 548
Phosphorus	11, 109
Number of gallons of carbon bisulphide	1, 966
Number of waste balls used	124, 418
Poisoned barley mixed for private landowners under the supervision of employees of the service—number of pounds (strychnine)	995

MEASURES TAKEN AGAINST RATS

Work directed against these rodents has been continued during the year under the following procedures: (a) Trapping and examination of rats; (b) inspection of premises where rat infestation is reported; and (c) inspection and report on buildings that are insanitary, that constitute rat harborages, and may be a menace to public health.

Rat survey in San Francisco.—A survey, by trapping and examination of rats, for the purpose of determining if they are infected with any diseases, particularly bubonic plague, which might affect the public health, has been a regular procedure in San Francisco for several years. This work has been carried out by 6 trappers—2 Federal employees, and 4 furnished by the city. It is performed under the immediate direction of the service as the city health officer has requested that the Public Health Service assume direction of the work. The rats are examined in the Public Health Service laboratory in San Francisco.

While the limited number of trappers do not permit of eradication measures, at the same time centers where most infestation exists and where rats, if infected, would presumably be caught, have furnished a satisfactory survey of actual conditions. The advantages of such a survey far outweigh the cost, which is small in comparison to the securing of definite knowledge as to whether infection is present. This is particularly true in the city, which has previously suffered with bubonic plague.

Rat survey in Oakland.—The rat survey in Oakland, instituted since the occurrence of bubonic plague in that city in 1924, furnishes to some extent information concerning the presence of diseases in the rodent population. These rats are examined in the Public Health Service laboratory in San Francisco. However, the number of rats caught is too small to furnish an adequate index and it is hoped that this work will progress to the extent that more trappers will be employed and a larger number of rats secured for examination.

Sanitary inspections in San Francisco.—The inspections, carried out under the office of plague suppressive measures, in cooperation with the health department of the city of San Francisco, fall in two classes. The first relates to the inspection of premises upon which rat infestation has been reported, and where advice is given to the owners as to corrective measures necessary to prevent infestation. These reports are received daily and the sanitary inspector either inspects the premises for the purpose of determining the cause of infestation, or trappers are assigned in specific instances for the eradication of the rats. The second class of inspections is of greater importance, as it relates to permanency. Buildings reported as insanitary are inspected, and if corrective measures can be instituted to place them in a sanitary condition and make them rat proof, such recommendations are made accordingly. Particular attention is given to old buildings which may furnish rat harborages. Furthermore, all complaints of insanitary premises which are believed to warrant condemnation proceedings are referred to this office for investigation and report. These transactions are as follows:

Rat complaints investigated.....	946
Insanitary premises inspected.....	218
Number of buildings submitted to board of health for condemnation.....	149
Number of buildings acted on by board of health and condemned.....	104
Number of buildings acted on by board of health and not condemned.....	45
Number of buildings abated following condemnation proceedings: By repair, 5; by demolition, 86.....	¹ 91
Number of buildings condemned and remaining unabated.....	80

OPERATION OF PUBLIC HEALTH SERVICE LABORATORY

The Public Health Service laboratory serves a dual purpose, as, in addition to the examinations and work carried out in relation to public health, it also serves as a laboratory for other service stations in San Francisco and San Pedro. The work falls in the following category: (a) Routine examination of rodents to determine if plague infection exists; (b) serological, bacteriological, and pathological work for other service stations in the district; (c) service performed for other Government agencies; and (d) special investigations of matters which may affect the public health.

¹ These include some buildings acted upon during previous years; hence, totals will not balance.

Examination is made of rats trapped in San Francisco and Oakland and of ground squirrels either shot by Public Health Service employees or sent to the laboratory by horticultural commissioners or other agencies.

During the year no rat has been found to be infected with plague. Rat leprosy and hemorrhagic septicemia have been encountered in these examinations.

All the serological work required at the marine hospital, San Francisco, and at San Pedro, Calif., has been performed at this laboratory. These examinations are made twice a week. Blood cultures and agglutination tests, and some tissue mountings and examination of specimens for pathological conditions have also been made.

The laboratory has cooperated in connection with the quarantine and immigration activities by making examinations of cultures for the determination of meningitis carriers. The work during the current year in this respect has been much less than in the preceding year, as less meningitis has occurred on vessels.

A special investigation of leptospira in rats was carried out at the laboratory by Surg. J. R. Ridlon.

A large number of samples of water used on interstate carriers, both vessels and trains, has been examined during the year.

The work for other departments includes the examination of water samples from national parks and from Indian reservations. Bacteriological and serological examinations have also been performed for physicians of the Indian Service.

The laboratory constitutes an important unit in connection with other activities as well as those of plague-suppressive measures, and a properly equipped laboratory building should be constructed and maintained in San Francisco for research work and for public-health problems that may arise on the Pacific coast and in adjacent territory.

The work performed in the present laboratory during the fiscal year is shown in the tabulated statements submitted herewith:

Classification of rats

Rats from San Francisco:	
<i>Mus norvegicus</i>	29,487
<i>Mus rattus</i>	2,393
<i>Mus alexandrinus</i>	2,853
Total.....	34,733
Rats from Oakland:	
<i>Mus norvegicus</i>	4,149
<i>Mus rattus</i>	279
<i>Mus alexandrinus</i>	135
Total.....	4,563
Rats from fumigated ships:	
<i>Mus norvegicus</i>	17
<i>Mus rattus</i>	797
<i>Mus alexandrinus</i>	1,253
Total.....	2,067
Squirrels from Santa Clara County.....	65

Summary of laboratory operations

	Received	Examined
Examination of rodents for plague:		
Rats from San Francisco.....	34,733	29,561
Rats from Oakland.....	4,563	4,130
Rats from fumigated ships.....	2,067	2,067
Squirrels from Santa Clara County, Calif.....	65	65
Serological examinations:		
Wassermann reactions (blood).....	4,897	4,897
Wassermann reactions (spinal fluids).....		96
Widal reactions.....		4
Bacteriological examinations (culture and microscopic):		
Blood.....		15
Water.....		428
Cultures for meningococcus.....		508
Recultures for meningococcus.....		13
Parrots for <i>B. psittacosis</i>		7
Bacteriological examinations (with animal inoculations):		
Tuberculosis.....		43
<i>B. pestis</i>		3
Rats, for study and investigation of leptospira.....		60

TRACHOMA-PREVENTION WORK

The activities under the office of trachoma prevention were carried on as formerly but with greater emphasis upon intensive field work. A nurse was placed in the field in Tennessee who was able to arrange for a series of diagnostic and treatment clinics to be carried on throughout the year. A field nurse in Missouri also carried on a program of field work throughout the year, although the field clinics were discontinued from December to April. The practice of conducting treatment clinics has proved to be an effective means of dealing with trachoma in any particular locality. A medical officer devoting his full time to field clinics could hold five or six weekly clinics in as many counties with a field nurse in each county to do the follow-up and educational work. This plan would be an effective and economical method of trachoma control in affected areas but would cost more money than is now available.

Surveys and clinics were held in two counties in northeastern Oklahoma at the request of State and local health authorities. Trachoma is something of a problem in this region, both in the white and Indian population.

At the request of State and local health authorities a survey was made of trachoma prevalence in Decatur County, Ga. A considerable trachoma prevalence was found in the northeastern part of the county, extending over into Mitchell County on the northeast. It probably extends also into Grady County on the east. The county health officer has promised to make further investigation as to prevalence of trachoma in the homes and neighborhood of the cases found, for the purpose of securing additional data on which recommendations toward solution of the problem may be based.

The Illinois Society for the Prevention of Blindness, with the approval and cooperation of the State health department, assigned two public-health nurses to carry on a survey of trachoma prevalence of certain counties in the southern part of the State. The blind pension lists of Illinois showed a number of pensioners in certain counties in the southern part of the State as blind from trachoma, and it has long been known in a general way that there was trachoma in southern Illinois. Before beginning this field-survey work the nurses spent a week at the trachoma hospital at Rolla, Mo., receiving

intensive instructions as to methods of recognizing and dealing with trachoma. Since then they have been engaged in visiting known trachoma cases and suspects in their homes in Illinois and arranging for clinics which persons known or suspected to be suffering from trachoma were urged to attend. This survey, which is still in progress, gives promise of some illuminating data on the prevalence of trachoma in Illinois.

Epidemiology.—The epidemiological studies carried on by Passed Asst. Surg. A. S. Rumreich were discontinued in February when Doctor Rumreich was transferred to the hygienic laboratory for duty.

Laboratory.—The research studies on etiology of trachoma carried on by Dr. Ida A. Bengtson have been continued at Rolla with the cooperation of the trachoma hospital, which has furnished material for her studies.

Knoxville, Tenn.—The hospital is now housed in a commodious building at 1013 Central Avenue, the rent of which is paid by the county court. The activities of this hospital, including the field clinics and surveys conducted by its staff, have reached all parts of the trachomatous areas in eastern Tennessee. While the number of cases treated in the hospital has decreased somewhat, this is undoubtedly due to the fact that its activities have decreased the prevalence of the disease in this area. A considerable number of trachoma patients live in and near Knoxville, and these are handled in the dispensary. Acting Assistant Surgeon Faed, who has been in the field for the past year gathering data on trachoma prevalence, is still engaged in that work and has gained some very instructive data which will be embodied in a separate report. A nurse was put into the field in October and a series of bimonthly clinics was begun which have been continued throughout the year. These clinics have been both for the purpose of diagnosis and of treatment, and are covering an area in the north-central section of the State which is believed to be the principal trachoma focus in Tennessee at this time. The field nurse discovered in this area an interesting family showing trachoma in four generations. In this family, Mrs. E. L., herself now blind from trachoma, is the mother of Mrs. E. L. B., who has trachoma and who is the mother of 13 children, 11 of whom have trachoma. Mrs. E. L. B. has 54 grandchildren, 28 of whom have trachoma. These people were seen by the field nurse in their homes and the diagnosis verified by the medical officer at the field clinics.

Richmond, Ky.—This hospital draws patients from a wide area in eastern and central Kentucky and some patients from outside the State. The field nurse who worked in Perry County from July until November unearthed a considerable number of cases and did a great deal of public health educational work, which resulted in a number of cases of trachoma finding their way from time to time to the hospital. Examining clinics and one operative clinic were held in this county. Field work was resumed in the spring and is at present being carried on in Knott County. The field work now being carried on in this State has as one of its purposes locating a strategic area where weekly treatment clinics may advantageously be held. Although a great deal of trachoma work has been done in Kentucky, there are still a large number of cases in the State and much intensive work remains to be done.

Rolla, Mo.—This hospital has treated a larger number of patients than in any previous year, and a series of 36 diagnostic and treatment clinics were held. There were no clinics held during the period from December 14, 1929, to April 5, 1930, but systematic home visiting was carried on in this interval. By this means the hospital was kept full throughout the year and much of the time a waiting list was maintained. The field nurse is an essential part of the hospital unit and the treatment clinic, if conducted frequently and persistently, is an effective means of carrying trachoma treatment and education to sufferers in their home communities. In order to give the patients the benefit of continuous treatment, these clinics should be held at weekly intervals. Since in the light of our present knowledge, treatment and education constitute the most effective means of preventing the spread of trachoma, our efforts must be extended toward giving instruction and treatment to the largest number within the limit of the means available. Many of the cases treated in the clinics have been completely cleared up and they are largely among people who would not have found their way to the hospital and who if the facilities of the clinic had not been placed within their reach would never have received any treatment at all. The work of the field nurse includes not merely visiting and advising but instructing and urging these people to attend the clinics. This is, of course, in addition to arranging for the clinics and assisting the medical officer in treating the patients at the clinic as well as keeping accurate and complete records of the patients and their families. Many trachoma sufferers do not realize the seriousness of their disease and if left to themselves would allow it to progress to an incurable stage without seeking treatment.

Statistical tables showing the work done at the field clinics and at the hospital are submitted as a part of this report. The tables show particularly the large number of cases that are reached by the field clinics.

Dispensary and hospital relief, operations, etc., fiscal year ending June 30, 1930

	Knoxville, Tenn.	Richmond, Ky.	Rolla, Mo.	Total
DISPENSARY RELIEF				
Old cases, all causes.....	1,122	364	1,395	2,881
Old cases, trachoma.....	1,066	300	1,178	2,574
New cases, all causes.....	412	359	976	1,747
New cases, trachoma.....	164	182	379	725
Total attendance.....	1,534	713	2,368	4,615
Average daily attendance.....	4.2	1.953	6.487	12.64
Impaired vision from trachoma.....	106	148	283	537
Corneal opacity from trachoma.....	43	119	272	434
Blindness both eyes from trachoma.....	0	2	5	7
Blindness one eye from trachoma.....	6	10	31	47
Ulcer from trachoma.....	34	28	49	111
Pannus from trachoma.....	33	129	346	508
Entropion from trachoma.....	22	32	141	195
Trichiasis from trachoma.....	9	22	98	129
HOSPITAL RELIEF				
Remaining from previous year.....	14	29	27	70
Total cases admitted during the year.....	168	280	363	811
Number cases first admission.....	115	177	219	511
Discharged during the year.....	165	287	359	811
Remaining at close of year.....	17	22	31	70
Days relief furnished.....	5,951	7,069	10,861	23,881
Rations furnished.....	7,811	9,215	13,822	30,848
Cost of rations.....	\$3,033.17	\$4,014.17	\$5,722.91	\$12,770.25

Dispensary and hospital relief, operations, etc., fiscal year ending June 30, 1930—
Continued

	Knoxville, Tenn.	Richmond, Ky.	Rolla, Mo.	Total
OPERATIONS				
General anesthesia.....	0	16	3	19
Local anesthesia.....	111	113	302	526
Grattage.....	73	111	139	323
Entropion.....	20	12	50	122
Canthoplasty.....	15	5	62	82
Cautery puncture.....	0	0	4	4
Canthotomy.....	0	1	0	1
Enucleation.....	0	0	2	2
Blepharoplasty.....	0	0	1	1
Pterygium.....	0	0	1	1
Chalazion curetted.....	2	0	1	3
Clipping scar bands.....	1	0	0	1
Canaliculus, slit of.....	0	0	2	2
Excision of verruca.....	0	0	1	1
Pterygium, transplant.....	0	0	1	1
Symblepharon.....	0	0	1	1
EDUCATIONAL WORK, HOUSE-TO-HOUSE VISITS, ETC.				
Public talks given.....	225	13	127	365
People (estimated) in audiences.....	12,499	491	6,222	19,212
Pamphlets on trachoma distributed.....	1,636	360	1,662	3,658
House-to-house visits.....	624	682	1,419	2,725
People in houses visited.....	2,565	3,540	4,906	11,011
Trachoma cases in houses visited.....	673	403	736	1,812
Pupils examined in schools.....	28,497	1,624	3,388	33,509
Trachoma cases in schools.....	172	19	70	261

Field clinics

	Illinois	Kentucky	Missouri	Tennessee	Total
Number of clinics held.....	2	10	36	55	103
Number persons examined.....	101	1,068	2,309	2,011	5,489
Trachoma cases found.....	36	279	979	1,337	2,631
New trachoma cases.....	36	100	308	369	813
Former hospital cases.....	0	160	215	168	543
Returned clinic cases.....	0	19	456	800	1,275
Suspicious cases found.....	7	2	205	125	339
Treatments given at clinics:					
Trachoma cases.....	0	24	919	1,194	2,137
Others.....	0	35	489	85	609
Operations performed:					
General anesthesia.....	0	0	0	0	0
Local anesthesia.....	0	6	31	19	56
Physicians present.....	10	14	25	74	123

Trachoma clinics, Hartville and Grove Spring (Wright County), Mo., August 31, 1929–November 30, 1929

	Aug. 31	Sept. 7	Sept. 14	Sept. 21	Sept. 28	Oct. 5	Oct. 12	Oct. 19	Oct. 26	Nov. 8-9	Nov. 15-16	Nov. 23	Nov. 30	Total
Number of examinations.....	124	100	102	110	107	63	66	94	111	94	65	99	66	1,201
Positive trachoma diagnoses.....	35	32	40	47	37	31	36	50	55	40	58	36	36	557
Suspected trachoma cases.....	6	6	2	9	7	3	2	4	12	5	6	7	6	74
New cases of trachoma.....	26	13	18	17	9	4	6	9	6	11	8	10	2	139
Visits of returned cases.....	9	19	22	30	28	27	30	41	44	54	32	48	34	418
Treatments.....	53	54	54	36	75	63	57	66	86	87	58	82	52	813
Operations.....	0	0	0	0	0	0	0	0	0	15	7	0	0	22
Average attendance.....														92.38

NOTE.—Half-day clinic at each place. Day of operative clinic (Nov. 8-9, and Nov. 15-16); 1½ days spent at Hartville, where operations were performed.

Trachoma clinics, Celina, Tenn., August 13, 1929-June 11, 1930

	Aug. 13-14	Aug. 28	Sept. 17	Oct. 9	Oct. 23	Nov. 6	Nov. 20	Dec. 4	Dec. 17	Jan. 8 ¹	Jan. 22 ¹	Jan. 29 ¹	Feb. 12 ¹	Feb. 26 ¹	Mar. 12 ¹	Mar. 26 ¹	Apr. 9 ¹	Apr. 23	May 14 ¹	May 28 ¹	June 11	Total
Number of examinations.....	27	21	25	32	17	24	41	11	22	29	115	17	20	43	19	33	19	45	36	30	527	
Positive trachoma diagnoses.....	18	18	23	26	13	19	16	8	16	24	110	11	14	26	13	22	12	39	33	27	389	
Suspected trachoma cases.....	3	0	0	0	0	0	9	0	1	2	0	3	3	0	2	1	1	0	1	0	0	26
New cases of trachoma.....	17	11	11	13	0	4	9	3	11	5	0	1	2	1	5	3	3	3	9	4	2	117
Visits of returned cases.....	1	7	12	13	13	15	7	5	5	19	9	9	9	13	21	10	19	9	30	29	25	272
Treatments.....	20	11	19	25	12	19	18	6	17	23	1	9	14	11	25	12	20	11	34	29	24	360
Operations.....	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	3
Average attendance.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25.09

¹ Half-day clinics.*Trachoma clinics, Livingston, Tenn., January 8, 1930-June 25, 1930*

	Jan. 8	Jan. 22	Jan. 29	Feb. 12	Feb. 26	Mar. 12	Mar. 26	Apr. 9	May 14	May 28	June 25	Total
Number of examinations.....	52	12	22	15	20	16	9	21	32	22	12	233
Positive trachoma diagnoses.....	14	7	11	11	14	10	3	13	15	12	10	120
Suspected trachoma cases.....	10	1	3	1	1	0	0	0	0	0	0	16
New cases of trachoma.....	13	1	3	2	4	0	0	3	5	3	1	35
Visits of returned cases.....	1	6	8	9	10	10	3	10	10	9	9	85
Treatments.....	7	7	12	13	10	9	4	12	15	12	10	111
Operations.....	0	0	0	0	0	0	0	0	0	0	0	0
Average attendance.....												21.18

NOTE.—All clinics held at Livingston were half-day clinics.

Trachoma clinics, Gainesboro, Tenn., August 15, 1929-June 26, 1930

	Aug. 15-16	Aug. 29	Sept. 18	Oct. 10	Oct. 24	Nov. 7	Nov. 21	Dec. 5	Dec. 18	Jan. 9	Jan. 23	Jan. 30	Feb. 13	Feb. 27	Mar. 13	Mar. 27	Apr. 10	Apr. 24	May 15	May 29	June 12	June 26	Total
Number of examinations.....	26	49	50	35	24	31	39	20	32	106	17	59	27	59	87	72	97	65	71	94	57	77	1,193
Positive trachoma diagnoses.....	15	31	18	19	16	20	25	10	17	40	11	24	20	40	57	53	72	57	52	69	52	63	781
Suspected trachoma cases.....	0	8	3	1	0	0	2	1	8	6	2	9	2	5	9	2	9	1	0	3	1	2	74
New cases of trachoma.....	12	27	10	4	5	12	9	4	1	11	3	5	4	12	17	5	17	5	10	9	8	15	205
Visits of returned cases.....	3	4	8	15	11	8	16	6	16	29	8	19	16	28	40	48	55	52	42	60	42	48	574
Treatments.....	15	26	20	21	13	21	17	13	32	41	14	26	18	42	64	51	66	51	50	65	49	59	774
Operations.....	0	3	0	0	0	0	3	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	9
Average attendance.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	54.2

SUPERVISION OF WATER SUPPLIES USED BY COMMON CARRIERS

The cooperative plan between the State health departments and the Public Health Service for the certification of water supplies used on interstate carriers has continued as heretofore but with more emphasis on the requirements as to sanitary features. Instructions were issued to the effect that provisional certification only would be given when cross connections with other supplies are found to exist. Compliance with these instructions will have a wholesome effect in the control over this very troublesome sanitary defect.

During the latter part of the year steps were taken to decentralize somewhat the certification procedure and bring the district offices into closer relation with the work. This change will tend toward more efficient administration.

Due to other demands it was possible to assist the States with only 61 surveys in connection with the certification work, which number is materially less than in the preceding year.

The following comparative tabulation of the percentages of completed certifications indicates the status of this work:

	1926	1927	1928	1929
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Railroad supplies.....	72	80	82	81
Vessel supplies.....	62	75	78	78

Increase in percentage of supplies certified above 80 per cent will be slow, since it is not possible in some States to make annual inspections, particularly of small supplies which have been found to be satisfactory on previous inspections. At the present time it is believed that all supplies used by interstate carriers are reasonably safe and well under control.

INTERSTATE CARRIER WATER SUPPLIES.

The following tables covering the calendar year 1929 give the status of this work by States:

Railroad supplies for calendar year 1929

State	Source classification				Certification status				Per cent sources acted upon
	Public ¹	Private ²	Railroad	Total	Satisfactory	Prohibited	Provisional	Action pending	
Alabama.....	38	1	4	43	43	0	0	0	100
Arizona.....	12	1	10	23	14	0	6	3	87
Arkansas.....	42	6	14	62	5	2	0	55	11
California.....	52	8	28	88	65	1	0	22	75
Colorado.....	31	2	7	40	29	1	10	0	100
Connecticut.....	12	0	0	13	11	0	2	0	100
Delaware.....	6	0	0	6	6	0	0	0	100
District of Columbia.....	1	0	1	2	2	0	0	0	100
Florida.....	45	2	7	54	54	0	0	0	100
Georgia.....	52	2	1	55	46	4	5	0	100
Idaho.....	16	2	8	26	26	0	0	0	100
Illinois.....	76	4	21	101	67	0	34	0	100
Indiana.....	55	1	11	67	32	4	31	0	100
Iowa.....	66	2	11	79	29	0	10	40	49
Kansas.....	82	1	7	90	81	1	4	4	96
Kentucky.....	36	12	13	61	47	0	3	11	82
Louisiana.....	30	5	11	46	29	1	1	15	67
Maine.....	35	1	6	42	28	0	1	13	69
Maryland.....	14	1	4	19	12	2	5	0	100
Massachusetts.....	36	0	0	36	36	0	0	0	100
Michigan.....	64	5	18	87	83	2	0	2	97
Minnesota.....	50	3	30	83	34	6	0	43	48
Mississippi.....	33	7	6	46	0	0	0	46	0
Missouri.....	58	7	6	71	53	4	12	2	97
Montana.....	21	2	10	33	32	0	0	1	97
Nebraska.....	36	0	20	56	9	2	1	44	21
Nevada.....	11	0	14	25	22	0	0	3	88
New Hampshire.....	19	0	1	20	18	0	0	2	90
New Jersey.....	35	0	3	38	36	1	0	1	97

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.

Railroad supplies for calendar year 1929—Continued

State	Source classification				Certification status				Per cent sources acted upon
	Public	Private	Railroad	Total	Satisfactory	Prohibited	Provisional	Action pending	
New Mexico.....	9	0	13	22	22	0	0	0	100
New York.....	91	2	17	110	58	0	4	48	56
North Carolina.....	48	1	4	53	45	0	7	1	98
North Dakota.....	21	2	19	42	39	0	2	1	98
Ohio.....	78	3	16	97	89	4	2	2	98
Oklahoma.....	48	1	3	52	32	0	10	10	81
Oregon.....	30	1	5	36	36	0	0	0	100
Pennsylvania.....	129	5	15	149	99	6	0	44	70
Rhode Island.....	2	0	0	2	2	0	0	0	100
South Carolina.....	31	1	1	33	33	0	0	0	100
South Dakota.....	24	0	10	34	8	0	0	26	23
Tennessee.....	27	1	10	38	34	1	3	0	100
Texas.....	116	9	50	175	88	1	75	11	94
Utah.....	14	1	6	21	15	0	6	0	100
Vermont.....	13	1	1	15	15	0	0	0	100
Virginia.....	49	3	5	57	46	2	0	9	84
Washington.....	28	1	5	34	27	1	0	6	82
West Virginia.....	30	10	11	51	42	4	5	0	100
Wisconsin.....	51	17	11	79	75	0	0	4	95
Wyoming.....	10	0	4	14	5	1	8	0	100
Totals.....	1,914	134	478	2,526	1,759	51	247	469	81

Vessel supplies for calendar year 1929

State	Source classification				Certification status				Per cent sources acted upon
	Public ¹	Private ²	Company	Total	Satisfactory	Prohibited	Provisional	Action pending	
Alabama.....	3	0	1	4	4	0	0	0	100
Arkansas.....	2	0	0	2	0	0	0	2	0
California.....	23	2	1	26	14	0	0	12	54
Connecticut.....	8	0	0	8	8	0	0	0	100
Delaware.....	2	0	0	2	2	0	0	0	100
District of Columbia.....	1	0	0	1	1	0	0	0	100
Florida.....	6	2	2	10	10	0	0	0	100
Georgia.....	2	0	0	2	2	0	0	0	100
Illinois.....	7	2	0	9	6	0	2	1	88
Indiana.....	7	0	0	7	3	1	2	1	86
Iowa.....	1	0	0	1	0	0	0	1	0
Kentucky.....	5	0	1	6	4	0	1	1	83
Louisiana.....	3	2	1	6	5	0	0	1	83
Maine.....	8	0	0	8	6	0	0	2	75
Maryland.....	4	1	0	5	5	0	0	0	100
Massachusetts.....	14	0	0	14	14	0	0	0	100
Michigan.....	15	1	0	16	14	0	0	2	81
Mississippi.....	4	0	0	4	0	0	0	4	0
Missouri.....	2	0	0	2	2	0	0	0	100
New Hampshire.....	1	0	0	1	1	0	0	0	100
New Jersey.....	9	2	0	11	11	0	0	0	100
New York.....	19	0	0	19	7	0	0	12	37
North Carolina.....	5	0	0	5	4	0	1	0	100
Ohio.....	15	1	0	16	13	1	1	1	94
Oregon.....	9	1	0	10	10	0	0	0	100
Pennsylvania.....	7	0	0	7	0	0	0	7	0
Rhode Island.....	3	0	0	3	3	0	0	0	100
South Carolina.....	3	0	1	4	4	0	0	0	100
Tennessee.....	3	1	0	4	3	1	0	0	100
Texas.....	8	9	1	18	4	1	7	6	67
Vermont.....	1	0	0	1	1	0	0	0	100
Virginia.....	11	0	2	13	11	0	0	2	85
Washington.....	19	3	0	22	20	0	0	2	91
West Virginia.....	7	0	0	7	7	0	0	0	100
Wisconsin.....	3	2	0	5	2	0	0	3	40
Total.....	241	31	10	282	201	5	14	62	78

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.

Through the cooperation of State and city laboratories a number of studies have been made relative to the bacteriological quality of water collected from coolers on railway and Pullman coaches. Details of these studies are given in the reports for districts Nos. 1 and 2.

The results of these studies show that in general the water drawn from the coolers meets the Treasury standards. In district No. 1 a number of samples of water were taken for examination from the drinking water tanks of vessels engaged in both interstate and foreign traffic. The results indicated that the water was of better sanitary quality on vessels operating in interstate traffic and subject to the Interstate Quarantine Regulations than on those engaged in foreign traffic and not subject to these regulations.

In 1927 an agreement was entered into with the Department of Pensions and National Health of Canada relative both to certification of water supplies used by carriers crossing the international boundary, and inspection of vessel water systems on vessels operating on the Great Lakes and border waters. The Canadian Government put into effect regulations very similar to the Interstate Quarantine Regulations of the United States and is now operating under these regulations. During the year certificates were received from the Canadian authorities covering 32 supplies used by United States carriers operating in Canada, while 4 certificates covering supplies in the United States used by Canadian carriers were forwarded to them.

Reciprocity with Canada in this control work is operating with efficiency.

RAILWAY SANITATION

Cooperation with the joint committee on railway sanitation of the American Railway Association was continued during the year, and one engineer devoted approximately 75 per cent of his time to the work of this committee. Progress in the development of a manual of accepted devices and procedure has reached a stage which will permit of its completion during the coming year. Through cooperation with several railroads various studies were made to obtain information necessary for the committee.

Three hundred and twenty-three inspections of coach yards and watering points have been carried on as time would allow, and corrections in sanitary conditions have been brought about.

With the present control over sources of water supply and better storage and handling of drinking water on coaches, the necessity of proper handling of the water from mains to the coaches becomes more important. At present this is the weak link in the chain of protecting the health of the traveling public.

SUPERVISION OF WATER-SUPPLY SYSTEMS ON VESSELS

Control over drinking and culinary water-supply systems on vessels engaged in interstate traffic has been extended during the year with a very satisfactory increase in first inspections and issuance of favorable certificates. During the year 268 vessels received their

first inspection. Reinspections totaled 869. The number of favorable certificates issued was 857, as against 462 for 1928.

In this work greater interest and cooperation are being shown by vessel owners.

The following table gives the status of this work during the calendar year 1929:

Vessels for calendar year 1929

District	Vessels on active status	Per cent of total vessels in district	Certification ¹			Per cent of district vessels certified	Per cent of total vessels certified
			Permanent	Temporary	Total		
1.....	833	37	117	375	492	59.0	21.9
2.....	127	6	97	9	106	83.5	4.7
3.....	582	26	406	143	549	94.4	24.5
4.....	295	13	22	217	239	81.1	10.6
5 and 6 (combined).....	406	18	215	21	236	58.2	10.5
Total.....	2,243		857	765	1,622		72.3

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

Cases of typhoid fever occurring among crews and passengers were investigated to determine the possibility of water or typhoid carriers being the cause. During the year 75 cases were reported as occurring among members of crews. This is a reduction of 23 cases from the number reported during 1928. Assistance has been given the venereal disease division in its campaign to reduce venereal diseases among seamen.

SHELLFISH SANITATION

No change has been made in the procedure of carrying on this work during the year. Such difficulties as have arisen relative to proper control by the individual States have been satisfactorily handled by the district engineers. Control by the States over this problem has improved over that of previous years. The list of certified shellfish dealers has been published as heretofore and has been instrumental in maintaining satisfactory control.

During the year 685 certificates issued by the States have been approved. The number of shippers listed was 1,410.

In the shellfish sanitation work the same reciprocity is in force with the Canadian health authorities as in the case of water supplies. The Department of Pensions and National Health has supplied the Public Health Service with copies of 30 certificates issued by that agency to shellfish shippers, and that department has in turn, been supplied with copies of all certificates issued by the various States and approved by the Public Health Service. No advance has been made in methods of cleansing oysters through the use of chlorinated water. A plant for the cleansing of soft clams has been constructed at Plymouth, Mass., and is being operated under State supervision. The results obtained at this plant are being watched with interest, since the clams are being obtained in part from polluted sources.

PUBLIC HEALTH ENGINEERING ABSTRACTS

The publication of public health engineering abstracts is now in its tenth year. The increased demand for, the interest in, and the increasing reference in the literature to these abstracts indicate their value to those engaged in public health engineering work.

The abstracts issued during 1929 were obtained from 146 domestic and 167 foreign publications and totaled 434 mimeographed pages.

The following table gives the status of this publication for the year 1930 in comparison with the three preceding years:

	Fiscal year ended June 30—			
	1927	1928	1929	1930
Publications available.....	129	116	207	295
Abstractors.....	78	85	87	89
Weekly issues.....	52	53	52	52
Articles abstracted.....	762	896	1,426	1,445
Mailing list.....	635	684	835	883

COOPERATIVE SANITARY WORK

The public health engineering work conducted in cooperation with other divisions of the Public Health Service and with other governmental agencies, both Federal and State, has been extended during the year. A total of 1,242 engineer days have been devoted to this work during the year, an increase of 346 days over the previous year. Cooperative work with the National Park Service and Indian Service has increased due to additional surveys and the preparation of plans for sanitary projects, 967 days, or 21.4 per cent, of the total engineers' time being spent on this work. Twenty-one surveys, and plans for 18 sanitary projects, were made for the National Park Service, and 115 surveys and plans for 20 projects for the Indian Service.

Of particular interest is the design for a sewage-disposal plant prepared for the valley floor in the Yosemite National Park. The requirements for this plant, which will be located on the banks of the Mercedes River near park roads, are that it must be inconspicuous, produce no noticeable odor, and produce an effluent that is clear, colorless, and that meets the Treasury bacteriological standards for drinking water.

The various Government agencies other than the two above mentioned to whom assistance has been rendered include—

- (1) Bureau of Prisons: Surveys, advice, and plans for sanitary projects, and pasteurization of milk.
- (2) Supervising Architect: Surveys and plans for water supply and sewage disposal at border stations.
- (3) District of Columbia: Study of causes of disintegration of a concrete sewer.
- (4) Bureau of Efficiency: Assistance in preparation of a plumbing code.
- (5) Postoffice Department, Forest Service, Lighthouse Service, Coast Guard, and Veterans' Bureau: Inspection of buildings and surveys of sanitary conditions.

(6) Utah and Montana: Studies of water supplies following typhoid outbreaks.

(7) Arizona: Study of pollution of irrigation canals.

(8) South Carolina: Flood sanitation and effect of flooding on malaria prevalence.

(9) Nevada: Study of possible pollution of water supply.

MOSQUITO CONTROL, DISTRICT OF COLUMBIA

During August and September, at the request of the Office of Public Buildings and Public Parks, a survey was undertaken under the direction of the Public Health Service to determine the extent of mosquito infestation in the District. Following the completion of the survey a report was prepared outlining methods, organization, and cost of carrying on control measures. This report received the approval of the authorities concerned and an appropriation for the work was requested of Congress. Delay in passing the necessary legislation prevented initiation of the work during the present year.

SUMMARY OF WORK CARRIED ON BY THE VARIOUS DISTRICTS

Distribution of time in days of the field personnel, under the engineering section, fiscal year 1930

Interstate quarantine:	
Office-----	1, 536
Field-----	
Water-----	1, 135
Shellfish-----	204
National parks:	
Office-----	341
Field-----	118
Indian Service:	
Office-----	331
Field-----	177
Other agencies:	
Office-----	97
Field-----	178
Technical meetings-----	72
Days leave of absence-----	330
Total days accounted for-----	4, 519

TABULAR SUMMARY OF ACTIVITIES

<i>Vessel water-supply supervision</i>		<i>Railroad water-supply supervision</i>	
Inspections:		Inspections:	
First inspection—		Sources of water supply---	61
Passenger-----	92	Coach yards, terminals,	
Freight-----	176	watering points-----	323
Reinspections—		Diners-----	237
Passenger-----	228	Water examinations: Samples--	1, 741
Freight-----	641	Major conferences-----	211
Certificates issued:		<i>Shellfish sanitation supervision</i>	
Temporary-----	799	Inspections:	
Regular (favorable)-----	717	Areas-----	28
Water examination: Samples---	3, 478	Plants-----	388
Typhoid fever cases reported---	74		
Major conferences-----	175		

<i>Shellfish sanitation supervision—Continued</i>		<i>Miscellaneous—Continued</i>	
Certificates:		Cooperation with Federal agencies—Continued.	
State certificates approved	685	Park Service—Continued.	
State certificates not approved	2	Water samples examined	296
Laboratory examinations: Water and shellfish	776	Indian Service—	
Major conferences	158	Surveys	115
<i>Miscellaneous</i>		Plans prepared	20
Cooperation with State departments:		Conferences	57
Surveys	61	Water samples examined	113
Conferences	63	Federal penitentiaries—	
Cooperation with Federal agencies:		Surveys	4
Park Service—		Plans prepared	2
Surveys	21	Conferences	7
Plans prepared	18	Other—	
Conferences	36	Surveys	13
		Plans prepared	5
		Conferences	35
		Water samples examined	303

INTERSTATE SANITARY DISTRICTS

DISTRICT NO. 1.—MAINE, NEW HAMPSHIRE, VERMONT, MASSACHUSETTS, RHODE ISLAND, CONNECTICUT, NEW YORK, NEW JERSEY, AND PENNSYLVANIA

Sanitary Engineer L. M. Fisher was in charge of the district during the year, assisted by Associate Sanitary Engineer I. W. Mendelsohn. The activities are grouped as follows: (1) Shellfish sanitation, (2) vessel water-supply and sanitation supervision, (3) railroad water-supply and sanitation supervision, (4) miscellaneous activities, (5) cooperation with State health departments in the certification of sources of water supplies used by interstate carriers, and (6) cooperation with local health departments and Federal agencies in solving special health problems.

SHELLFISH SANITATION

The shellfish sanitation work involves the supervision of sanitary activities in the oyster industry and the methods of marketing hard and soft clams. The oyster industry is well organized and is carried on principally by fairly large and responsible concerns. The marketing of hard and soft clams is in the hands of a very large number of small dealers who dig a limited quantity of clams and frequently market them direct or sell to wholesale dealers who buy the product of a group of diggers.

Because of the difference in the manner of carrying on the business, violations of the local regulations are more frequent in the clam industry than in the oyster industry. As soft clams are invariably subjected to some form of heat treatment before being consumed, there is, apparently, less danger involved in the consumption of soft clams from moderately contaminated areas than there would be in the consumption of oysters obtained from areas similarly contaminated. However, since several instances are on record in which soft clams eaten raw have caused disease, an effort is made

to enforce practically the same standards of purity as are enforced in the oyster industry. The clam situation is further complicated by the fact that State authorities will tolerate on the local market the presence of clams taken from closed areas, whereas they will not certify these same clams for shipment in interstate commerce. This results in a very large portion of the total clam output being handled by local dealers who do not possess interstate shippers' certificates.

To prevent such clams from reaching interstate shipments, the policy has been adopted of not certifying a concern which operates two houses, one of which can be certified and the other not. This policy, combined with a more rigid policing of the closed areas, and supplemented toward the latter part of the year by the construction of chlorinating plants in which clams from moderately polluted areas may be cleansed, has contributed materially to reducing the quantity of uncertified clams on the local markets.

Efforts to provide an outlet for clams from moderately polluted areas were begun two years ago by the Massachusetts State Health Department, when it instituted studies in chlorination and in relaying of clams from moderately polluted areas. Following these studies the State recommended that at certain localities chlorinating plants might be operated to treat this product. A municipal plant was constructed at Newburyport, Mass., on a small scale, but because of incompetent supervision the State withdrew its approval of this plant. This year a large plant, operated by a private concern, was constructed at Plymouth, Mass. The plant at the present time has a capacity of about 150 barrels a day. The clams are treated in rectangular concrete tanks containing about 36 inches of salt water obtained at high tide. They are placed in containers built of wire netting and placed on racks in the tanks. Air is bubbled through the water from perforated pipes placed near the bottom of the tank. Chlorine is added rather heavily at first and is later maintained at about one-half part per million of free chlorine. The clams remain in the tanks for 48 hours. One-half hour before they are taken out, the excess chlorine is removed from the water by the addition of sodium thiosulphate. The scores of clams so treated are reported to be consistently less than 50, and these clams are considered by the State authorities to be safe for local consumption. Formal approval by the Public Health Service has not yet been given to this process because of a desire to verify the results and to permit the accumulation of more data than is now available. Massachusetts authorities have worked out a satisfactory procedure in the relaying of quahaugs or hard clams, by which they are permitted to be taken from moderately polluted areas under State supervision and relaid in clean areas until examination made after a 30-day period shows them to be safe for marketing.

The cleanliness of soft clams reaching the market has also been enhanced by the building of additional shucking houses by individual clam diggers or by the construction of what amounts to community shucking houses privately operated.

Assistance was rendered the State of New Jersey in improving conditions under which clams are shucked at one of the large clam producing centers in this State. A representative of the State was accompanied to the New England areas where modern clam shuck-

ing houses have recently been constructed. A satisfactory routine was worked out in conjunction with the city of New York, where most of the product was marketed. Revised regulations were prepared by the State so as to eliminate the unsatisfactory conditions formerly existing.

Assistance was rendered the State of Maine in its study of the clam growing areas along the coast. Because of limited facilities, the State was not able to make the studies that were at that time necessary. Arrangements were completed by district No. 1 with the health officer of the city of Portland, permitting examination in the city laboratory, by a Public Health Service laboratory aide, assisted by the city bacteriologist, of the shellfish samples collected by the State at various points along the coast within easy access of the Portland laboratory. Since then the State has made plans to continue this survey until all of the clam producing areas have been thoroughly studied.

District No. 1 cooperated with the State of Rhode Island in making studies, during the active marketing season, of both water and oyster samples collected in Narragansett Bay. This study began with the opening of the season in September and continued through April, samples being collected regularly each week. The study confirmed the results obtained two years ago by the Public Health Service in this area and showed an improvement in the quality of the water and the shellfish due to the active campaign carried on by the State board of water purifications for the elimination of sewage from public waters in Rhode Island. This board has accomplished a praiseworthy achievement in cleaning up the public waters in its State.

As a result of recommendations made last year, the State of New Jersey effected improvements in the municipal sewage-treatment plant at Millville, and thus improved the quality of the water in Maurice River, where oysters are subjected to water storage during the winter at times when water temperatures are 5° C. or lower.

Assistance was rendered a legislative committee appointed by the New York State Legislature in investigating the most desirable methods for disposing of sewage on Long Island so as not to affect adversely the recreational interests or the shellfish industry. The State has adopted the policy of requiring the treatment of sewage from Long Island cities before permitting its discharge into shellfish-growing areas. During the year a plant, approved by the State health department, with this as one of the objects in view, was placed in operation at Freeport, Long Island.

All of the principal shellfish handling establishments in this district were inspected at least once during the active season by a representative from the Public Health Service.

The district engineer participated in a meeting of the National Association of Shellfish Commissioners held at Providence, R. I.

A paper was prepared and read at the New England Health Institute, held at Boston, on the present status of shellfish sanitation in New England.

An inspection of several dining cars disclosed that shellfish supplied on some were not obtained from certified dealers. On taking this matter up with the dining-car authorities a satisfactory source of supply was obtained.

SUPERVISION OVER VESSEL WATER SUPPLY SYSTEMS AND SANITATION

In order to supply information with reference to the quality of drinking water on vessels, arrangements were made to install a laboratory at the marine hospital at Hudson Street, New York City. A complete water laboratory was installed in one corner of the hospital laboratory where water samples collected from vessels or trains or shellfish samples shipped to the laboratory might be examined.

A limited number of water samples were collected from American vessels in the port of New York, regardless of whether they were in the coastwise trade or in foreign trade. A study of these results seems to indicate that the quality of water found on coastwise vessels is somewhat better than that found on vessels in the foreign trade which are, at times, obliged to obtain water from such sources as are available and which do not have the benefit of inspections made from time to time by representatives of the Public Health Service. In this connection it is of interest to note that at least one American company, engaged in foreign trade, insists that plans for the drinking-water system of its new vessels be approved by the service before it accepts completed vessels.

The vessel companies showed a commendable spirit of cooperation in all efforts to bring about improvements affecting the safety of the drinking-water supplies.

Due to the rush of other work, less attention was given to vessel-inspection work this year. The number of uninspected freight vessels has not been reduced. Practically all of the passenger-carrying vessels are regularly inspected each year, and temporary certificates are issued to such vessels, both freight and passenger, as can not be given a regular inspection.

The chief engineer of the Canadian Department of Pensions and National Health conferred in this office with reference to the inspection of vessels operating on the Great Lakes the owners of which have their headquarters in this district. Efforts to require foreign-owned (other than Canadian) vessels to meet with the same requirements as are exacted of American and Canadian vessels in the Great Lakes trade were continued.

During the fiscal year, 41 cases of typhoid fever on vessels having their headquarters in this district were reported from hospitals and quarantine stations of the Public Health Service or by State and local health authorities. Two cases occurred on the steamship *Atlas* and were carefully investigated. The investigation disclosed that the cook gave a history of having had typhoid fever in previous years. He gave a positive Widal reaction, but repeated examinations of stools and urine, made both here and at Portland, Me., failed to disclose that he was a carrier. Both men who contracted typhoid fever frequently went ashore and obtained food and drink while away from the ship, so that it was not possible to fix the responsibility for the infection definitely.

Two cases occurred on board the fishing boat *Yale*. An investigation was made by the Massachusetts State Health Department at the request of this office, but definite responsibility for the infection could not be fixed. Examination of the water supply gave a high chlorine content, which showed at least a certain amount of carelessness in connection with the drinking-water supply.

Special efforts were made to inspect water boats at New York, Boston, and Philadelphia. Some water boats act as general utility tugboats and will engage in any activity which yields a profit. During the time the battleship fleet was in North River, one of these boats was engaged in carrying garbage from the battleships. After the fleet left it continued its water-boat activities.

Results of examinations of samples of drinking water obtained from vessels, fiscal year ending June 30, 1930

Number of vessels sampled.....	37
Total number, 10 cubic centimeter-portions examined.....	210
Number 10 cubic centimeter portions positive.....	32

RAILROAD WATER-SUPPLY AND SANITATION SUPERVISION

As the Joint Committee on Railway Sanitation has not yet made final recommendations, the policy during the year has been to encourage the railroads to cooperate with this committee in completing its work.

Inspections of coach yards and terminals were made with a view to indicating unsatisfactory features without requiring corrections in a specific way, but at the same time urging the railroad to follow the suggestions of the joint committee as far as they may have been formulated.

Coach yards and terminals were inspected on all the principal lines in the district, including the Pennsylvania; New York Central; Erie; Delaware, Lackawanna & Western; Reading Co.; Central Railroad of New Jersey; New York, New Haven & Hartford; Boston & Maine; Baltimore & Ohio; and Lehigh Valley Railroads. A report of inspections made along the Pennsylvania Railroad between New York and Pittsburgh, accompanied by numerous photographs of unsatisfactory conditions found at various points along the system, resulted in the appointment by the railroad of a sanitary engineer charged with the duty of maintaining proper sanitary conditions along the lines in this system.

The various railroads showed a willingness to furnish information for use of the Joint Committee on Railway Sanitation, and conducted tests outlined by a representative from this office, intended to discover the most satisfactory methods for cleansing water coolers and soil cans. Tests were also made on various filters used on dining cars. From a sanitary standpoint the use of filters on railways is not indicated, since the quality of drinking water supplied railroads is generally of a very high order. However, at the larger cities, such as New York, Boston, Chicago and elsewhere, the water supplies are not subjected to filtration, and at times there is a perceptible amount of turbidity present, to which the patrons on dining cars object, therefore in order to reduce complaints, the railroad companies generally have adopted a policy of installing filters on dining cars.

In order to obtain information regarding the quality of the drinking water served on railroads, arrangements were completed with State health departments whereby the examination of samples collected at various points could be made. At Philadelphia, the Pennsylvania State Health Department examined a series of samples col-

In 6 instances the samples failed to meet the requirements of sec. 2 of the Treasury Department standard

lected by a representative of this office and delivered to the laboratory. The same procedure was followed at Boston. At Albany, the State health department collected the samples and examined them. At New York City a number of samples were collected as opportunity offered and examined in the district laboratory. The results are tabulated below:

Results of railway water examinations for fiscal year ending June 30, 1930

Railroad	Place where examined	Total No. 10 cubic centi- meters portions	Number of por- tions positive	Compliance with Treasury standards—	
				Sec- tion 1	Sec- tion 2
Boston & Maine.....	Massachusetts State laboratory..	175	1	Yes...	Yes.
New York, New Haven & Hart- ford.....	do.....	415	10	Yes...	Yes.
Boston & Albany.....	New York and Massachusetts State laboratory.....	205	5	Yes...	Yes.
Boston & Montreal.....	Massachusetts State laboratory..	10	1	Yes...	Yes.
Pennsylvania.....	do.....	10	0	Yes...	Yes.
New York Central.....	New York State laboratory.....	85	22	No...	No.
Delaware & Hudson.....	do.....	5	2	Yes...	Yes.
West Shore.....	do.....	15	0	Yes...	Yes.
Pennsylvania.....	Pennsylvania State laboratory..	178	4	(1)	(1)
Lehigh Valley.....	do.....	15	1	(1)	(1)
Do.....	Public Health Service labora- tory New York.....	25	1	Yes...	Yes.
New York Central.....	do.....	55	3	Yes...	Yes.
New York, New Haven & Hart- ford.....	do.....	45	0	Yes...	Yes.
Pennsylvania.....	do.....	80	9	No...	No.
Erie.....	do.....	40	0	Yes...	Yes.
Delaware, Lackawanna & West- ern.....	do.....	20	1	Yes...	Yes.
Central Railroad of New Jersey..	do.....	25	0	Yes...	Yes.
Reading Co.....	Pennsylvania State laboratory..	109	3	(1)	(1)
Baltimore & Ohio.....	do.....	45	1	(1)	(1)
New York Central.....	New York State laboratory.....	50	0	Yes...	Yes.
Delaware, Lackawanna & West- ern.....	Railroad laboratory, Scranton...	250	4	Yes...	Yes.
Total.....		1,857	68		

¹ Standard methods recommended by the American Public Health Association not followed in this laboratory.

It will be noted that except for the water samples collected at Albany the quality was usually of a very high order. In this connection it is to be noted that the procedure followed by the State of Pennsylvania is not that prescribed by the American Public Health Association. All the other samples were examined according to standard methods, American Public Health Association. Samples were taken from dining-car filters, coolers in coaches and Pullman cars, and from hose nozzles in coach yards.

Cooperation with the New Hampshire State Health Department has continued in making inspections of water supplies used by railways in the State. A number of supplies deriving their water principally from upland streams were examined at Plymouth, North Conway, Bartlett, Gorham, Fabyans, and Portsmouth.

MISCELLANEOUS

The intention at the time of the establishment of the interstate sanitary district that the district offices should become a clearing house for miscellaneous public-health activities for the district seems

to be more nearly realized from year to year. An increasing volume of such work has been noted. Some of the miscellaneous activities are enumerated below:

Assistance through advice, inspection, and cooperation was rendered to various Federal Government departments.

Investigation was made of the need for ventilation in the mail-bag room at the post office on Eighth Avenue at Thirty-fourth Street, at the request of the district director. A short report, with recommendations, was submitted.

An inspection was made and report with recommendations submitted on changes to be made at the Federal detention headquarters, New York City, in improving the ventilation in the kitchen and laundry and elsewhere, and in improving the general sanitary conditions.

Assistance was rendered engineers of the Veterans' Bureau in solving their water-supply problems and sewage-treatment problems at veterans' hospital, Castle Point, N. Y., and at the hospital at Northport, Long Island.

Inspections were made and recommendations rendered in regard to water supply and sewage treatment problems for the Lighthouse Bureau and Coast Guard for stations at Fire Island, N. Y.

A conference was had with the Indian agency at Salamanca, N. Y.

At the request of the chairman of the State Board of Purification of Waters for Rhode Island, the district engineer testified at a hearing before the board involving an order against the town of Bristol, R. I., directing it to cease polluting the waters of the State through the discharge of raw sewage into a tributary of Narragansett Bay in which shellfish are grown.

The assistance of this office was sought by the recently appointed health officer for the State of Rhode Island in securing a competent sanitary engineer to fill the position vacated by resignation and to obtain the services of an epidemiologist.

Some time was devoted to encouraging the use of venereal disease prophylactic measures by vessel companies operating in this district. The companies are beginning to appreciate the value of such work and are taking an increased interest in it. This is shown by the fact that over 60 per cent of the members of the American Steamship Owners Association are now supplying their vessels with the necessary material to carry on prophylactic work. As a result of this activity, one of the large steamship companies established a medical service for all its personnel, and requested the assistance of this office in obtaining a competent director familiar with seamen and maritime matters. A competent physician employed as an acting assistant surgeon in the hospital at Ellis Island was secured for this company.

There is an increased interest in mosquito-control work in this district. The State of Massachusetts reorganized the drainage board and placed under it the supervision of mosquito-control activities in the State. Conferences have been held at various times with members of this board. The annual meeting of the New Jersey Mosquito Extermination Association was attended.

Meetings of the New England Water Works Association and meetings of water and sewage works operators in New York, New Jersey, and Pennsylvania were attended. Assistance was rendered in organ-

izing a sewage research association among Public Health Service engineers in order that they might assist the National Federation of Sewage Works Association in studying sewage research problems.

Hearings before special masters of the United States Supreme Court, involving health matters in controversy between States in this district were attended. One such hearing involved a complaint of the State of New Jersey in regard to dumping of garbage by New York City where it might contaminate New Jersey beach resorts. Another such hearing involved the suit brought by the State of New Jersey against the city and State of New York in regard to the diversion of water from the Delaware River for the New York City municipal supply.

The district engineer continued to represent the service on a sectional committee of the American Standards Association, engaged in formulating standard specifications for household refrigerators.

TABULAR SUMMARY

<i>Vessel water-supply supervision</i>		<i>Shellfish sanitation supervision</i>	
Inspections:		Inspections:	
First inspections—		Areas.....	24
Passenger.....	5	Plants.....	103
Freight.....	35	Certificates:	
Reinspections—		State certificates approved....	542
Passenger.....	62	State certificates not ap-	
Freight.....	19	proved.....	1
Certificates issued:		Laboratory examinations:	
Temporary.....	354	Samples.....	770
Regular (favorable).....	96	Major conferences.....	107
Water examinations: Samples.....	69		
Typhoid fever cases: Reported....	41	<i>Miscellaneous</i>	
Plans of vessel water systems:		Cooperation with State depart-	
Approved.....	8	ments:	
Not approved.....	5	Surveys.....	0
Major conferences.....	48	Conferences.....	38
		Cooperation with Federal agen-	
<i>Railroad water-supply supervision</i>		cies:	
Inspections:		Indian Affairs—	
Sources of water supply.....	6	Surveys.....	1
Coach yards.....	22	Conferences.....	1
Terminals.....	0	Penitentiaries—	
Watering points.....	2	Surveys.....	1
Dining cars.....	10	Conferences.....	1
Water examinations: Samples.....	638	Other—	
Major conferences.....	120	Surveys.....	6
		Conferences.....	24

DISTRICT NO. 2.—DELAWARE, MARYLAND, VIRGINIA, WEST VIRGINIA, DISTRICT OF COLUMBIA, NORTH CAROLINA, SOUTH CAROLINA, GEORGIA, AND FLORIDA

PERSONNEL AND ACTIVITIES

The activities of Interstate Sanitary District No. 2 were carried on under the direction of Associate Sanitary Engineer A. P. Miller. The district engineer was assisted by Assistant Sanitary Engineer J. L. Robertson.

The activities of this station may be arranged in order of importance as follows:

(1) Sanitation of shellfish, which includes joint investigations with State authorities of shucking houses and shellfish producing

areas and cooperation with those authorities in working out special problems and solving difficulties.

(2) Inspection and supervision of water-supply systems, storage facilities, and all other sanitary and water appurtenances on interstate carriers within the jurisdiction of this district.

(3) Investigation of the devices and methods used by railroads in watering cars and the determination of the quality of water on common carriers.

(4) Cooperation with State health departments in matters jointly affecting them and the Public Health Service.

(5) Technical assistance to other Government departments and bureaus and the District of Columbia.

SHELLFISH SANITATION

This activity continues to be a major one. The procurement of physical improvements seemed to be more difficult this year. This may be attributed to the fact that generally the shellfish business in this area was not very profitable and, hence, money was not available for improvements.

Our procedure has been the same as in previous years. Joint inspections of shucking houses are made and assistance is given in the study of shellfish-producing areas. This district has adhered to the plan of making definite reports to the States on all inspection activities. It is not possible, due to the lack of sufficient personnel, to inspect every shucking house, but an endeavor is made to cover enough so that a definite opinion can be formed as to the effectiveness of the State inspection machinery.

Each State presented some new problem during the year. In North Carolina the question of the small shucking house, usually located in the owner's backyard, and used possibly only by the owner and his relatives, required a definite solution. It was finally decided that these small houses, ordinarily operated by colored families, would have to comply in every respect with sanitary requirements enforced upon the larger houses.

A survey was made of the floating laboratory equipment and the methods followed in shellfish-area investigational work in South Carolina. As a result radical changes were recommended both as to methods and as to equipment.

Sanitary conditions in a large producing area in Maryland had not been satisfactory for a number of years. After several meetings with Maryland authorities and the producers in that area, creditable improvement in shucking houses was effected. The question of patrol of areas in both Georgia and Delaware arose. After consultation with the authorities in these States, more adequate patrol was developed. In Georgia a definite patrolling system was set up and a monthly report on its operation required. In Delaware it was necessary to inaugurate a complete new patrol scheme. This was done by the State authorities. A monthly report was required from Delaware also. Attention was focused on patrol facilities only after investigations indicated the removal of shellfish from polluted areas. In both cases, evidence pointed very definitely to the fact that such stock was being taken out.

A special check was made of the effectiveness of patrol in the condemned areas in Virginia. The results of this work were quite

satisfactory. Much difficulty was experienced with the Virginia authorities in the operation of the scheme set up covering the transplantation of oysters for cleansing purposes. With their cooperation, this difficulty was overcome in a manner satisfactory to all concerned.

A special effort was made during the season to call on the health officers of the larger municipalities in the district with the idea of urging them to effectively control the oysters consumed in their respective cities and to restrict sales to stock from certified dealers. Several joint conferences were held with the Maryland and Virginia authorities in an endeavor to work out a solution of the returnable container question. In the last few years these containers have not been satisfactory, but plans have now been made to solve this difficulty during the coming season.

The States have been asked to report on their inspections of shucking and shell houses at least once each month. This request has been complied with better this year than last, although the inspection of shell houses has not been entirely satisfactory. The following table shows the number of shucking-house inspections reported by the States in this district:

TABLE 1.—Number of shucking-house inspections as reported by States

State	1929				1930			
	September	October	November	December	January	February	March	Total
Delaware.....	7	7	7	12	0	5	0	38
Florida.....	9	18	22	22	25	21	0	117
Georgia.....	11	26	31	33	44	33	35	213
Maryland.....	107	302	274	134	153	153	82	1,205
North Carolina.....	15	38	32	35	38	27	26	211
South Carolina.....	15	9	14	0	20	16	25	99
Virginia.....	21	106	200	198	168	185	42	920
Total.....	185	506	580	434	448	440	210	2,803

The table below reduces the number of inspections of shucking and shell houses to a "per house per month" basis.

TABLE 2.—Number of inspections by States reduced to "per house per month" basis

State	Shucking			Shell		
	Inspections per month over period September to March	Average number plants active per month	Inspections per house per month	Inspections per month over period September to March	Average number plants active per month	Inspections per house per month
Delaware.....	5.4	5.6	1.0	0	0	0
Florida.....	16.7	19.4	.9	.7	2.7	.3
Georgia.....	30.4	28.4	1.1	1.1	1.0	1.1
Maryland.....	172.1	213.9	.8	.7	11.1	.06
North Carolina.....	30.1	29.4	1.0	0	45.0	0
South Carolina.....	14.1	21.6	.7	1.0	7.6	.1
Virginia.....	131.4	162.4	.8	.7	177.9	.004
Total.....	400.4	494.4	.8	4.2	245.3	.016

It will be noted that four States did not make an inspection of every shucking house each month, although each of them did closely approximate that figure. In our cooperative work in the inspection of shucking houses, this office completed 198 inspections.

The scope of this inspectional work and the percentage of compliance with the numerous items covered by it are shown in the following table, which represents a survey of 35 houses in one of the larger shellfish States.

TABLE 3.—*Compliance of shucking houses with minimum requirements*

Item	Number of houses which should comply with item	Percentage of houses which—	
		Did comply	Did not comply
		<i>Per cent</i>	<i>Per cent</i>
Source of stock.....	35	97	3
Storage of shell stock.....	62	64	36
Preparing shell stock for shipment.....	8	62	38
Floors.....	62	98	2
Walls.....	27	93	7
Benches.....	58	88	12
Misuse of unit of plant.....	35	91	9
Buckets.....	58	52	48
Hand dips.....	33	76	24
Towels.....	62	79	21
Soap.....	62	84	16
Skimmer.....	59	59	41
Second skimmer.....	22	82	18
Measures.....	48	65	35
Paddles.....	57	70	30
Dippers.....	24	63	37
Holding tubs.....	17	71	29
Blowers.....	15	73	27
Hot water.....	59	88	12
Water supply and system.....	62	38	39
Cans (nonreturnable).....	59	66	34
Cans (Sealshipt).....	13	0	100
Toilet signs.....	62	63	37

A gradual improvement in the sanitary conditions of the industry in this territory can be noticed, although the state of business is such that too rapid improvement can not be expected.

VESSEL WATER SUPPLY AND SANITATION

Again a decrease in boats of the small river type has been noticed. Highways and automobile trucks are gradually forcing the small river lines out of business. The number of the larger vessels of the seagoing type, however, remains quite constant.

An inspector was on duty during the summer months and was able to cover practically all of the vessels in this territory. Eight passenger and 5 freight vessels were given their first inspections this year and reinspections of 78 passenger and 17 freight vessels were made. It was necessary to issue only very few noncompliance notices covering violations of the Interstate Quarantine Regulations. The vessel-inspection work in this district is becoming quite routine, and in view of the few defects now being found, consideration should be given to the possibility of permitting certificates for certain classes of vessels to run more than a year before a reinspection is required.

With the exception of those at one office, calls were made on all of the local inspectors of the Steamboat Inspection Service to maintain close relations, so that in case violations of regulations were found that service could be asked to help in the abatement.

Five cases of typhoid fever on four different boats were reported. None of these was attended by any unusual circumstances. Only 33 examinations of water from vessels were made this year by cooperating city laboratories.

Cooperation with shipbuilding companies was continued. Plans for several vessels were reviewed, and constructive suggestions were made to improve the water storage and distribution systems.

At the request of the division of venereal diseases this office presented to the officials of seven vessel companies a program for venereal disease control among seamen. These seven companies were considered to be the only ones in this district which were large enough to undertake this plan. Only mediocre results were obtained from these interviews. The follow-up work was to be done by representatives of the division of venereal diseases.

RAILWAY SANITATION

At the beginning of this year two major projects in the field of railway sanitation were started. The first involved the accumulation of sufficient data to permit the formulation of a definite opinion concerning the actual quality of the drinking water carried on railway cars. Water samples to the number of 404 were collected by personnel of the Public Health Service and by that of the State health departments. Samples were taken from day coaches and Pullmans; from through trains and local trains. As wide a cross section of conditions was covered as was conveniently possible.

The following table gives the number of samples collected and indicates the laboratory which tested them:

TABLE 4

Railroad	Florida State Board of Health, Jacksonville	U. S. Public Health Service, Norfolk	South Carolina State Board of Health, Columbia	Virginia State Board of Health, Richmond	Georgia State Board of Health, Atlanta	District of Columbia Health Department, Washington, D. C.	West Virginia State Board of Health, Charleston	North Carolina State Board of Health, Raleigh	City of Wilmington Health Department, Wilmington, Del.	Maryland State Department of Health, Baltimore	Delaware State Board of Health, Dover	Total
Atlantic Coast Line.....	17	4	2	10								33
Atlanta & West Point.....					4							4
Baltimore & Ohio.....						11	5					16
Central of Georgia.....					8							8
Chesapeake & Ohio.....		17										34
Florida East Coast.....	4			11			6					4
Norfolk Southern.....		15						1				16
Norfolk & Western.....		42		2								44
New York Central.....							6					6
Pennsylvania.....						10			28	38	9	85
Reading.....									1			1
Richmond, Fredericksburg & Potomac.....				10		3						13
Seaboard Air Line.....	8	20	11	7	2	2		16				66
Southern.....		5	15	6	17	4		15				62
Virginian.....		11										11
Western Maryland.....										1		1
Total.....	29	114	28	46	31	30	17	32	29	39	9	404

The following table gives the results of these tests:

TABLE 5.—*Water samples from railroad cars*

Railroad	Number of samples	Number of 10-cubic-centimeter tubes	Number of 10-cubic-centimeter portions positive	Number of samples having 3 or more tubes positive	Does railroad pass Treasury Department standards—	
					Sec. 1	Sec. 2
1.....	33	165	15	3	Yes.	No.
2.....	4	20	0	0	Yes.	Yes.
3.....	16	80	0	0	Yes.	Yes.
4.....	8	40	1	0	Yes.	Yes.
5.....	34	170	23	4	No.	Yes.
6.....	4	20	0	0	Yes.	Yes.
7.....	6	30	0	0	Yes.	Yes.
8.....	16	80	1	0	Yes.	Yes.
9.....	44	220	1	0	Yes.	Yes.
10.....	85	425	8	1	Yes.	Yes.
11.....	1	5	0	0	Yes.	Yes.
12.....	13	65	5	1	Yes.	Yes.
13.....	66	330	28	5	Yes.	No.
14.....	62	310	15	3	Yes.	Yes.
15.....	11	55	0	0	Yes.	Yes.
16.....	1	5	0	0	Yes.	Yes.
Totals.....	404	2,020	97	17		

Some of the above analytical work was done by the Public Health Service at the laboratory at Craney Island, Va. While collecting these samples, a study was made of the construction of water coolers on seven railways. The 69 coolers observed were found to be satisfactory in major details.

The other principal project carried through this year was a survey of watering facilities and devices along a number of railroad lines.

The field work for the following eight railroads involving visits to 103 watering points was completed and reports furnished to four of them. The remaining four reports are yet to be finished.

Baltimore & Ohio Railroad.
Florida East Coast Railway.
Norfolk & Western Railway.
Norfolk Southern Railroad.

Richmond, Fredericksburg & Potomac Railroad.
Seaboard Air Line Railway.
Virginian Railway.
Western Maryland Railway.

The district engineer, as a member of the joint committee on railway sanitation of the American Railway Association, attended two meetings of that committee. At the request of that committee, tests of water-cooler and soil-can cleansing methods were made by the Richmond, Fredericksburg & Potomac Railroad, and the Chesapeake & Ohio Railway in conjunction with this office.

COOPERATION WITH OTHER GOVERNMENT DEPARTMENTS

At the request of the Department of Justice, additional surveys were made of the Federal penitentiary at Atlanta, Ga., the Federal Industrial Institution for Women at Alderson, W. Va., and the proposed Federal prison camp at Camp Lee, Petersburg, Va. The surveys included investigations of the water supplies and methods of sewage disposal and other matters of sanitation. An incinerator was designed for use in the Federal penitentiary reservations.

The Cherokee Indian Reservation at Cherokee, N. C., was visited again at the request of the Office of Indian Affairs and plans for improving the water system were drawn up.

Assistance was given to the Commissioners of the District of Columbia in a survey of mosquito infestation and in investigating the extent of the disintegration of an intercepting sewer. This latter project took considerable time and extended through the entire summer.

COOPERATION WITH STATE HEALTH DEPARTMENTS

Conferences were held and joint work carried on with all the State health authorities, a number of visits being made to each State in this district.

At Asheville, N. C., it was necessary to invoke the interstate quarantine regulations relative to the use of milk on interstate carriers.

Two special pieces of work were done in South Carolina. One of these was an investigation of the magnitude of the flood in Horse Creek Valley and its effect on sanitation and health. The second was a study of the Edisto River to determine its relationship, if any, to increased mosquito breeding.

A number of meetings of water and sewage-disposal groups in the various States were attended by representatives from this office.

TABULAR SUMMARY

<i>Vessel water-supply supervision</i>		<i>Shellfish sanitation supervision—Con.</i>	
Inspections:		Certificates:	
First inspections—		State certificates approved	271
Passenger	8	State certificates not approved	0
Freight	5	Laboratory examinations:	
Reinspections—		Water	0
Passenger	78	Shellfish	0
Freight	17	Major conferences	37
Certificates issued:		<i>Miscellaneous</i>	
Temporary	1	Cooperation with State departments:	
Regular (favorable)	98	Surveys	2
Water examinations: Samples	33	Conferences	2
Typhoid fever cases: Reported	5	Cooperation with Federal agencies:	
Major conferences	8	Indian Affairs—	
<i>Railroad water-supply supervision</i>		Surveys	1
Inspections:		Plans prepared	1
Sources of water supply	0	Conferences	1
Coach yards, terminals, watering points	103	Penitentiaries—	
Water examinations: Samples	404	Surveys	3
Major conferences	16	Plans prepared	1
<i>Shellfish sanitation supervision</i>		Conferences	6
Inspections:		Other—	
Areas	2	Surveys	1
Plants	198	Plans prepared	0
		Conferences	2
		Technical papers prepared	2
		Technical meetings attended	8

DISTRICT NO. 3.—OHIO, MICHIGAN, INDIANA, WISCONSIN, ILLINOIS, MINNESOTA, IOWA, NORTH DAKOTA, SOUTH DAKOTA, AND NEBRASKA

The activities of this district were continued under the direction of Sanitary Engineer Frank R. Shaw, assisted by Associate Sanitary Engineer Elliot H. Gage.

The activities comprised the following: (1) Inspection and supervision, for the purpose of certification, of the drinking and culinary water supplies and water-supply systems and the general sanitary conditions on vessels operating in interstate traffic on the Great Lakes and the St. Lawrence River; (2) cooperation with the State health departments in the supervision of the water supplies used for drinking and culinary purposes on interstate common-carrier railroads, the method of loading the water on the trains, and the general sanitation of coach yards and terminals; (3) cooperation with the subcommittee of the American Railway Association's committee on railway sanitation in the study of coach-yard sanitation methods; (4) cooperation with the Office of Indian Affairs of the Department of the Interior, the Customs Service of the Treasury Department, the Post Office Department, and the Department of Justice; (5) cooperation with the State health departments in matters involving sanitary engineering.

VESSEL WATER-SUPPLY AND SANITATION SUPERVISION

The supervision of vessel water supplies extended to 123 vessel companies and involved 74 passenger vessels and 421 freight vessels, a total of 495 vessels. These and other statistical data are recorded later. The difference in the number of vessels reported last year as of June 30, 1929, and those in the active files on June 30, 1930, reported herein—that is, 86—is due to the influence of withdrawals because of classification and shipping inactivity, counterbalanced slightly by new vessels.

The valuable assistance rendered by the steamboat inspectors of the Department of Commerce was continued. All the offices continue to report the expiration date of the certificate found posted, making it possible for this office to insure that all vessels carry active certificates. The number of vessels found with expired certificates has reduced markedly and only infrequently does the Public Health Service have to issue a duplicate certificate to replace one that has been misplaced.

The cooperation between the Department of Pensions and National Health of Canada and this office and the assistance rendered by seven American city laboratories in taking and examining samples of water from the vessels have continued.

The outstanding features of the vessel-inspection work are as follows: A total of 611 inspections were made (as compared to 539 in 1929), of which 53 were passenger and 558 freight vessels. It was reported last year that on July 1, 1928, there were 187 vessels credited to this district which had never been inspected and that this was reduced to 76 by June 30, 1929. By January 1, 1930, this office had, by elimination due to classification and by accomplishing 45 initial inspections, reduced the number of vessels not before inspected to zero.

The reinspections since the opening of the 1930 navigating season have revealed a decided improvement in the condition of vessels and much better interest and finer cooperation on the part of the vessel officers. Although noncompliance notices have been issued whenever violations were observed, only six have been issued this season. These

improvements are due to the fine cooperation by the vessel companies and the tactful procedure of the inspector.

The improvement may be visualized from the following comparison of certification status.

Fiscal year	Temporary certificates	Regular certificates
1928.....	504	131
1929.....	422	280
1930.....	125	463

A total of 2,646 samples of domestic water taken from vessels were examined bacteriologically by seven American city health departments and two Canadian health departments. This is an increase of 350 over 1929 and 977 over 1928. An analytical summary of the bacteriological results for the calendar year 1929 revealed that 12.4 per cent of the vessels sampled failed to meet the Treasury standards, as compared to 15.2 per cent for the calendar year of 1928. Consideration must be given the fact that many vessels had but single samples taken and that in one case during 1929 repeated contamination was traced to the hydrant.

The plan of notifying the vessel companies of the results of bacteriological examinations by means of post cards as soon as the examinations are completed, inaugurated at the beginning of the 1929 season, has been continued with growing success. It is stated by one city laboratory that discontinuance would bring a strong protest from the vessel companies. Many companies notify this office of the action taken after the receipt of notice of contamination.

TYPHOID FEVER ABOARD VESSELS

The typhoid-fever statistics on cases reported by marine hospitals since 1915 are tabulated under statistical data. These statistics show a general trend downward from 70 in 1916 to 9 in 1929. It is believed that this reduction is far greater than is indicated by the figures, for the reason that seamen have availed themselves of the marine hospitals to a greater extent in recent years than formerly.

VENEREAL-DISEASE CONTROL AMONG SEAMEN

During 1929 this office cooperated with the venereal disease division in its effort to induce the lake carriers to institute the full program suggested by the service for venereal-disease control among seamen. Our efforts were not rewarded by success at that time, but a notice was observed in the June issue of the bulletin issued jointly by the Lake Carriers' Association and the Great Lakes Protective Association to the effect that framed placards would shortly be issued to the vessels of these associations. The decrease in the number of treatments, even in the face of the increase in new cases, suggests that more prompt treatment is being sought. The total number of seamen on the vessels coming under the jurisdiction of this office is 19,064, but, of course, this is only a part of the total eligible for treatment.

Vessel statistical data—Vessels in active file June 30, 1930

Number of vessel companies.....	123
Number of passenger vessels.....	74
Number of freight vessels.....	421
Total vessels.....	495
Number of officers and seamen involved in crews.....	19,064
Number of passenger vessels not inspected prior to June 30, 1930.....	6
Number of freight vessels not inspected prior to June 30, 1930.....	8
Passenger vessels drawing water from ashore.....	47
Passenger vessels purifying water aboard.....	27
Freight vessels drawing water from ashore.....	35
Freight vessels purifying water aboard.....	386
Number of vessels found using raw lake water.....	2
Percentage of all vessels sampled conforming to Treasury standards:	
Calendar year 1928, 230 vessels.....per cent..	84.8
Calendar year 1929, 226 vessels.....do.....	87.6

Venereal disease among seamen applying for treatment at the Chicago outpatient office of the Public Health Service

	Calendar year 1928	Fiscal year 1930
New venereal disease cases.....	312	598
Total venereal disease treatments.....	2,333	2,115
Total treatments, all causes.....	5,889	4,505

Typhoid fever among seamen on vessels operating in district No. 3

Navigation season	Cases	Navigation season	Cases	Navigation season	Cases
1915.....	60	1920.....	20	1926.....	29
1916.....	70	1921.....	13	1927 ¹	10
1917.....	49	1922.....	17	1928 ²	11
1918.....	39	1923.....	25	1929.....	9
1919.....	24	1924.....	21	1930.....	12
		1925.....	7		

¹ Also 1 case of dysentery.² Also 3 cases of dysentery.³ Jan. 1 to June 30, 1930.

RAILROAD WATER SUPPLY AND GENERAL SANITATION

During the fiscal year this office surveyed 4 water-supply sources and inspected 43 coach yards.

The studies conducted by the Chicago & North Western Railroad upon the request of the subcommittee of the Joint Committee on Railway Sanitation of the American Railway Association to ascertain the efficiency of certain methods of cleaning water coolers and soil cans were supervised by this office.

Acting under special instructions from the bureau, this office inspected practically every railroad diner leaving Chicago. A total of 174 diners were inspected and reported upon.

COOPERATION WITH FEDERAL AGENCIES

Office of Indian Affairs.—Cooperation with the Office of Indian Affairs on matters of sanitary engineering continued during this fiscal year. Visits were made to 14 additional administrative units. Thus far a total of 19 of the 28 administrative units have been visited. During this year surveys and preliminary reports were

made on 36 units and subdivisions, which brings the total to 41 units and subdivisions of the 110 units and subdivisions existing in this district. Of the 59 unsurveyed units only 9 are major units, the remaining 50 being day schools and the like.

The preliminary reports contained descriptions of the water supply and sewage-disposal systems, together with tentative plans for the needed improvements and cost estimates. At the close of the year this office prepared a summary of the estimates in tabular form, which revealed total estimated costs of \$229,105.51 for water supplies, \$85,907.12 for sewage disposal, and \$2,750 for topographical surveys, or a grand total of \$317,762.63.

Cooperation was rendered the superintendents of those reservations for which authority had been received for the construction of projects recommended during the fiscal year of 1929. Permanent chlorination was installed at one reservation and emergency chlorination was instituted at four reservations.

The superintendents continue to arrange for periodic examination of samples of domestic water. During the fiscal year 193 bacteriological examinations and 15 chemical analyses of water samples, and 20 bacteriological examinations of milk samples were made in this district.

Post Office Department.—A survey was made of the Iowa City post office. The report involved recommendations regarding space, ventilation, illumination, and conservation of heat.

Customs Service.—A report including plans for a water-supply system and for sewage disposal was prepared for the proposed border customs station at St. John, N. Dak.

MISCELLANEOUS

During six weeks of the summer of 1929, Associate Sanitary Engineer E. H. Gage was detailed at Washington, D. C., for the purpose of making a mosquito-control survey of the District of Columbia.

TABULAR SUMMARY

<i>I. Vessel water-supply supervision</i>		<i>II. Railroad under supply supervision and general sanitation—Continued</i>	
Inspections:		Inspections—Continued.	
First inspection—		Water examinations: Samples..	428
Passenger.....	7	Major conferences.....	9
Freight.....	38		
Reinspections—		<i>III. Miscellaneous</i>	
Passenger.....	46	Cooperation with Federal agencies:	
Freight.....	520	Indian Affairs—	
Certificates issued:		Surveys.....	36
Temporary.....	125	Plans prepared.....	10
Regular (favorable).....	463	Conferences.....	17
Water examinations: Samples..	2, 646	Other—	
Typhoid fever cases: Reported..	9	Surveys.....	2
Major conferences.....	52	Plans prepared.....	2
		Conferences.....	0
<i>II. Railroad water-supply supervision and general sanitation</i>		Miscellaneous laboratory examinations:	
Inspections:		Water.....	208
Sources of water supply....	4	Other.....	20
Coach yards.....	43	Technical meetings attended....	4
Terminals.....	0		
Watering points.....	0		
Diners.....	174		

DISTRICT NO. 4.—ALABAMA, MISSISSIPPI, MISSOURI, LOUISIANA, OKLAHOMA, ARKANSAS, KANSAS, KENTUCKY, TEXAS, AND TENNESSEE

The activities of the district were under the direction of Sanitary Engineer H. N. Old, with the assistance of Associate Sanitary Engineer E. C. Sullivan. On October 1, 1929, the headquarters of the district were transferred from Memphis, Tenn., to New Orleans, La.

The activities included vessel and railroad water supply supervision; several series of tests of railway sanitary equipment; shellfish sanitation; cooperation with State health departments and Federal bureaus, particularly in the sanitary survey of Indian Bureau jurisdictions; the sanitary survey of labor camps operated by contractors engaged in flood-control work on the Mississippi River; and other miscellaneous duties.

VESSEL WATER-SUPPLY SUPERVISION

Within the district, which includes the west coast of Florida and the entire Mississippi and Ohio River systems in addition to the 10 States, there are 85 vessel companies operating 74 passenger-carrying vessels and 143 freight vessels (practically all of the passenger-carrying vessels also carry freight). These vessels are actively supervised by the Public Health Service with respect to the drinking and culinary water systems. In addition there are 20 companies operating 14 passenger and 13 freight vessels of small type and minor importance, such as ferry service of a few minutes' duration per trip, which this office does not attempt to supervise as actively as the more important vessels. Many of these on the upper Mississippi River are considerably removed from convenient and economic accessibility.

The vessel companies enumerated above use 42 different sources of shore water supplies within this district and 30 sources of supply located in other interstate sanitary districts. Conversely, some of the 42 vessel supplies located within this district are used also by 27 vessel companies coming within the jurisdiction of other districts.

As the district had the services of an inspector for only the last five months of the year, the vessel-inspection work was somewhat handicapped.

During the year trips were made to the various points on the Ohio River from Cairo, Ill., to Pittsburgh, Pa., at which time thorough inspections were made of the drinking and culinary water supply systems on vessels coming within the jurisdiction of this district. The attitude of vessel company officials in this section was most encouraging. During the course of these visits the defects discovered were for the most part of minor nature, involving such defects as absence of signs indicating taps supplying nonpotable water. At several places defective shore water lines to wharf boats were found and correction ordered.

Inspections were also made of vessels and small craft, such as ferries at various points between Memphis and New Orleans on the Mississippi River.

Considerable attention has been devoted to the vessels operating to and from the Gulf ports, several visits having been made to all the Gulf ports between Pensacola, Fla., and Galveston, Tex. In

connection with these vessels the problem of cross connections between drinking-water supply and overboard or other nonpotable supplies has been present to a large extent but very excellent response has been made to orders issued for severance of such connections.

In connection with vessel water-supply supervision many conferences were had with State and local health authorities, officials of the Steamboat Inspection Service, medical officers in charge of marine hospitals, and others concerning various phases of mutual cooperation.

One of the most difficult situations to handle in connection with vessel activities has been that of the water barges used at several of the Gulf ports to convey drinking water from safe shore sources to vessels remote from water lines. Nearly all such barges are in defective condition and poorly maintained. In some cases harbor tugs are used, although company officials frequently deny this statement. At Port Arthur, Tex., during May there occurred five cases of typhoid fever on a Government dredge which had been supplied regularly with drinking and culinary water by several water boats which had previously been placed under noncompliance orders by this office. Indications in this case pointed to these defective boats as constituting the most probable source of infection.

As this district office is not equipped with bacteriological laboratory facilities, it was necessary to solicit the aid of the joint State and city laboratory at New Orleans, La., the city laboratory at Port Arthur, Tex., and the State laboratory at Austin, Tex., in connection with vessel water samples collected during inspections.

The city health department at Cincinnati continued to submit copies of all laboratory results of analyses of drinking and culinary water samples collected from vessels calling at that port. It is of interest to note that in only 52 of the total of 510 samples examined was there found evidence of colon bacillus in 10-cubic-centimeter amounts.

Of the 18 typhoid fever cases reported to this office by the marine hospitals or relief stations none were from vessels directly under the jurisdiction of this district. The distribution was as follows: Foreign, 8 cases; intrastate vessels, 2; United States Engineer Corps vessels, 7 (5 of which were on a dredge at Port Arthur, Tex.); Mississippi-Warrior Service, 1. In practically all of these cases, however, the master of the vessel or other responsible officials were advised that the Public Health Service would be glad to consult with them and render any assistance possible toward preventing further infection of this sort.

Every effort was made during the five months that an inspector has been on duty to replace temporary vessel certificates with regular favorable certificates based upon thorough inspection rather than a master's statement as to arrangement and condition of the drinking and culinary water supply system.

RAILROAD WATER-SUPPLY SUPERVISION

Of the approximately 700 water supplies used by railroad companies engaged in interstate traffic, 77 per cent were reported upon by the States during the calendar year of 1929. Unfortunately this is somewhat lower than during 1928, and is largely due to the ap-

parent inability of Arkansas and Mississippi to submit reports on water supply sources in those States.

Considerable time was devoted to the inspection of railway coach-yards and terminals within the district, and very encouraging results have been secured. The chief sources of trouble have been defective hydrants and hydrant boxes, lack of sanitation in use and maintenance of the hose and buckets used for filling coach water coolers and tanks, and prevention of soil pollution adjacent to the coach tracks. Suggestions and recommendations have been made, and without recourse to other means the percentage of corrections made has been most satisfactory. In fact, at Louisville, Ky., the largest terminal and coach yard apparently has been converted from one of the most insanitary in the country to a state approaching perfection in equipment and operation.

The 153 terminal and coach yard inspections were distributed as follows: Birmingham and Mobile, Ala.; Covington, Fulton, Louisville, and Paducah, Ky.; Baton Rouge and New Orleans, La.; Gulfport, Jackson, Meridian, Natchez, and Vicksburg, Miss.; St. Louis, Mo.; El Reno, McAlester, Oklahoma City, Shawnee, and Tulsa, Okla.; Memphis, Tenn.; Abilene, Amarillo, Austin, Beaumont, Dallas, Fort Worth, Galveston, Houston, San Antonio, Texarkana, Waco, and Wichita Falls, Tex.

Among the more important railroad lines involved in these inspections were the following: Abilene & Southern; Atchison, Topeka & Santa Fe; Baltimore & Ohio; Chesapeake & Ohio; Chicago & Alton; Chicago, Rock Island & Pacific; Cleveland, Cincinnati, Chicago & St. Louis; Fort Worth & Denver City; Gulf, Colorado & Santa Fe; Gulf, Mobile & Northern; Illinois Central; International & Great Northern; Louisiana & Arkansas; Louisville & Nashville; Missouri-Kansas-Texas; Missouri Pacific; Mobile & Ohio; Nashville, Chattanooga & St. Louis; Pennsylvania; Seaboard Air Line; Southern; Southern Pacific; St. Louis-San Francisco; St. Louis Southwestern; Texas & Pacific; Wabash; and the Wichita Valley.

During two of the large gatherings within this district, the mardis gras at New Orleans and Derby day at Louisville, special investigations were made in the matter of sanitary facilities and operation with respect to the 235 Pullman cars parked for occupancy. Due to the check-up made at New Orleans in 1929 the organization of this work at that city was found superior to that at Louisville. The deficiencies noted at most of the parking areas at the latter city well indicate the importance of closer supervision being exercised over matters of this nature by the city, State or Federal Government.

Inspections were made of 18 dining cars primarily to ascertain sources of milk supply being used. In nearly all cases it was found that pasteurized milk was available and is being used.

During the last half of the year this office, at the request of the Joint Committee on Railway Sanitation of the American Railway Association, conducted rather extensive studies at New Orleans concerning the efficiency of different methods of cleaning and sterilizing railroad drinking-water coolers and soil cans. This work involved 149 bacteriological water samples which were examined by the joint State and city laboratory at New Orleans.

At the request of the same organization, a series of tests were conducted at Forth Worth in an attempt to secure some idea of the relative sanitary value of different types of hose nozzles used in filling coach water coolers or tanks. This work included the examination of 63 bacteriological water samples by the city health department laboratory.

These tests were made possible through the cooperation of the Illinois Central system and the St. Louis Southwestern Railway Co., respectively, and the two laboratories referred to above. Special reports of these studies were prepared and submitted to the Public Health Service and others interested.

In accordance with the request of the Texas State Department of Health, sanitary surveys were made by personnel of this district of the municipal supplies used by interstate carriers at Abilene, Amarillo, Austin, San Antonio, Waco, and Wichita Falls. This duty was in connection with recommendations for certification of these supplies for the year 1930.

SHELLFISH SANITATION

The shellfish season on the Gulf coast during the season of 1929-30 was not of the best from a commercial standpoint, and for that reason lasted only about four months, many of the large shops being closed early in February.

With the exception of a survey made by the Louisiana State Department of Health in October to determine the cause of a rather acute outbreak of intestinal disorders following the eating of oysters, and a few bacteriological examinations made of reef oysters by Mississippi, there were no extensive surveys of oyster-producing areas made in this district.

The Louisiana survey led the State health department to the conclusion that excessive salt content of the Louisiana oysters due to abnormal tides and lack of fresh water dilution was the cause of the aforementioned outbreak. No evidence was found of dangerous pollution of the producing areas.

During the season shellfish sanitation certificates were issued by the States as follows: Alabama, 18; Louisiana, 35 (half of which were renewals after January 1); Mississippi, 34; and Texas, 1.

Inspections of these plants were made by the States as follows: Alabama, 132; Louisiana, 84; Mississippi, 212; Texas, 1. In addition, the district engineer visited approximately 75 per cent of the certified establishments in the district at least once during the season, making several visits to those in Louisiana and Mississippi. Plant sanitation was found to be improved considerably and much of this is due to improved excreta-disposal facilities at the Mississippi establishments.

Considerable difficulty was experienced by reason of oyster shipments without proper identification being shipped or trucked from one State to another. This was particularly true in connection with the trucking of uncertified shell stock from western Florida into Alabama and Mississippi.

The part played by the Public Health Service as an intermediary between the producing and the consuming States within the district

in the matter of advice to the latter that the former had not issued or had revoked certificates covering establishments, appeared to be most effective in securing improved sanitation without the necessity of the producing State resorting to legal prosecution with its frequent delays and chances of lost cases through friendly and sympathetic local magistrates or jurors. Rejection of shipments strikes a more responsive chord in the economic make-up of an insanitary dealer.

COOPERATION WITH BUREAU OF INDIAN AFFAIRS

Sanitary surveys were made of the following jurisdictions of the Bureau of Indian Affairs in Oklahoma: Jones Academy at Hartshorne; Eufala Boarding School at Eufala; Cheyenne and Arapaho Agency and School at Concho; Kiowa Agency, Riverside Boarding School, and Anadarko Boarding School at Anadarko; Seger Agency and School at Colony; Kiowa Hospital and Fort Sill Boarding School at Lawton; Bloomfield Seminary at Ardmore; Mekusukey Academy at Seminole; Shawnee Agency and Sanatorium at Shawnee; Choctaw-Chickasaw Sanatorium at Talihina; Chilocco School at Chilocco; Claremore Hospital at Claremore; Euchee Boarding School at Sapulpa; Osage Indian Village and Agency at Pawhuska; Greyhorse Indian Village at Fairfax; Hominy Indian Village at Hominy; Quepaw Agency and Seneca Boarding School at Wyandotte; Pawnee Agency, Hospital and School at Pawnee; Ponca Sub-agency near Ponca City; Sequoyah Orphan Training School at Tahlequah; Wheelock Orphan Academy at Millerton; and the Choctaw Agency.

The hospital at Philadelphia, Miss., and the six schools of that agency located in several counties of east central Mississippi were also surveyed.

Individual reports with recommendations were prepared for each of these surveys and submitted to the Public Health Service for transmission to the Commissioner of Indian Affairs. During the course of these surveys and by correspondence considerable advice and assistance have been given to the various superintendents of Indian jurisdictions, chiefly in connection with water-supply and sewage-disposal problems.

CONTRACTORS' LABOR-CAMP SURVEYS

For the purpose of furnishing to the office of the Surgeon General of the Army and the State health departments of the Mississippi flood-control States some idea relative to sanitation of the labor camps maintained by contractors engaged in flood-control operations on the river between Cairo, Ill., and New Orleans, La., sanitary surveys were made of 54 such camps. This represented about 80 per cent of the camps which existed between October, 1929, and February, 1930.

It was understood that the States concerned were desirous of instituting sanitary-control measures appropriate to the conditions found.

These surveys were largely concerned with sources of water supply used at these camps, milk and food supplies, excreta and waste disposal, and allied sanitation. A full report with recommendations and illustrations was submitted in March covering these surveys.

assistant during a part of one month. There are, in the 11 States of the two districts, 450 vessels engaged in interstate traffic and of this number 282 were inspected and 228 regular certificates issued. There were 31 temporary certificates issued. The figures for inspections and certificates issued are practically the same as those reported for the calendar year 1928, and the time devoted to vessel-inspection work was practically the same for the two calendar years. There were during the year two cases of typhoid fever among the crews of vessels engaged in interstate traffic.

RAILROAD WATER-SUPPLY AND SANITATION SUPERVISION

While engineers were on details to the national parks, Indian reservations, customs stations, and Forest Service work, conferences were held with all of the State health officers and the State sanitary engineers of the 9 States having State sanitary engineers, and considerable time was spent with the health officers of the 2 States in the 2 districts that do not have engineers. The assistance given State health departments with regard to interstate water supplies included surveys of 3 water supplies in the State of Washington and 14 supplies in California.

In addition to the assistance rendered State health departments in connection with interstate water supplies, Public Health Service engineers made investigations, at the request of State health officers, at Elko, Nev., Ogden, Utah, and Helena, Mont., and a special investigation was made of the pollution of the Salt River and tributary canals in the vicinity of Phoenix, Ariz.

COOPERATION WITH CITY HEALTH DEPARTMENTS

Conferences were held during the year with the city health officers of San Francisco, Calif., Portland, Oreg., Seattle, Wash., Phoenix, Ariz., Ogden, Utah, and Helena, Mont. The work with the city health officers consisted largely of conferences regarding ordinances for milk supplies and various local problems of sanitation.

SANITATION IN THE NATIONAL PARKS AND MONUMENTS

General.—The activities carried on in connection with work in the national parks, other than that identified with any particular park or monument, included: (1) Preparation of a report and standard plans in conjunction with the chief landscape engineer of the Park Service, for a standard housekeeping cabin for the national parks; (2) attendance at the Annual Conference of National Park Superintendents held at Yellowstone National Park; (3) collection of data on the cost of supplying water to the various operators in the national parks, together with schedule of rates to be charged for collection and disposal of garbage; and (4) design of a spark arrester for use on incinerators in the national parks.

In general, the work performed with regard to sanitation in the individual parks and monuments consisted of general inspections of all the hotels, lodges, cafeterias, housekeeping units, swimming pools, and other places handling, selling, or serving food products, and inspections of Government automobile tourist camps and other operations of the Government in the parks, where problems of sanitation were involved.

The more important activities carried out in the various parks and monuments were as follows:

Bryce Canyon National Park.—A tentative agreement was prepared, at the request of the superintendent of the park, for the operation and maintenance of the sewerage system and disposal plant which were built partly by the Utah Parks Co. and the National Park Service, and plans were prepared for an extension of the sewer system and an addition to the disposal plant, which were constructed by the Park Service.

Carlsbad National Park.—This park was a national monument until May, 1930. Recommendations were given for increasing the water supply at the cavern, which included the construction of storage tanks to catch the flow of water from a small canyon, and information was furnished the superintendent regarding the construction of a sewerage system and disposal plant which were designed by the Public Health Service engineers.

Casa Grande National Monument.—Plans, bills of material, and specifications were furnished the superintendent for a sewerage system and disposal plant, and recommendations were given for increasing the water supply.

Crater Lake National Park.—Plans and specifications were furnished for a sewerage system and disposal plant for the Government automobile camp grounds, housekeeping camps at the rim area, and information was furnished the superintendent regarding measures to be taken for conserving and increasing the water supply at Government headquarters and the rim area.

General Grant National Park.—Recommendations were submitted to the superintendent of this park for developing additional water, collecting and burning garbage, and improving the operation of the sewage-disposal plant.

Glacier National Park.—The work done in connection with this park during the year included general inspections and recommendations for a new sewerage system and disposal plant for headquarters at Belton, Mont., and design of sewerage systems and disposal plants for Hudson Bay Divide and Logan Pass.

Grand Canyon National Park, South Rim.—An engineer from this station was detailed to the South Rim at the request of the superintendent of the park to operate the sewage treatment and reclaiming plant for one month. This plant continued to produce a quality of effluent equal to that required under the Treasury Department standards for drinking water, and the amount of water reclaimed exceeded that produced during the preceding year by approximately 10 per cent on the average, the net value of the reclaimed sewage in terms of fresh water hauled to the canyon was in the neighborhood of \$300 a day. As a result of the demonstration that sewage can be reclaimed in such manner as to be practical and relatively free of danger to public health, the cities of southern California have taken an active interest in the problem of sewage reclamation, and the Chamber of Commerce of Los Angeles has gone on record as recommending reclamation of all the sewage produced by the city.

North Rim.—Plans, specifications, and bills of material were prepared for an incinerator for the Utah Parks Co. who own and operate hotel and lodge accommodations at the North Rim of the canyon, and recommendations were given for the operation of the sewage-disposal plant which was designed by Public Health Service engineers.

Grand Teton National Park.—Tentative plans and estimates were prepared for water-supply systems, sewerage systems and disposal plants for Government automobile camp grounds, to be constructed at String and Jenny Lakes.

Lassen Volcanic National Park.—Plans and estimates of cost were submitted to the superintendent for a new water-supply system and a sewerage system and disposal plant.

Mesa Verde National Park.—No inspections were made at this park during the year, but estimates were submitted for a sewerage system and a disposal plant which would produce an effluent satisfactory for certain industrial purposes.

Mount McKinley National Park.—Recommendations were submitted to the superintendent for waterproofing a concrete water-storage tank and for a sewerage system.

Mount Rainier National Park.—In addition to general inspections, plans were prepared for a sewerage system and disposal plant for Yakima Park which is a new development in the park, and data were furnished regarding cost of collecting, hauling, and burning garbage at Paradise Valley.

Pinnacles National Monument.—Estimates were prepared and recommendations given for development of a new water supply and a sewerage system and disposal plant for a new Government automobile camping ground, and recommendations were given for increasing the water supply at the camp grounds used at the present time.

Platt National Park.—Plans submitted by the superintendent of the park for a sewerage system to be constructed by the city of Sulphur, Okla., were reviewed, and plans were approved for remodeling the pavilion and equipment at Bromide, Medicine, and Chloride Mineral Springs.

Rocky Mountain National Park.—In addition to inspections made throughout the park, reports were submitted which included tentative plans for sewerage systems at the camp grounds at Glacier Basin, Aspenglen, and Endo Valley, and recommendations for improving operation of sewage plants at the hotel at Grand Lake and the lodge at Bear Lake.

Sequoia National Park.—Assistance was given the superintendent in the construction of a sewerage system and disposal plant at Government headquarters.

Wind Cave National Park.—Recommendations were made to the superintendent for a new sewerage system and disposal plant, and the installation of a new water supply system.

Yellowstone National Park.—The more important work done for this park included: (1) Recommendations with estimates of cost for a new water pipe line at Mammoth headquarters; (2) preparation of rate tables showing cost of producing water and cost of operating sewage disposal plants and garbage incinerators at the five important junctions in the park; (3) preparation of plans for sewerage system and disposal plant for the fish hatchery headquarters at the lake junction; and (4) general recommendations for remodeling and extending sewerage systems and disposal plants at the Thumb and Fishing Bridge areas.

Yosemite National Park.—The most important work in connection with sanitation in this national park was the design of a sewage-treatment plant and the assistance given the superintendent in con-

nection with the design of approximately 4 miles of sewer line. The sewage treatment plant was designed to treat approximately 1,500,000 gallons of sewage daily, and the plant will be, when constructed, more complete than the one now in operation at the Grand Canyon. The peculiar conditions on the floor of the valley require that the plant be inconspicuous, that there be no odors of any kind, and that the effluent shall be of the highest quality possible both from the standpoint of stability and bacteriological content. To meet these conditions it was necessary to locate the plant where it will not be conspicuous from the highways located within 100 yards on the floor of the valley, and the highways leading up out of the valley along the walls to the east and west, and to provide treatment units that would not produce odors and would produce an effluent that would in no way affect the water in the Merced River. Complete plans were submitted for a treatment plant to meet the conditions stated above and specifications were prepared for all the material in connection with the design and construction of the sewerage system and treatment plant.

In addition to the work described above, specifications were prepared for five pumping units with auxiliary gas engine power units for pumping sewage, and two pumping units for water supplies, and plans were prepared for settling tanks for removing grease and oils from garages operated by the Yosemite Park & Transportation Co.

COOPERATION WITH THE OFFICE OF INDIAN AFFAIRS

There were made during the year 53 inspections at Indian agencies, subagencies, and schools, and plans were prepared for water supply or sewerage and disposal systems at the Tongue River Agency, Fort Belknap Indian Agency, Colorado River Indian Agency, Western Shoshone Agency, Jicarilla Agency, Consolidated Ute Agency, Flathead Agency, and Coeur d'Alene Agency.

COOPERATION WITH UNITED STATES CUSTOMS SERVICE

Inspection trips were made to the Babb-Piegán border station in Montana and the San Luis border station in Arizona. Recommendations were made for a water-supply system and sewerage system and disposal plant for both these stations. Plans and specifications were submitted for a sewerage system and sewage disposal for the Pacific Highway border station at Blaine, Wash.

COOPERATION WITH THE UNITED STATES FOREST SERVICE

At the request of the forest supervisor at Portland, Oreg., a survey was made of the springs and camp grounds at the place known as Ohanapecosh Hot Springs, and recommendations were given for improvements at the springs and for location and development of a new tourist camping ground. Inspections were also made at the Teton National Forest in Wyoming, and recommendations given for improving sanitary conditions.

SHELLFISH SANITATION

A survey was made by a Public Health Service engineer of the shellfish-growing areas and packing plants in the State of Washington.

MISCELLANEOUS ACTIVITIES

The miscellaneous activities included: (1) Attendance by Public Health Service engineers at (a) annual meetings of the Arizona Public Health Association, (b) western branch of the American Public Health Association, (c) California section, American Water Works Association, and (d) California Sewage Works Operators' Association. Papers prepared by Public Health Service engineers were read at the meetings held by the Arizona Public Health Association and the western branch of the American Public Health Association. (2) Collection of data in the 11 States of the 2 districts regarding the number of cities in the respective States that produce grade A milk, pasteurized according to the United States Public Health Service Standard Sanitary Milk Code. (3) Report to medical officer in charge Angel Island quarantine station regarding advisability of softening the water used at the station for domestic purposes and the type of softener best suited for the water at the station. (4) Investigation of the deterioration of concrete pipe used for carrying domestic sewage.

TABULAR SUMMARY

<i>I. Vessel water-supply supervision</i>		<i>VI. Miscellaneous—Continued</i>	
Inspections:		Cooperation with Federal agencies:	
First inspections—		Indian Affairs—	
Passenger.....	5	Surveys.....	53
Freight.....	38	Plans prepared.....	8
Reinspections—		Conferences.....	7
Passenger.....	27	Bacteriological examinations, U. S. Public Health Service.....	71
Freight.....	68	Bacteriological examinations, State.....	25
Certificates issued:		Chemical examinations, United States Public Health Service.....	17
Temporary.....	159	National Park Service—	
Regular (favorable).....	33	Surveys.....	21
Water examinations: Samples.....	0	Plans prepared.....	18
Typhoid fever cases: Reported.....	1	Conferences.....	36
Major conferences.....	3	Examinations of water, U. S. Public Health Service laboratory.....	296
<i>II. Railroad water-supply supervision</i>		Penitentiaries—	
Inspections:		Surveys.....	0
Sources of water supply.....	34	Plans prepared.....	0
Coach yards, terminals, watering points.....	0	Conferences.....	0
Water examinations: Samples.....	59	Customs Service—	
Major conferences.....	20	Surveys.....	2
<i>III. Shellfish sanitation supervision</i>		Plans prepared.....	3
Inspections:		Conferences.....	3
Areas.....	2	Forest Service—	
Plants.....	5	Surveys.....	2
Certificates:		Plans prepared.....	0
State certificates approved.....	31	Conferences.....	3
State certificates not approved.....	0	Miscellaneous laboratory examination:	
Laboratory examinations:		Water.....	0
Water.....	6	Other.....	0
Shellfish.....	0	Technical papers prepared.....	2
Major conferences.....	2	Technical meetings attended.....	4
<i>IV. Miscellaneous</i>			
Cooperation with State departments:			
Surveys.....	5		
Conferences.....	11		

RURAL HEALTH WORK

Cooperative demonstration projects in rural sanitation were carried on during the fiscal year ended June 30, 1930, in 202 counties in 24 States as follows:

Counties		Counties	
Alabama.....	8	Mississippi.....	11
Arkansas.....	21	Missouri.....	14
California.....	3	Montana.....	3
Georgia.....	4	New Mexico.....	7
Idaho.....	2	North Carolina.....	4
Illinois.....	1	Oklahoma.....	3
Iowa.....	1	South Dakota.....	1
Kansas.....	9	Tennessee.....	22
Kentucky.....	31	Texas.....	1
Louisiana (parishes).....	24	Virginia.....	13
Massachusetts.....	1	Washington.....	1
Michigan.....	2	West Virginia.....	15

The details relating to the work carried on in the 202 projects are made the subject of a special report.

The appropriation for the rural sanitation work of the Public Health Service for the fiscal year 1930 was \$346,000. Against the amount appropriated was set up a budget saving of \$2,000. The unexpended balance from the operations of the preceding fiscal year was \$7,720.72. Thus \$351,720.72 was available for expenditure during the fiscal year 1930. Of this amount a total of \$331,697.14 was expended through specific allotments toward the support of 202 field projects and \$10,096.81 was used for special studies and administration.

According to the data collected by the rural sanitation office from the State health departments the number of counties or equivalent divisions provided with local health service reaching all rural sections thereof, under the direction of whole time county or district health officers, was 505 at the beginning of the calendar year 1930, as compared with 467, 414, 337, 307, 280, 250, 230, 202, 191, and 109 at the beginning of the calendar years 1929, 1928, 1927, 1926, 1925, 1924, 1923, 1922, 1921, and 1920, respectively. The gain of 396 within this 10-year period is significant.

The prospects are good for a better rate of progress in this vitally important field in the next few years. Public-health administrators generally now appear convinced that local official health service under the direction of a whole-time local health officer is the most essential element in the development of an adequate system of effective and economical public-health service in the United States, and that most of the work of the Federal and State health agencies should be conducted with and through such local health departments. State health departments in increasing number from year to year are obtaining authorization and appropriations to enable them more nearly to do their proportionate part in the development and maintenance of whole-time county health service. The cooperative demonstration work of the Public Health Service in rural sanitation evidently has been a very important factor in the development of efficient economical whole-time rural (county) health service in the United States. It would appear altogether advantageous for this activity of the Public Health Service now to be placed technically on a cooperative instead of a demonstration basis and be conducted on a largely increased scale.

COOPERATION WITH STATE AND MUNICIPAL BOARDS OF HEALTH IN THE PROVISION OF ADEQUATE RULES AND REGULATIONS FOR THE PREVENTION OF THE INTRODUCTION AND SPREAD OF CONTAGIOUS AND INFECTIOUS DISEASES

At the request of State and municipal health authorities studies of the rules and regulations pertaining to the prevention of the spread of contagious and infectious diseases were conducted at the following places and appropriate recommendations were submitted: Alameda County, Calif.; August, Ga.; Fort Smith and Pine Bluff, Ark.; Iowa State Department of Health; and Des Moines, Iowa.

Reports of the studies of Fort Smith, Pine Bluff, and the Iowa State Department of Health have been published in the Public Health Reports during the fiscal year. It is expected that the reports of the other surveys will be published through the same channel in the course of the next fiscal year.

SPECIAL STUDIES OF PUBLIC HEALTH ADMINISTRATION IN TENNESSEE

Through the cooperation of the Tennessee State Department of Health an opportunity was afforded for the detail of Surg. J. W. Mountin to conduct studies and experiments in local public health administration in order that accurate scientific information might be secured upon which to base recommendations for more effective measures for preventing the introduction and spread of contagious and infectious diseases. The results of these studies will be published from time to time. Among other work, an analysis has been made of the types of records now in use in the State department of health, together with a critical study of the material which should be recorded and the manner in which it should be entered. This was followed by the development of a tentative record and report system which will be ready for publication in the near future. A manual for the conduct of county health departments has also been prepared for Tennessee, and the practicability of the recommendations is being tested. This will shortly be revised in the light of the experience gained and will then be published in a form which will be of benefit to county health administration generally. A study of the development of public health administration in Tennessee, embracing past, present, and future plans, has been completed and will also be issued in the near future. Information of value and interest to all public health administrators is contained in this study.

MISCELLANEOUS ACTIVITIES

In response to a request from the Department of the Interior received on August 15, 1929, Surg. R. R. Spencer was detailed to investigate an outbreak of disease in Yellowstone National Park, where he arrived on August 22. It was learned that the epidemic, which was of unknown origin, had reached its peak on August 7 when about 200 guests at the Lake Hotel became suddenly ill. The symptoms consisted of a sudden onset of nausea, vomiting, sharp pain in the abdomen, and diarrhea. After persisting for a few hours

the symptoms gradually subsided and an uneventful recovery was made, usually within 24 to 36 hours. As a result of Surgeon Spencer's investigation it seems probable that water, milk, vegetables, and other foods can be eliminated as the source of the trouble. The condition, however, is a communicable infection which, like the respiratory diseases, spreads for the most part from person to person. Due to the fact that the epidemic had very nearly subsided by the time that Surgeon Spencer arrived at Yellowstone Park, a complete epidemiological and laboratory study was impossible. Plans have been made, however, to detail him to Yellowstone Park early in the summer of 1930, in order that he may make a complete study and, if possible, determine the cause of outbreaks of this character which have occurred in a number of the national parks and in numerous other sections of the country as well. A detailed report of the study made by Surgeon Spencer in 1929 is available in the files of the domestic quarantine division under date of September 10, 1929.

At the request of the Arizona State Department of Health, assistance was given to the State and local authorities in establishing measures for the control of cerebrospinal meningitis in the vicinity of Globe, Ariz., and in the prevention of its spread. Surg. H. A. Spencer was detailed for that purpose and the report of his work is contained in the files of the domestic quarantine division under date of September 8, 19, and 25, 1929.

At the request of State and local health authorities of Louisiana, Surg. C. V. Akin was detailed to cooperate in the prevention of the spread of meningitis in East Carroll Parish. His report is contained in the files of the domestic quarantine division under date of January 22, 1930.

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

In accordance with the act of July 1, 1902, the Twenty-eighth Annual Conference of the Public Health Service with the State and Territorial health officers was held in Washington, D. C., June 18-20, 1930. Delegates from 37 States and the District of Columbia, and visitors from the Pan American Sanitary Bureau and many of the provincial health departments of Canada, were in attendance. Joint sessions were held with the Forty-fifth Annual Conference of State and Provincial Health Authorities of North America.

An interesting 3-day program was arranged, and the following subjects were discussed:

1. Psittacosis.
2. Morbidity reporting area.
3. Latest information regarding the value of scarlet fever immunization.
4. Recent progress in studies of undulant fever.
5. Policies of the Rockefeller Foundation affecting State and provincial health work.
6. Evolution of a State health department.
7. Epidemiological problems in State health work.

8. County health work appraisal on basis of morbidity and mortality.
9. Health education.
10. Relation between the practicing physician and departments of health.
11. Antirabic paralysis—consideration of various vaccines.
12. Summary of pharmacological findings in studies of "Jamaica ginger" paralysis.
13. Prevalence and trend of epidemic meningitis.
14. Observations in India.
15. White House conference on child health and protection symposium.
16. Toxoid versus toxin-antitoxin.
17. Cancer.
18. Prevention of hookworm disease and approved methods of control.

DIVISION OF FOREIGN AND INSULAR QUARANTINE AND IMMIGRATION

In Charge of Asst. Surg. Gen. F. A. CARMELIA

QUARANTINE TRANSACTIONS

During the fiscal year 1930, officers of the Public Health Service engaged in the administration of the United States quarantine laws inspected 25,571 vessels and 3,361,729 persons. Of these, 17,619 vessels, 825,904 passengers, and 1,163,915 members of crews were inspected at the continental maritime stations. At insular stations 3,026 vessels, 141,416 passengers, and 216,326 members of crews were inspected. At foreign stations 4,926 vessels, 514,590 passengers, and 410,604 members of crews destined for ports of the United States were inspected. There were 3,690 vessels fumigated or disinfected at continental stations, 647 at insular stations, and 852 at foreign stations. At the border quarantine stations there were 88,974 travelers inspected, exclusive of the local interurban traffic, numbering 7,182,174 who were under surveillance.

GENERAL PREVALENCE OF QUARANTINABLE DISEASES

Yellow fever.—The outbreak of yellow fever which occurred last year in the interior of Colombia ended shortly after the beginning of the fiscal year and no yellow fever has been reported in Colombia since July, 1929.

Yellow fever continues to be reported from the Gold Coast of Africa, one case having occurred in Liberia, where an officer of the Public Health Service has been especially detailed for duty in connection with the control of this disease.

The prevalence of yellow fever in Brazil decreased during the spring of 1929, and only a few cases were reported there during the year ended June 30, 1930. There have been cases reported from the port of Para at the mouth of the Amazon River, and several interior Brazilian places. This situation has warranted the issuance of a yellow fever quarantine declaration against Para and an advisory warning notice respecting the possibility of other Brazilian ports being infected from outbreaks occurring in the interior.

The mosquito which carries and spreads yellow fever has been reported exceedingly prevalent in the South Atlantic and Gulf coast territory of the United States and the undetected arrival and subsequent entry of a single case of yellow fever would result in a serious outbreak.

Cholera.—Cholera was confined principally to the continent of Asia during the year. As usual, the greatest number of cases was

reported in British India, but the disease was reported in China, Japan, and Indo-China. Cases were also reported in Ceylon and Chosen, and there was an outbreak in June, 1930, in Afghanistan.

During the latter part of May, 1930, an outbreak of cholera occurred in the Philippine Islands. This outbreak principally involved the rural communities, centering in the south central part of the Philippine Archipelago. Toward the close of the fiscal year the situation attained threatening proportions. The southern Philippine port of Cebu had become infected, but Manila remained uninfected in the port proper, although several isolated cases occurred in the outlying adjacent rural districts. Interisland quarantine has been declared against Cebu, but a quarantine measure of this character is impracticable of enforcement against the smaller native fishing boats which travel promiscuously among the islands. At the close of the fiscal year the situation became so threatening that a maritime quarantine against the Philippine Islands was being contemplated as a measure of protection against the transmission of the infection, particularly through oriental steerage passengers destined to the Hawaiian Islands and the Pacific coast ports of the United States.

Plague.—Plague was reported from practically all parts of the world. In some years the number of cases of this disease reported in northern India is greater than for all the remainder of the world. However, the prevalence of plague in northern India has been decreasing since 1924.

In Europe during the fiscal year plague was reported in Greece and in the Province of Naples, Italy, and in Paris, France. This disease was also reported present in the Azores Islands. In Asia the disease was reported in many countries, including Turkey, Syria, Iraq, India, Ceylon, Siam, Straits Settlements, Dutch East Indies, Indo-China, Kwang-Chow-Wan, China, Japan, Chosen, and the Union of Socialist Soviet Republics. In Africa plague was reported during the year in Egypt, Tunisia, Algeria, Morocco, Canary Islands, Dakar, Senegal, Dahomey, Nigeria, Belgian Congo, Cape Province, Orange Free State, Tanganyika, Kenya, Uganda, and in Madagascar. In South America this disease was reported in Brazil, Argentina, Chile, Peru, and Ecuador.

Plague, by reason of its wide geographical distribution and the method of its spread, remains one of the major pandemic diseases which requires the constant vigilance of health authorities in all countries. No cases of this disease, however, occurred on board vessels arriving at United States quarantine stations during the year.

Smallpox.—Smallpox is, perhaps, the most widespread of the quarantinable diseases. During the fiscal year, cases of smallpox were reported from nearly all the countries of the world, although there did not occur any notable outbreak of this disease in epidemic proportions.

Typhus fever.—Typhus fever was reported during the fiscal year from many ports with which we have commerce. It is endemic in Mexico, Ireland, and in many eastern European countries. The number of cases occurring have decreased annually since the World War, but the disease still continues to be widespread.

CHANGES IN QUARANTINE PROCEDURE

The reciprocal quarantine arrangement entered into between the Government of the United States and the Dominion of Canada, under the provisions of articles 56 and 57 of the International Sanitary Convention signed at Paris June 21, 1926, to accord reciprocal recognition to quarantine pratique granted by either Government to vessels entering their international waters, was completed the latter part of the year 1929 and became effective January 1, 1930. This arrangement appears to be working out to the satisfaction of both countries and has proved of considerable benefit to maritime commerce entering those international waters destined to ports in both countries.

The necessary arrangements respecting this agreement were completed through an exchange of notes between the Secretary of State for External Affairs, Ottawa, Canada, and the Minister of the United States attached to the United States Legation at Ottawa, and have been published as State Department Executive Agreement Series No. 1. These notes read as follows:

DEPARTMENT OF EXTERNAL AFFAIRS, CANADA,
Ottawa, October 10, 1929.

No. 132

SIR: With reference to your note No. 480, of the 30th September, intimating that the public health authorities of your Government were agreeable to an exchange of notes for the purpose of establishing an arrangement between our Governments to provide for the acceptance by each Government of the quarantine inspection of the other in respect of vessels from foreign ports entering Puget Sound and adjacent waters, or the Great Lakes via the St. Lawrence River, in the terms suggested in my note No. 45, of the 2d May last, I have the honor to state that His Majesty's Government in Canada is prepared, in accordance with the provisions of articles 56 and 57 of the International Sanitary Convention signed at Paris the 21st June, 1926, to agree with the Government of the United States of America that vessels from foreign ports destined for both Canadian and United States ports located on the Straits of Juan de Fuca, Haro, Rosario, Georgia, Puget Sound, or their tributaries or connected waters, or so destined to ports on the Great Lakes and St. Lawrence River shall undergo quarantine inspection by the quarantine officers of that Government having jurisdiction over the primary port of arrival, and when cleared from quarantine in accordance with the provisions of the said International Sanitary Convention shall receive free pratique, the document granting such pratique to be issued in duplicate, that the original shall be presented upon entry at the primary port of arrival, and that the duplicate shall be presented to the proper quarantine officers upon secondary arrival and entry at the first port under the jurisdiction of the other Government, and shall be accepted by that Government without the formality of quarantine reinspection, provided that cases of quarantinable disease have not been prevalent in the ports visited and have not occurred on board the vessel since the granting of the original pratique, and provided further that the observance of the provisions of article 28 of the said convention shall not be modified by such agreement.

It will be understood that on the receipt of a note from you expressing your Government's concurrence in this agreement it shall become effective, and the necessary administrative steps in connection with its operation shall be taken.

Accept, sir, the renewed assurances of my highest consideration.

W. H. WALKER,
For the Secretary of State for External Affairs.

THE HON. WILLIAM PHILLIPS,
*Minister of the United States of America,
United States Legation, Ottawa.*

LEGATION OF THE UNITED STATES OF AMERICA,
Ottawa, Canada, October 23, 1929.

No. 502

SIR: I have the honor to acknowledge the receipt of your note No. 132, of October 10 last in regard to the proposed establishment of an arrangement between our Governments to provide for the acceptance by each Government of the quarantine inspection of the other in respect of vessels from foreign ports entering Puget Sound and adjacent waters, or the Great Lakes via the St. Lawrence River.

It gives me pleasure to inform you that my Government accepts the terms of the agreement as set forth in your note No. 132 of October 10, 1929.

I avail myself of the occasion to renew to you, sir, the assurances of my highest consideration.

WILLIAM PHILLIPS.

The Right Hon. WILLIAM LYON MACKENZIE KING, C.M.G., LL.B., LL.D.,
Secretary of State for External Affairs, Ottawa.

Following the completion of formal arrangements between the Governments concerned, the necessary instructions with respect to the carrying out of this arrangement were issued to quarantine officers and others concerned through the issuance of Department Circular No. 420, dated December 30, 1929.

The remarkable development of aerial transportation has brought with it international sanitary and public-health problems of major importance. Regular lines of aircraft have been established, providing direct and rapid communication between areas in Africa, Asia, and South America, which have long been endemic centers of various pestilential diseases, such as cholera, plague, and yellow fever, and noninfected but infectible territory in Europe, North America, and in fact almost all the rest of the entire world. The journey by airplane from most of the endemic centers of these various pestilential diseases is usually less than the incubation period of these diseases, excepting journeys from endemic centers of cholera.

The problem of the satisfactory control of aerial transportation has been a matter of serious interest not only to this country but to the countries of Latin America and the countries of Europe, Africa, and Asia. As a consequence, a preliminary draft of a proposed international agreement for the sanitary control of aircraft prepared by a special international commission known as the Quarantine Commission of Air Navigation, which met at Paris on March 11, 1930, was submitted to the Permanent Committee of the Office International d'Hygiene Publique during its May, 1930, session. The Surgeon General, who represents this Government on that committee, was requested to ascertain the views of the Pan American countries with reference to the technical changes in the proposed draft, and the subject will probably be a major one for discussion at the autumn meeting of the committee.

The east coast of the United States now has direct aerial communication with islands of the Caribbean, the east and west coasts of South America, Mexico, and Central American countries, while the west coast and the Rio Grande border have direct communication with Mexico and Central American countries. To date a total of 23 airports have been designated airports of entry, at which quarantine and medical immigration inspections are required to be made by

the Public Health Service. During the past year the Public Health Service made the necessary arrangements for the performance of the necessary quarantine and immigration medical examinations in connection with the establishment of airports of entry at Ajo, Douglas, and Nogales, Ariz.; El Paso, Laredo, and Eagle Pass, Tex.; Portal, N. Dak.; Port Angeles and Bellingham, Wash.; Newport, Vt.; Malone, N. Y.; Scobey and Havre, Mont.; Detroit, Mich.; and San Pedro, Calif. Information has also been received of the designation of airports of entry at Pembina, N. Dak.; Spokane, Wash.; Watertown and Plattsburg, N. Y.; Minneapolis, Minn.; and Great Falls, Mont., but as there is no medical officer of the Public Health Service stationed in or near these ports, and as funds for the employment of additional medical personnel are not available, it was impracticable to make suitable arrangements for the required quarantine and medical immigration examinations incident to the arrival of aircraft at these ports from foreign ports.

During the year legislation was introduced which had for its major object authorization and provision for 24-hour quarantine inspection service at all United States ports. This legislation was the result of a detailed study made by several important port authorities, shipping interests, and others concerned to determine the need for such services. Results of these studies were transmitted to the Treasury Department and to the Public Health Service for consideration.

The quarantine regulations of the United States have for some 40 years past traditionally limited the performance of quarantine inspections to the hours between sunrise and sunset. This was largely done on medical grounds, as it had been deemed impossible to make a satisfactory quarantine inspection of vessels, particularly those arriving from ports infected with quarantinable disease, during hours of darkness. Within recent years, however, due to the availability of modern artificial lighting facilities on arriving steamers, objection from a medical viewpoint to the performance of quarantine inspections during hours of darkness no longer obtains in the same degree, and now it would be practicable to perform night inspections in the case of the majority of arriving vessels, with the proviso that the quarantine inspection of vessels from ports infected with quarantinable disease, notably plague or yellow fever, continue to be restricted to hours of daylight. Under present conditions this class of vessels constitutes a very small percentage of the total number of arrivals at United States ports.

There are other aspects of the extension of quarantine inspection service beyond the hour of sunset. Any extension of the present sunrise to sunset hours of duty will require provision by Congress of funds for the employment of additional personnel necessary for nighttime duty. Furthermore, the provisions of existing law requiring all ports to be treated on a basis of equality as regards quarantine matters is fundamental, and if night quarantine inspections were made available in one port, the law requires similar facilities be made available at all other ports. Therefore the necessity for extending quarantine inspections beyond the hour of sunset should be determined to exist at least in the majority of ports.

MENINGOCOCCUS (CEREBROSPINAL) MENINGITIS

Executive Order No. 5143, dated June 21, 1929, restricting for the time being the transportation of passengers from certain ports in the Orient to United States ports, the text of which was quoted in the annual report for the preceding fiscal year, and the special regulations of the Secretary of the Treasury prescribed in accordance with this order, continued in force during the fiscal year 1930. These regulations have proved effectual in attaining the essential control of the danger theretofore presented by the introduction of epidemic cerebrospinal meningitis into the United States. From time to time during the year, as changed conditions warranted, the Secretary issued amendments to the special meningitis regulations upon the recommendation of the Surgeon General, modifying the regulations so far as consistent with effectiveness, and thus removing as soon as practicable unnecessary restrictions upon maritime commerce.

Following the issuance of Executive Order No. 5143, the Surgeon General, by direction of the Secretary, convened a board of experienced and responsible medical officers to make recommendations respecting the scope and provisions of the regulations to be promulgated in accordance with the terms of the Executive order. As a result, the special meningitis regulations governing the embarkation of passengers and crew at ports in China and the Philippine Islands, and their transportation to United States ports was issued under date of July 11, 1929. These regulations were divided into three principal sections: Section A prescribed conditions governing embarkation, section B prescribed conditions governing transportation on shipboard, and section C prescribed the quarantine treatment of vessels arriving at United States ports with cases of meningitis on board. These regulations applied without discrimination as to nationality of vessels or of passengers. Embarkation was restricted to those oriental ports at which medical officers of the Public Health Service were detailed, thus providing suitable supervision, and included the principal ports from which vessels depart for United States ports, viz, Shanghai and Hong Kong, China, and Manila, P. I.

Absolute control of the spread of the disease under conditions obtaining on shipboard is impracticable; therefore it was necessary that the measures prescribed by such regulations be very comprehensive and severely restrictive. While these regulations admittedly were exacting, they were necessarily so and their proper observation was not impossible, although inconvenient, costly to a degree, and required readjustment of existing maritime practice. In opposition to such objection stands the costly expenditures at Pacific coast ports of the United States in efforts to prevent the introduction and spread of this dangerous disease, which latter interest is certainly paramount.

The first amendment to the regulations issued July 11, 1929, was made under date of August 5, 1929, and was adopted especially for the convenience of military forces of the United States located in north China by adding Tientsin and Peking to the list of ports in China from which persons might embark for United States ports.

Under date of August 29, 1929, the second amendment to the special meningitis regulations was issued. The first part of this

amendment exempted strictly cargo-carrying vessels from the observation of the prescribed requirements under section A of the regulations which govern embarkation. The second section of the second amendment was adopted to permit continuation of necessary commercial intercourse between the ports of Amoy and Manila. The third section of this amendment was adopted to facilitate commercial intercourse of first-class passengers departing from Manchuria, northern China, by way of Korea and Japanese ports.

In November, 1929, the board of medical officers reconsidered the whole meningitis regulations in the light of apparently decreased prevalence of the disease and, as a result thereof, the board re-drafted section A of these regulations, which was approved by the Secretary of the Treasury under date of November 6, 1929. This amendment required the detention of only those persons known or suspected to have been exposed to meningitis during the preceding 14 days, and permitted the embarkation without detention of those persons whom the medical officer believed to be free from signs or symptoms of the disease. However, in the early part of January, because of the arrival at United States ports of a number of vessels with cases of meningitis which had developed en route from the Philippines, the board of medical officers recommended as a temporary measure the resumption of the detention requirement and the bacteriological examination of all oriental steerage prior to embarkation at Manila.

While the number of cases of meningitis on vessels arriving at Pacific coast ports of the United States has been far less than during the preceding year, nevertheless an occasional vessel does arrive with cases of meningitis on board and it is considered advisable to enforce at ports of embarkation regulations aimed to prevent the recurrence of a condition such as existed during the spring of 1929.

PSITTACOSIS

Beginning in November, 1929, the occurrence of an unusual sickness, resembling influenza and typhoid fever, with a high mortality rate, began to be reported in various sections of the United States. Investigation revealed that these cases were associated with recently imported and acquired parrots. Inasmuch as the parrots involved were not confined to one species and had been imported from various parts of the world, and in the absence of definite knowledge otherwise concerning the disease, it was deemed advisable to stop the importation of all species of parrots from all countries for the time being until the disease could be studied. As a result, Executive Order No. 5264, dated January 24, 1930, was issued restricting for the time being the introduction of parrots into the United States. This Executive order is quoted herewith:

EXECUTIVE ORDER

RESTRICTING FOR THE TIME BEING THE INTRODUCTION OF PARROTS INTO THE UNITED STATES

Whereas there have been officially reported in widely separated portions of the United States since the middle of December, 1929, a considerable number of human cases, some of them fatal, of a disease communicated by infected parrots; and

Whereas there is evidence that such parrots have been introduced from ports outside of the continental United States; and

Whereas there exists danger of further such introduction;

Therefore in order to prevent the further introduction of disease communicable from parrots to human beings, from ports outside of the continental United States into the United States, by virtue of the authority vested in me by section 7 of the act of Congress approved February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the marine hospital service," it is ordered that no parrots may be introduced into the United States or any of its possessions or dependencies from any foreign port, for such period of time as may be deemed necessary, except under such conditions as may be prescribed by the Secretary of the Treasury.

This order shall take effect from and after this date.

HERBERT HOOVER.

THE WHITE HOUSE,

January 24, 1930.

(No. 5264)

In accordance with this Executive order, the Secretary of the Treasury, upon the recommendation of the Surgeon General, issued regulations under date of February 3, 1930, governing the importation of parrots into ports of the United States or its possessions. These regulations pertained only to members of the family "Psittacidae" and did not include cockatoos, macaws, parrakeets, or love birds, as the latter have not been extensively involved.

Under the provisions of these regulations, for the time being parrots are not permitted entry into ports of the United States, its possessions, or dependencies, from foreign ports, except that an individual privately owned parrot which has been maintained in a good sanitary environment in the quarters of an accompanying owner for not less than 60 days prior to arrival and which has not been exposed to contact meanwhile with other parrots, following proper certification of these facts, may, if apparently well, be permitted entry for transportation directly to the home of the accompanying owner.

In several instances there were embarked at a foreign port prior to the issuance of Executive Order No. 5264 parrots destined to and arriving at a United States port after January 24, 1930. The regulations of the Secretary of the Treasury in such instances authorized the parrots to be removed from the vessel to the United States quarantine station at the port of arrival and there held for such period of observation and under such conditions as were deemed advisable by the Surgeon General at the expense of the owner or consignee. Those arriving at a quarantine station which were known to have embarked at a foreign port subsequent to the issuance of the Executive order, were refused entry and were deported on the vessel upon which they arrived or in some circumstances were transferred to some other vessel in the same port for reshipment to a foreign port.

Studies undertaken at the National Institute of Health of the Public Health Service with respect to this disease have proved the transmissibility to man of infection from sick parrots; however, the identity of the causative organism of psittacosis and its mode of transmission from parrot to man still remains unknown, and further research is now being undertaken at the quarantine isolation hospital at Curtis Bay, Baltimore, Md.

RAT PROOFING OF VESSELS

The principle of eliminating or controlling structural rat harbor-age from maritime vessels, which was originally developed and advocated by the Public Health Service, is now embodied in the marine standard specifications officially adopted by the American Marine Standards Committee. The existence of a diminished quarantine hazard from plague which is conveyed by rats is now recognized in international sanitary conventions and vessels maintained in a condition affording minimum rat infestation are rewarded with special quarantine treatment. In addition, shipowners and operators now realize the benefits derived from diminished cargo damage due to rats. For both of these reasons remarkable progress is being made in the elimination of rat harborage from the rapidly increasing number of vessels. Practically all new contracts for construction of major ocean-going vessels now include such specifications providing for the elimination or control of structural rat harborage.

FLOATING EQUIPMENT

During the past year considerable effort has been directed toward the repair of old vessels, the condition of which warranted the required expenditure of funds, and the construction of new vessels to replace those condemned as unfit for further service.

The new construction program is well under way; several new vessels have been placed in service; and plans and specifications are now being prepared for additional vessels which are greatly needed to permit condemnation of vessels now unfit for service.

The station ship *Chase*, at the Fort Monroe quarantine station, was condemned and replaced by the 130-foot *Argus*, the living quarters of which are now being rearranged to make them suitable for the station personnel. The *H. W. Sawtelle* (65 feet) was entirely rebuilt; boiler and engine were replaced by a new Diesel engine, and an entirely new superstructure greatly improves the appearance of the vessel. Similarly, the tug *Elk* (60 feet) is at present undergoing reconstruction; superstructure and machinery were removed by station personnel and a new Diesel engine and superstructure are now being installed. The work of reconstructing the *Q-6* (35 feet), which was undertaken by station personnel during the past fiscal year, was completed. This boat now has a new engine and suitable trunk cabin forward, skiff-type pilot house amidships and open cockpit aft. The launch *Q-5* (40 feet) was reconstructed and now has a superstructure almost identical to that of the *Q-6*. The engine which was installed in this boat was taken from an old condemned hull of about the same size and is in very good condition. The *Q-5* has now been transferred to Honolulu to fill the needs of that station. The old unserviceable gasoline engine is now being removed from the launch *Q-10* (42 feet) to be replaced with a more reliable and modern Diesel engine. The worn-out gasoline engine was removed from the launch *Q-3* (33 feet) and has been replaced with a new gasoline engine fitted with reduction gear.

The 40-foot Diesel-driven wood hull work boat *Q-7*, the construction of which was commenced during the preceding fiscal year, was completed during the year. The new 91-foot tug *G. B. Loring* was completed and is now in service. This last named is a steel hull fitted with a 350-horsepower Diesel engine capable of a speed of about 13 miles per hour. Accommodations are provided in the superstructure for freight and passengers, and a separate cabin is provided for officers while boarding ships. All auxiliaries are electrically driven. Plans and specifications are now being prepared for a new 60-foot Diesel steel tug for the San Diego quarantine station, also a new 100-foot Diesel steel tug for the New York quarantine station.

VIOLATIONS OF QUARANTINE LAWS

During the fiscal year the department assessed fines aggregating \$1,100 for violation of the act of February 15, 1893, because of the failure of masters of vessels to present American consular bills of health, and for other violations of the quarantine laws.

QUARANTINE TRANSACTIONS AT CONTINENTAL AND INSULAR QUARANTINE STATIONS

TABLE 1.—Summary of quarantine transactions at continental and insular stations for the fiscal year ended June 30, 1930

(1) INSPECTIONS

	Total number	Passed free pratique	Passed provisional pratique	Detained	Remarks
Vessels.....	20,645	14,570	6,075	179	
Seamen.....	1,380,241			2,501	Includes workaways.
Passengers.....	1,056,294			957	Includes stowaways.

(2) DETENTIONS

	Yellow fever		Typhus fever		Cholera		Smallpox		Leprosy	
	Number	Days	Number	Days	Number	Days	Number	Days	Number	Days
Vessels.....	6	26			2	10	4	14	1	1
Seamen.....	307	1,094					360	1,174	46	46
Passengers.....	5	6	5	10			144	716		
Sick.....							5	28		

(3) LABORATORY

Number of rats examined.....	14,047
Number of fleas classified.....	2,611
Number of persons vaccinated.....	112,547
Other examinations:	
Vaccinations for cholera.....	418
Stools examined for cholera.....	14,092
Nasal swabs examined for meningococcus.....	742
Spinal fluid examination for meningococcus.....	12,155

(4) TREATMENT OF VESSELS (FUMIGATING, TRAPPING, REMANDING)

(A) FUMIGATION

	Cyanide	Sulphur	Total
Vessels.....	3,372	965	4,337
Cubic feet fumigated.....	1,468,790,092	156,269,671	1,625,059,763
Net tonnage.....	18,247,221	1,588,850	19,836,071
Rats recovered.....	16,528	3,287	19,815

(B) TRAPPING

Number of vessels.....	62
Net tonnage.....	227,173
Number of traps.....	8,056
Number rats.....	134

(C) REMANDS FOR FUMIGATION

	Mandatory vessels	Periodical vessels	For other purposes
From other ports.....	1,284	333	410 requests.
To other ports.....	1,180	309	16 miscellaneous.

(5) RESEARCH

The greater percentage of research work was done at the New York quarantine station; in addition a small amount of this work was also accomplished at the Boston quarantine station:

1. Rat-infestation survey and study of rat proofing of vessels.
2. Study of fumigation methods and effectiveness on loaded vessels.
3. Experiments to determine effects of cyanide fumigants on rubber floor covering.
4. Experiments of various fumigants to determine the lethal effects on roaches.

(6) FINANCIAL REPORT

Total amount of bills rendered for quarantine services..... \$558,847.81

(7) PORT SANITARY STATEMENTS AND BILLS OF HEALTH ISSUED

Number issued..... 48,485

(8) MEDICAL EXAMINATIONS OF ALIENS AT QUARANTINE STATIONS

	Number examined	Intensive	Class certified				Total certified
			A-I	A-II	B	C	
Passengers.....	135,270	9,526	20	110	296	148	574
Alien seamen.....	435,633	181,098	74	1,029	123	53	1,279

TRANSACTIONS AT CONTINENTAL MARITIME STATIONS

TABLE 2.—Summary of transactions at continental maritime stations for the fiscal year ended June 30, 1930

	Vessels inspected	Vessels fumigated		Passengers inspected	Crew in- spected
		Cyanide	Sulphur		
Aberdeen, Wash.	45	0	13	0	1,869
Angel Island, Calif. (San Francisco)	605	491	12	38,785	43,666
Astoria, Oreg.	110	20	19	5	4,540
Baltimore, Md.	866	318	0	270	30,394
Beaufort, S. C.	0	0	0	0	0
Boca Grande, Fla.	16	0	0	0	480
Boston, Mass.	996	167	0	49,056	69,027
Brunswick, Ga.	16	0	1	0	436
Carrabelle, Fla.	2	0	0	0	18
Cedar Keys, Fla.	0	0	0	0	0
Charleston, S. C.	171	0	22	260	5,413
Corpus Christi, Tex.	42	0	0	74	1,742
Eastport, Me.	2	0	0	0	47
Eureka, Calif.	5	0	0	0	193
Fall River, Mass.	79	0	0	9	2,867
Fernandina, Fla. (Cumberland Sound)	2	0	0	0	43
Fort Bragg, Calif.	0	0	0	0	0
Fort Everglades, Fla.	0	0	0	0	0
Fort Pierce, Fla. ¹	2	0	0	1	11
Fort Monroe, Va.	463	0	142	234	16,996
Freeport, Tex.	12	0	0	0	442
Galveston, Tex.	804	120	0	1,473	29,597
Georgetown, S. C.	2	0	0	0	16
Gloucester, Mass.	0	0	0	0	0
Gulfport, Miss.	40	0	8	0	1,146
Jacksonville, Fla. (St. Johns River)	170	30	0	72	4,512
Key West, Fla.	336	0	13	20,137	13,911
Lewes, Del. (Delaware Breakwater)	1	0	0	0	37
Marcus Hook, Pa.	1,103	314	102	1,796	39,022
Marshfield, Oreg. (Coos Bay)	24	0	6	0	949
Miami, Fla.	716	38	0	30,185	28,815
Mobile, Ala.	313	12	48	257	9,919
Monterey, Calif.	0	0	0	0	0
Morgan City, La. (Atchafalaya)	0	0	0	0	0
New Bedford, Mass.	3	0	3	28	41
New London, Conn.	24	0	0	4	1,497
New Orleans, La.	2,046	263	0	14,520	78,547
Newport, Oreg.	0	0	0	0	0
Newport, R. I.	2	0	0	26	31
New York, N. Y. ²	4,761	837	0	622,492	642,007
Ogdensburg, N. Y.	5	0	0	0	93
Panama City, Fla.	18	9	0	0	290
Pascagoula, Miss.	0	0	0	0	0
Pensacola, Fla.	86	45	0	3	2,786
Plymouth, Mass.	3	0	0	0	80
Portland, Me.	145	0	18	107	4,695
Portland, Oreg.	17	30	3	0	639
Port St. Joe, Fla.	0	0	0	0	0
Port Townsend, Wash. ³	213	188	34	4,159	14,868
Providence, R. I.	99	0	1	7,486	6,881
San Diego, Calif. (Point Loma)	634	0	23	19,374	19,974
San Luis Obispo, Calif. (Port San Luis)	7	0	0	0	280
Sabine, Tex.	254	24	0	357	9,406
San Pedro, Calif.	1,580	195	0	13,763	60,208
Santa Barbara, Calif.	0	0	0	0	0
Savannah, Ga.	95	12	2	36	2,976
Searsport, Me. ⁴	6	0	0	0	0
South Bend, Wash.	8	0	1	0	324
Southport, N. C. (Cape Fear)	52	0	15	39	2,195
Tampa, Fla.	364	89	2	279	9,022
Vineyard Haven, Mass.	1	0	0	0	6
Washington, N. C.	0	0	0	0	0
West Palm Beach, Fla.	253	0	0	617	961
Total	17,619	3,202	488	825,904	1,163,915

¹ New station, opened April, 1930.² Includes Perth Amboy, N. J.³ Includes all ports on the Puget Sound.⁴ New station, opened June, 1930.

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

TABLE 3.—Summary of transactions at continental and insular stations for the fiscal year ended June 30, 1930

Location	Name of airport (officially designated)	Distance in miles to nearest Public Health Service station	Date designated	Number airplanes arriving from foreign ports	Number 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 arriving from foreign ports or places	Number of aliens inspected by Public Health Service	Number of aliens certified for disease
Ajo, Ariz.	Municipal Air Field	6	Nov. 20, 1929	33	0	170	0	0	0	0
Albany, N. Y.	do		Sept. 28, 1928	(¹)						
Bellingham, Wash. ²	Graham Airport		May 2, 1930							
Brownsville, Tex.	Municipal Airport	3-4	Jan. 13, 1930	761	455	3,542	2,954	686	686	8
Buffalo, N. Y.	do		May 20, 1929	393	0	730	0	76	76	0
Detroit, Mich.	Ford Airport		Aug. 1, 1929	0	0	298		65	0	0
	Grosse Island		July 31, 1929							
Douglas, Ariz.	Municipal Air Field		Jan. 13, 1930							
Eagle Pass, Tex. ⁴	Eagle Pass Airport	1½	Mar. 3, 1930	17	17	18	18	0	0	0
El Paso, Tex.	Municipal Airport	8-9	Aug. 15, 1929	254	253	709	708	47	32	0
Great Falls, Mont. ²	Vance Airport		June 2, 1930	(¹)						
Havre, Mont. ²	Municipal Airport		do							
Laredo, Tex. ²	Laredo Airdrome	3¼	Jan. 24, 1930	45	45	81	81	8	8	0
Key West, Fla.	Meacham Field	5	Jan. 19, 1929	2	2	6	6		0	0
Malone, N. Y. ²	Malone Airport		May 2, 1930							
	Pan American Field	9	Oct. 16, 1928							
Miami, Fla.	Dinner Key	6	Mar. 7, 1930	1,500	1,500	10,897	10,897	797	797	0
	Curtiss-Wright Field		Apr. 22, 1930							
Minneapolis, Minn. ²	Wold-Chamberlain Field		May 2, 1930	(¹)		11		4		
Newark, N. J.	Metropolitan Airport		Jan. 2, 1929	2	2	446		139		
Newport, Vt.	Canadian Gateway (Derby Field)		Aug. 1, 1929	0	0	0	0		0	0
Nogales, Ariz.	International Airport		June 27, 1929	279	269	653	632	100	100	0
Palm Beach, Fla.	Curtiss Flying Field		Dec. 2, 1929	77	77	393	393		0	0
Pembina, N. Dak. ²	Municipal Airport		Jan. 13, 1930	(¹)						
Plattsburg, N. Y. ²	Mobodo Airport		June 2, 1930	(¹)						
Port Angeles, Wash. ²	Port Angeles Airport		Jan. 11, 1930	8	8	43	43	4	4	0
Portal, N. Dak.	Portal Airport		Jan. 13, 1930	0	0	0	0	0	0	0
St. Paul, Minn.	Municipal Air Field		June 4, 1928	(¹)		50				
San Diego, Calif.	Ryans Field		Dec. 27, 1928	841	841	4,615	4,615	48	48	0
	Lindbergh Field		Jan. 24, 1930							
San Juan, P. R.	Escambron Field		Aug. 8, 1928	286	217	2,033	1,763	215	215	0
	Isle Grande									
San Pedro, Calif. ²	Alhambra-Western, Airport Express Field	12	Jan. 11, 1930							
	Allen Field	10	Jan. 8, 1930	332	68	1,950	378	62	62	1
	Glendale-Grand Central Air Terminal	30	Nov. 20, 1929							

¹ No medical officer.² Temporary permission.³ New station, no transactions reported.⁴ Closed.

TABLE 3.—Summary of transactions at continental and insular stations for the fiscal year ended June 30, 1930—Continued

Location	Name of airport (officially designated)	Distance in miles to nearest Public Health Service station	Date designated	Number airplanes arriving from foreign ports	Number 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 arriving from foreign ports or places	Number of aliens inspected by Public Health Service	Number of aliens certified for disease
Scobey, Mont. ¹	Scobey Airport ²		June 2, 1930							
Seattle, Wash.	Boeing Field		Dec. 11, 1928	554	0	1,928	0	424	0	0
	Lake Union		Dec. 27, 1928							
Spokane, Wash. ²	Felts Field—Municipal Airport ²		June 2, 1930	(1)		15				
Watertown, N. Y. ²	Western Municipal Airport ²		do	(1)						
Total				5,384	3,754	28,588	22,488	2,600	2,028	9

¹ No medical officer.² Temporary permission.³ New station, no transactions reported.

REPORTS FROM CONTINENTAL QUARANTINE STATIONS

Aberdeen, Wash.—Acting Asst. Surg. J. B. Kinne in charge. Post-office and telegraphic address, Aberdeen, Wash.

This quarantine station serves the three cities of Hoquiam, Aberdeen, and Cosmopolis, with Aberdeen in the center. The majority of vessels entering these ports are in the oriental lumber trade, practically all loading lumber for Japan. Being lumber-carrying ships, they did not, as a rule, harbor many rats.

During the fiscal year 45 foreign ships passed through this quarantine station, of which number 25 were Japanese ships, 13 British, 3 Norwegian, 1 Italian, 2 Danish, and 1 American. No quarantinable or infectious disease was found among the crew of any of these vessels.

Baltimore, Md.—Surg. H. F. White in charge. Post-office and telegraphic address, Curtis Bay, Baltimore, Md.

Shipping entering the port of Baltimore during the past year was normal. These vessels brought cargoes from many countries and consisted chiefly of ferromanganese from England; iron ore from Cuba, Chile, Europe, and Australia; crude oil from Mexico, Colombia, and Venezuela; fruit from Cuba, Jamaica, Guatemala, and Honduras; magnesite from Italy; pyrites from Spain; lumber from British Columbia, the Philippines, and South America; and general cargoes from many parts of the world. The vessels were inspected upon arrival at quarantine and received the necessary treatment.

There were inspected, fumigated, or otherwise treated during the year, 1,127 vessels, of which number 318 were fumigated with hydrocyanic acid gas and 149 were inspected and given rat-exemption certificates.

Only one case of quarantinable disease entered the port during the fiscal year—a mess boy employed on the British steamship *Missouri*, which arrived coastwise, was suffering from a mild case of smallpox. He was removed to the quarantine station and was kept in isolation until he had recovered. The personnel of the ship were accorded the necessary treatment.

Beaufort, S. C.—Acting Asst. Surg. M. G. Elliott in charge. Post-office and telegraphic address, Beaufort, S. C.

The Beaufort quarantine station principally serves the ports on the Port Royal Sound, formerly of importance in the export lumber trade. During the fiscal year 1930 there were no transactions at this station.

Boca Grande, Fla.—Acting Asst. Surg. H. P. Bevis in charge. Post-office and telegraphic address, Boca Grande, Fla.

During the year 16 vessels arrived at this port from foreign ports and were inspected. A considerable improvement is noted in the class of vessels now entering, the old and dilapidated tramp steamships giving way to new and modern steel vessels, having practically no rat harborage.

Boston, Mass.—Surg. A. R. Sweeney in charge. Post-office and telegraphic address, Gallops Island, Boston, Mass.

This station is located 1 mile from the mainland and 5 miles from the Army base, Boston, where boats tie up overnight and from which point passengers for the quarantine station and station sup-

plies are handled. Quarantine activities at the subports of Lynn, Salem, and Beverly are taken care of by the personnel at the Boston quarantine station.

Commerce for the port of Boston was about average in volume for the past fiscal year. There was considerable passenger traffic. Seven of the large steamship companies have passenger vessels entering the port of Boston, this port being the original port of call for most of the passenger vessels. Sailings are from Hamburg, Bremen, Liverpool, Glasgow, Cobh, Galaway, and Londonderry. During the year a total of 49,056 passengers arrived on these vessels and were inspected.

In addition to the passenger liners, a large number of steamship lines operate freight vessels from all parts of the world, making the port of Boston the original port of entry. A great variety and volume of imported material, both raw and manufactured, is carried. Usually part of the cargoes are discharged at this port, the vessels then proceeding to New York, Baltimore, Philadelphia, and as far south as Norfolk for further discharge. Some of the principal imports are: Bananas from the West Indies, Central and South American ports; manufactured goods and general cargo from European ports; coal from the United Kingdom and southern Russian ports on the Black Sea; cement from Belgian ports; coffee from Argentina, Brazil, and the Dutch possessions of the Near East; paper pulp from Scandinavian ports; hides, casein, and cocoa from Brazil and Argentina; jute, rubber, gunnies from far eastern ports, and mahogany from African and Central American ports.

During the year 996 vessels were inspected, on which were examined 69,027 seamen and 49,056 passengers. There were 167 vessels fumigated, with a total capacity of more than 69,000,000 cubic feet and more than 478,000 tonnage. The rats recovered after fumigation were all autopsied and examined for plague, and inoculations of guinea pigs were made of suspected rodents. No plague-infected rats were found. Zyklon-B is exclusively used as a fumigant.

During the year no vessel was required to be detained on account of quarantinable disease. One vessel arrived with 8 members of the crew ill and had on board 2 parrots and 18 parrakeets. Some of the birds appeared to be ill. The sick members of the crew were detained at the marine hospital for observation. The birds were killed by cyanide gas and destroyed; all exposed portions of the vessel were disinfected with formalin permanganate and thoroughly washed down with a solution of bichloride of mercury. Diagnosis of psittacosis was made in at least two of the ill members of the crew and it is probable that all of those sick were suffering from psittacosis. No new cases developed after the precautions taken.

Research was conducted with different types of fumigants to determine the effects, if any, on foodstuffs, fabrics, etc. No discernible effects could be demonstrated by the use of cyanide on foodstuffs and fabric. Experiments were also undertaken to determine the relative lethal effects of sulphur and the different methods of cyanide fumigation on roaches. Due to complaints by steamship companies of alleged damage to rubber tile floor covering in the course of fumigation, experiments were undertaken with samples of rubber floor covering obtained from two large manufacturers.

The combined quarantine and immigration examination, inaugurated at this station in March, 1928, continued during the fiscal year with satisfactory results.

During the current fiscal year 55 vessels were granted deratization exemption certificates and granted six months' extension from fumigation on account of having no evidence of rat infestation and having a satisfactory degree of rat proofing. Two vessels were granted deratization exemption certificates for one voyage. Good progress has been noted in the rat proofing of vessels, much of the work being accomplished by ships' crews at foreign ports where the vessels are completely discharged. Demonstrations with models and charts have been made to interested parties and to officials of local shipyards and their interest has been enlisted in rat proofing.

During the year arrangements were made for inspection of ship-to-shore airplanes contiguous to the Boston airport. Three planes were inspected during the year, and it is expected that ship-to-shore dispatch of mail and passengers will increase. The procedure of handling such planes has been found to be very satisfactory and favors the dispatch of mail and passengers.

Brunswick, Ga.—Acting Asst. Surg. R. E. L. Burford in charge. Post-office and telegraphic address, Brunswick, Ga.

The foreign commerce entering this port consisted for the most part of cargoes of sugar from Cuba, crude oil from Mexico, and fertilizing material from Chile and Germany. The vessels engaged in this trade, with but few exceptions, were well kept and practically rat free. No quarantinable diseases were encountered during the year.

Charleston, S. C.—Surg. C. M. Fauntleroy in charge. Post-office and telegraphic address, Charleston, S. C. Administrative headquarters and detention facilities are maintained at the station located on James Island, a distance of about 10 miles by roadway, and about 3 miles by water, from the city of Charleston.

The majority of vessels calling at this port are coastwise, and therefore are not subject to inspection unless there be quarantinable disease on board. There did arrive, however, during the year a total of 171 vessels from foreign ports, which were inspected, 22 of which were fumigated. For the most part these vessels came from ports in South America, carrying nitrate cargo, and from continental European ports, carrying general cargo. An average of one fruit vessel per week arrives at this port direct from Central American ports. One vessel per month carrying passengers in transit from Mexican ports destined for Germany calls at Charleston for bunkers. No quarantinable diseases were observed on vessels arriving during the past year.

Owing to the established practice at Charleston of performing ship fumigations while at anchor in the open stream, only sulphur fumigations have been done. It is proposed in the near future to begin the use of Zyklon-B for the fumigation of certain vessels at the wharves at Charleston, after the completion of the discharge of cargo, when it will be practicable to remove all personnel from such vessels and place them safely in a suitable location away from the ship during the time required for such fumigations.

Columbia River, Oreg.—Acting Asst. Surg. R. J. Pilkington in charge. Post-office and telegraphic address, Astoria, Oreg.

The greater part of vessels coming to Astoria are freighters. During the year 110 vessels arrived from foreign ports and were inspected, of which number 39 were fumigated—19 with sulphur and 20 with cyanide. Only five passengers arrived on vessels requiring inspection. Formerly vessels entering this port were tramps, coming direct from foreign ports and taking on full cargo. In recent years this practice has been changed and now the majority of vessels have called at other United States ports prior to entry at Astoria and hence have received the necessary quarantine inspection before entry at this port.

Coos Bay, Oreg.—Acting Asst. Surg. Everett Mingus in charge. Post-office and telegraphic address, 129 Broadway, Marshfield, Oreg.

All fumigations at this port are made with sulphur. As there are no service facilities available for the performance of this work at this station, this work is done by the Independent Stevedore Co. All vessels are of steel construction and are designed for the convenient handling of freight. No foreign commerce entered the port during the year. Lumber and logs are the chief export products.

Corpus Christi, Tex.—Acting Asst. Surg. M. J. Perkins in charge. Post-office and telegraphic address, Corpus Christi, Tex.

Foreign commerce entering this port during the year was very light, but 42 vessels arriving during that period requiring inspection. The principal business is exports, which consists for the most part of cotton, lead, and sulphur.

Cumberland Sound, Fla.—Acting Asst. Surg. D. G. Humphreys in charge. Post-office and telegraphic address, Fernandina, Fla.

The foreign commerce entering this port consists principally of vessels from European ports calling for phosphate cargoes. All entered coastwise with the exception of two, which were required to undergo inspection. No fumigations were performed.

Eastport, Me.—Acting Asst. Surg. John E. Brooks in charge. Post-office and telegraphic address, Eastport, Me.

During the year but two vessels entered this port requiring inspection. The majority of vessels calling at Eastport are small freighters from Canada, which are not required to undergo quarantine inspection. Some of these vessels carry passengers but for the most part they are locals coming in to trade and do not require quarantine treatment.

Fall River, Mass.—Acting Asst. Surg. Thomas Cox in charge. Post-office and telegraphic address, 1244 Pleasant Street, Fall River, Mass.

During the fiscal year a total of 79 vessels arrived. The crews of these ships numbered 2,867 persons; 9 passengers were carried. These ships were all oil tankers sailing chiefly from Curacao, Danish West Indies. No quarantinable diseases were encountered.

Fort Monroe, Va.—Surg. J. W. Kerr in charge. Post-office and telegraphic address, Fort Monroe, Va.; hospital and detention barracks, Craney Island, Norfolk, Va. This station serves the ports of Norfolk and Newport News, Va.

Vessels are boarded at the quarantine anchorage off Fort Monroe and all fumigations are done with sulphur in this anchorage. During the year a total of 463 vessels arrived from foreign ports and were inspected, of which number 142 were fumigated for the destruc-

tion of rodents, and 13 were inspected and granted deratization exemption certificates. In addition, 13 vessels were trapped for rodents and 9 were guarded by inspectors at wharves during the discharge or partial discharge of cargo. Two of this last number were remanded to other ports for fumigation. A total of 234 passengers and 16,996 seamen were inspected under the quarantine laws; there were no quarantinable diseases among them.

On March 30, 1930, representatives of the United States Coast Guard delivered the U. S. S. *Argus* from New London, Conn., to be used as a station ship instead of the *Chase*, which had become unserviceable. Reconditioning of the *Argus* was begun with station labor April 18, 1930. This vessel has a concrete hull and is well suited to the purpose for which she is intended.

The Engineer Corps of the Army has practically completed the riprapping of the entire island, except about 1,000 feet in front of the quarantine premises. This was done in order to provide means of dumping harbor dredgings. Riprapping of the 1,000 feet mentioned should be completed. This would protect the channel and conserve the property which in the future will increase in value. The island now consists of about 200 acres. Eventually the channel to the station will have to be dredged, or a new landing established on the southwest corner of the island opposite the Elizabeth River channel.

Galveston, Tex.—Acting Asst. Surg. Fleetwood Gruver in charge. Post-office and telegraphic address, Galveston, Tex.

The quarantine station at Galveston is situated about 2 miles from the city, at the extreme end of Pelican Spit, on filled land. This point is inclosed on the north, east, and part of the west sides by a riprap of granite cubes which form an admirable breakwater. On the remaining part of the west side is a fill of gravel and loose rock to a height of from 2½ to 3 feet. On the east side of the station is a wharf about 125 by 10 feet, set on piles, about 25 feet from the riprap retaining wall and parallel to it. This wharf is connected to the grounds by a small wooden bridge which approaches immediately in front of the office building. A steel bulkhead has been completed from the southeast corner of the station grounds to the Coast Guard station reservation, a distance of about 2,300 feet, and the United States engineers are now engaged in dredging the Galveston river channel and the lowland between the Coast Guard and quarantine stations is being filled.

Being located in an isolated position, it is necessary that the station depend upon itself for such accommodations and protections as are generally afforded other stations located near a city. For fire protection a Fordson engine has been installed with which water can be pumped directly from the channel and a pipe line is now connected to furnish drinking water direct from Galveston. While this is not adequate *per se* as a fire-protection measure, it will serve well as a "first aid" in case of fire until the station fire pump can be manned and started. The station is lighted by electricity supplied from Galveston but is equipped with a Delco engine in case the city supply fails. This has occurred several times within the past year and the entire station has been served by the station plant.

During the year 804 vessels entered the port of Galveston from foreign countries and were examined. The total number of vessels fumigated during this period was 120; net tonnage, 398,695; cubic

feet, 49,476,723. Eight hundred and thirty-nine rats were recovered. A total of 29,597 alien seamen and 1,473 passengers were examined. One case of smallpox was encountered during the year, which was transferred to the quarantine station and given the necessary treatment.

Gulfport, Miss.—Acting Asst. Surg. C. A. Sheely in charge. Post-office and telegraphic address, Gulfport, Miss.

Quarantine inspections are conducted in the channel off Gulfport, Miss., and the detention station at Ship Island is maintained under the charge of a caretaker.

During the year 40 vessels from foreign ports were inspected, of which number 8 were fumigated. No quarantinable diseases were encountered.

Jacksonville, Fla.—Acting Asst. Surg. R. S. Wynn in charge. Post-office and telegraphic address, Jacksonville, Fla.

There has been a slight decrease in the total number of vessels inspected during this fiscal year; also a slight decrease in the number of vessels fumigated. The station is located at the United States Army Engineer's dock, and the service is allowed the use of their facilities and equipment at this dock.

The foreign commerce entering this port consists principally of fertilizer material. Quite a number of the schooner type of vessel enters this port from Central and South American ports. No quarantinable diseases were encountered during the year.

Key West, Fla.—Acting Asst. Surg. J. Y. Porter, jr., in charge. Post-office and telegraphic address, Key West, Fla.

Boarding and inspection is done in the stream and at the dock; fumigations are always done in the stream, sulphur being the fumigant used. Airplanes are inspected at the Meacham Airport, located on the southeastern part of the island of Key West.

Vessels entering this port are principally steamships and small yachts from Cuba, the former bringing fruit and merchandise. Fruit and turtle schooners also enter this port from Central America and Cayman Islands, and steamships in ballast from European ports enter for bunkers and orders. The majority of vessels are of the modern steel hull type with slight rat harborages and practically no rat infestation. However, the turtle and fruit schooners are of wood and they afford extensive rat harborages.

During the fiscal year 336 vessels arrived from foreign ports requiring inspection, 13 of which were fumigated. A total of 20,137 passengers and 13,911 crew were inspected. The quarantine risks at this port are slight and during the year no quarantinable diseases were encountered.

Marcus Hook, Pa.—Surg. D. J. Prather in charge. Post-office and telegraphic address, Marcus Hook, Pa.

The quarantine station at Marcus Hook, Pa., is the boarding and detention station for Philadelphia, Chester, Marcus Hook, Wilmington, and other ports on the Delaware River. Additional detention facilities are maintained at Reedy Island. Marcus Hook is 17 miles below Philadelphia and the Reedy Island quarantine station is 40 miles below Philadelphia. An office is also maintained at the custom-house, Philadelphia, to care for fumigations, the making of rat-infestation inspections, general supervision of shipping while in port, and the issuing of port sanitary statements. The Marcus Hook

quarantine station is also the administrative office for the Reedy Island quarantine station, the fumigation force in Philadelphia, the medical examination of aliens in Philadelphia, and the examination and medical care of aliens at the immigration detention station at Gloucester City, N. J.

All vessels bound for ports on the Delaware River are boarded and inspected at Marcus Hook, and the necessary fumigations and rat-infestation inspections are made at the docks in Philadelphia, Chester, Marcus Hook, Wilmington, and Paulsboro. There has been little change in the character of foreign commerce arriving during the year, which consists principally of fruit, crude oil, sugar, ore, molasses, cork, china clay, quebracho, and linseed. The principal quarantine risks at this port are smallpox and plague. No cases of quarantinable diseases arrived at this port during the year. During August, 1929, the fumigation office at Philadelphia was reorganized and placed under the immediate supervision of a medical officer. The use of sulphur was gradually discontinued and the use of Zyklon-B inaugurated. This change has proven satisfactory to the shipping interests and the service.

Miami, Fla.—Acting Asst. Surg. F. R. Maura in charge. Post-office and telegraphic address, 1101-1103 Newstower Building, Miami, Fla.

As there is no anchorage available at this port, inspection of vessels is made at the various docks about the harbor and also at Miami Beach and Fisher's Island. Airplanes are inspected at three points: Pan American Airport, which is located at Hialeah, 9 miles distant; Dinner Cay seaplane base, 6 miles distant; and Curtis-Wright seaplane base, in the harbor proper. Only one vessel was detained during the year; the steamship *Herbert G. Wylie*, an American tanker, arrived in Miami April 13, 1930, from Aruba, Danish West Indies, with one case of smallpox in a member of the crew. This case was isolated and given the necessary quarantine treatment and all members of the crew and passengers were vaccinated.

Mobile, Ala.—Surg. F. M. Faget in charge. Post-office and telegraphic address, Mobile, Ala.

Vessels arriving at this port requiring inspection are boarded under way in the main channel and allowed to proceed to Mobile while undergoing inspection. In this manner the loss of time to shipping at quarantine is reduced to a minimum. Vessels requiring fumigation are usually allowed to proceed to Mobile in order to discharge cargo under proper precautions and are then fumigated at their dock. The lack of a suitable quarantine basin or ship anchorage near the station and the lack of a ship dock at the station alongside to which vessels requiring quarantine treatment or detention could be tied up tends to detract from the efficiency of operations.

During the year a total of 313 vessels were inspected and 60 were fumigated.

New Bedford, Mass.—Acting Asst. Surg. E. F. Cody in charge. Post-office and telegraphic address, 105 South Sixth Street, New Bedford, Mass.

During the year three vessels (small schooners) arrived from the Cape Verde Islands and were inspected. The freight on these vessels is small, being composed of a few bags of beans. The condition of these vessels is good, no trace of rats being detected, although

mosquitoes were abundant in the holds. All of these vessels were fumigated.

New Orleans, La.—Surg. J. G. Wilson in charge. Post-office and telegraphic address, Room 305 Customhouse, New Orleans, La.

Although a wharf has been completed on the site acquired by the Treasury Department in 1927 for a new quarantine station, the construction of the necessary buildings has not yet begun and therefore all quarantine procedures are necessarily carried on as heretofore at widely separated points. Upon the completion of the new station, which will be located on the west bank of the Mississippi River, about 4 miles below the customhouse, it will be possible to abandon the stations at Flood Street in the city of New Orleans and at Quarantine, La., near the mouth of the river 90 miles below. The fumigation plant on Chartres Street and the administrative offices in the customhouse can also be moved to the new site and all activities combined at one place. As this will be in close proximity to the immigration station, where the medical immigration examinations are performed by the same officers who carry out quarantine procedures, both of these activities will be greatly facilitated.

Yellow fever and bubonic plague are the two quarantinable diseases which are most likely to be introduced at this port, and special precautions have naturally been directed against them. During the year, 2,046 vessels, with a net tonnage of 907,035 tons and carrying 14,520 passengers and 78,547 members of the crew, were inspected. Many of these vessels came from European ports carrying miscellaneous cargoes. Some were tankers carrying petroleum from Venezuela and Colombia; some came from the Far East with copra and hemp; many were coffee ships from the east coast of South America or bauxite carriers from Antofagasta and other west coast ports; and there were large regular shipments of bananas from Central America. West Indian ports were also freely represented and once a week a sea train arrived with cargoes already loaded in box cars taken on at Habana.

In spite of the great amount of shipping entering this port during the year it was necessary to detain only four vessels. These detentions were all on account of the possibility of introducing yellow fever, but the total time which they lost to complete the incubation period before pratique was granted was very small. Routine fumigation for mosquitoes of 22 vessels from certain South American ports was carried out during the summer of 1929, but with the beginning of the closed quarantine season in 1930 this practice was discontinued. However, even during this period especial vigilance has been exercised to ascertain whether mosquito breeding places exist on board vessels from these ports and the passengers and crews have been carefully inspected and their temperatures routinely taken.

There have been no passengers or members of crews detained on account of plague, but deratization measures have been consistently carried out. Two hundred and sixty-three vessels have been fumigated either with HCN or Zyklon-B, the space thus treated aggregating 130,909,583 cubic feet. All of the rats recovered following fumigation (2,029) were examined by the laboratory personnel of the New Orleans Parish Board of Health and found free from evidence of plague. During the year 276 vessels were inspected and granted deratization exemption certificates when careful inspection

showed no evidence of rats. These inspections are believed to be of great practical importance, as they not only prevent the expenditure of time and money in useless fumigations but when repeatedly and conscientiously performed they also act as an incentive to ship-owners to carry out rat-proofing measures. By recording the results of repeated systematic inspections the rat status of any vessel can be kept up to date and its past history in regard to rat-food cargoes and efforts to remove rat harborages can be seen at a glance.

New York, N. Y.—Surg. Carroll Fox in charge. Post-office and telegraphic address, Rosebank, Staten Island, N. Y.

The administrative, boarding, inspection, laboratory, and fumigation headquarters of the station are located at Rosebank; the hospital and detention units are located at Hoffman Island, approximately 2 miles south of Rosebank. Swinburne Island remains inactive, but inspections of the property are made from time to time by officers at Rosebank. An office is also maintained in the customhouse for the issuance of port sanitary statements to outbound vessels. Occasionally throughout the year an officer from the New York quarantine station is sent to Bridgeport, Conn., to inspect an incoming ship. An inspection station at Perth Amboy, N. J., is also under the supervision of this station, and in those instances in which fumigation of arriving vessels is required squads are sent from Rosebank for the performance of this work.

The activities of the station are effected through the following divisions: (1) Boarding; (2) laboratory; (3) fumigation and ship inspection for rat infestation; (4) rat proofing of vessels; (5) personnel and accounts; (6) material; (7) buildings, grounds, and mechanical equipment; (8) floating property; and (9) hospital and detention (Hoffman Island).

During the year 4,663 vessels were inspected, of which number 3,184 were granted free pratique and 1,479 were permitted to enter subject to the terms of provisional pratique; 64 Army and Navy vessels were passed on certificates from the ship's medical officer. A total of 837 vessels, with an aggregate tonnage of 2,906,727 tons and a cubic capacity of 368,515,733 cubic feet, were fumigated at this station by the use of Zyklon-B plus a warning gas or by liquid HCN and CNCl. All of the rats recovered following fumigation (6,510) were examined in the laboratory for plague infection.

Vessels arriving from ports on the Parana and Uruguay Rivers and from Dakar, Africa, are fumigated before discharge of cargo. In some instances, when deemed necessary, a second fumigation is performed. Inspection of vessels for rat infestation has been carried on rather intensively throughout the year. This is a valuable means of determining whether a vessel is actually in need of fumigation. A total of 1,315 vessels was inspected, resulting in postponement of fumigation of 939 vessels on account of absence of rat evidence.

The only serious accident occurring during the year as a result of fumigation was on the British steamship *Trevose*. In this instance an apprentice was cleaning muck out of the bilges 12 days after fumigation of the vessel when he was overcome. He was taken to the hospital where he died two days afterwards. Tests showed the muck to contain HCN gas.

The laboratory has continued the examination for plague infection of rats fumigated on ships, with negative results. Identification of

fleas from other stations has continued. Information relative to rat-flea surveys, fumigation methods, and other quarantine procedures, as well as mounted specimens and other material has been furnished various other stations, individual officers, and interested persons in this and foreign countries. The special investigation of fumigation has proceeded satisfactorily, the principal results being the development of an air jet sprayer for fumigation of loaded ships and of various apparatus for introducing gas directly into rat harborages on all ships. Tests have been made of various newly developed fumigating products, the most important being HCN discoids. The effect of fumigation with various cyanide products and with sulphur on fresh fruits and vegetables was tested at the request of one of the large steamship companies. The fruits and vegetables used were injured by sulphur but not by any of the cyanide preparations. Also, at the request of one of the larger food companies, the effect of fumigation with cyanide on tea was tested. Fumigated and unfumigated samples were returned to the company expert who was unable to differentiate between them.

The work of the rat-proofing division has been carried on very energetically during the year. Periodical visits were made to the plant of the Newport News Shipbuilding & Dry Dock Co. to inspect the rat-proofing work being carried out on the four new ships under construction at that yard. At the request of the technical director, a formal lecture on rat proofing of vessels was delivered during the winter lecture course by the chief of the division. Inspection was made of a Shipping Board vessel being reconstructed at the plant of the Maryland Dry Dock Co. at Baltimore, with regard to rat proofing. Special inspections were also made of the two new German liners, *Bremen* and *Europa*, the new *Lafayette* of the French Line, and four new freight vessels that were built in European yards during the year. All of these vessels had carried out rat-proofing work during construction. Advice and assistance were given to officers of the construction corps of the United States Navy at the New York Navy Yard and at the plant at Newport News in carrying out rat-proofing measures on the new naval cruisers *Pensacola* and *Houston*, and in addition conferences were had during the year with officials of numerous other companies with regard to this work.

The hospital and detention division maintains the hospital, detention barracks, and the delousing and disinfection plant on Hoffman Island. The bed capacity available for immediate use of the various class of passengers is as follows: First-class cabin passengers, 22; second-class passengers, 75; tourist class or crews, 48; third class, 240; total of 385 beds. While there is ample accommodation, arranged so that there may be detained safely, contacts of diseases of the intestinal type and those carried by insects, the arrangement for the detention of contacts of diseases of the respiratory type is not satisfactory. Seven persons were detained at the island during the year; five were held to complete the period of incubation for typhus fever and two were held as possible psittacosis contacts.

Ogdensburg, N. Y.—Acting Asst. Surg. R. L. Stacy in charge. Post-office and telegraphic address, Ogdensburg, N. Y.

There are no facilities available for detention or hospitalization at this port, this being only a boarding station for quarantine inspection and fumigation. During the year no passenger vessels

arrived at this port, all being small freight steamers. There were four British and one Norwegian steamer; the cargoes were iron pipes and coal. The international agreement between the Government of the United States and the Dominion of Canada for the acceptance of quarantine pratique issued by either country for vessels entering their international waters has greatly reduced the number of vessels stopping at this port for quarantine inspection; there has been but one vessel since this arrangement went into effect the first of the calendar year 1930.

Pensacola, Fla.—Acting Asst. Surg. C. W. D'Alemberte in charge. Post-office and telegraphic address, Pensacola, Fla.

The Pensacola quarantine station is situated 7 miles from the town of Pensacola on Santa Rosa Sound. This station is maintained by two caretakers under the supervision of the medical officer in charge and is being held to accommodate such cases of quarantinable diseases and contacts as may be encountered at this port. The boarding and fumigation of vessels are done at Pensacola. All vessels entering the port requiring inspection are boarded and inspected at anchor about 1 mile from shore. They consist for the most part of steamships, with an occasional sailing vessel. All rats destroyed by fumigation (using hydrocyanic acid gas) are subjected to laboratory examination for evidence of plague.

Perth Amboy, N. J. (under supervision of the New York quarantine station).—Acting Asst. Surg. C. W. Naulty, jr., in charge. Post-office and telegraphic address, Perth Amboy, N. J.

During the past year 98 vessels from foreign ports entered this port and were inspected. There were 3,333 crew and 17 passengers carried on these vessels. In instances in which vessels arrive requiring fumigation, fumigators are sent from the New York quarantine station for the performance of this work.

The plan of having the Quarantine, Customs, and Immigration Services use the customs launch for boarding purposes was given a trial during the year, upon the suggestion of the coordinator for the district. This plan, however, did not prove entirely satisfactory and was discontinued after a few months.

Portland, Me.—Acting Asst. Surg. Albert F. Stuart in charge. Post-office and telegraphic address, Portland, Me.

During the fiscal year ended June 30, 1930, 145 steamers and sailing vessels were inspected at quarantine. These vessels carried 4,695 seamen and 107 passengers. Eighteen vessels were fumigated for the destruction of rats and 85 dead rats were found following these fumigations. No quarantinable diseases were observed during the year.

Portland, Oreg.—Passed Asst. Surg. F. S. Fellows in charge. Post-office and telegraphic address, 429 Mayer Building, Portland, Oreg.

Portland, Oreg., was established as a quarantine station early in the preceding fiscal year and constitutes the headquarters for quarantine operations along the Columbia River. The customs launch is used for combined quarantine, customs, and immigration purposes, officers from the three services boarding incoming vessels at the same time.

The majority of vessels entering the Columbia River enter in ballast from the Orient. Many of these have called at the Japanese

coaling port of Miiki for coal and fumigation just previous to departure for the United States.

Port San Luis, Calif.—Acting Asst. Surg. T. S. Long in charge. Post-office and telegraphic address, San Luis Obispo, Calif.

The port of San Luis, where quarantine inspections are made, is located in the town of Avila, approximately 10 miles west of the city of San Luis Obispo, and does not have any Government buildings or other property for the purpose of carrying out quarantine treatment.

Vessels entering this port are principally oil tankers and, as a whole, these ships are kept extremely clean and are not considered to afford important harborage for rats. No infectious or contagious diseases were encountered on these ships during the fiscal year.

Port Townsend, Wash.—Surg. O. H. Cox in charge. Post-office and telegraphic address, Port Townsend, Wash. (Boarding and inspection station, Port Townsend, Wash.; hospital and disinfecting station, Diamond Point, Wash.)

The Port Townsend quarantine station serves all ports on the Puget Sound and its tributaries, the largest port being Seattle. All vessels subject to quarantine entering Puget Sound are boarded and inspected at Port Townsend. There has been a decided decrease in the number of vessels inspected at this station during the fiscal year 1930. This has resulted from the international agreement between the Government of the United States and the Dominion of Canada for the reciprocal recognition of quarantine pratique issued by quarantine officers of either country to vessels entering their international waters.

There has been a marked decrease in the number of meningitis cases arriving on vessels at Pacific coast ports from oriental ports. An occasional vessel did arrive at this port during the year with meningitis cases and contacts, which were taken off the vessel and sent to Diamond Point for observation and treatment.

Providence, R. I.—Surg. H. G. Ebert in charge. Post-office and telegraphic address, Room 403, Federal Building, Providence, R. I.

The foreign commerce entering this port consists of oil tankers from Mexico and Caribbean ports; passenger steamers of the Fabre Line from Mediterranean ports, the Near East, Portugal, Madeira, and the Azores; colliers from Cardiff and vicinity, also from Mariupol, Russia; lumber carriers from Archangel and Leningrad; and schooners bringing salt from Turks Island. Vessels in the oil trade constitute the largest class of arrivals, with passenger steamers next, the remainder being distributed among the coal and lumber ships.

There was an appreciable increase during the past fiscal year in the number of vessels in the foreign trade arriving at this port. The number of such vessels arriving which required inspection was 99, only 1 of which was fumigated. There were 6,881 crew and 7,486 passengers inspected during the fiscal year.

St. Andrews, Fla.—Acting Asst. Surg. W. J. Blackshear in charge. Post-office and telegraphic address, Panama City, Fla.

Shipping entering this port during the year has all been in water ballast. The outbound cargoes consisted of naval stores and lumber to foreign ports. Eighteen vessels arrived during the year and were inspected; nine of these were fumigated.

Sabine, Tex.—Surg. W. A. Korn in charge. Post-office and telegraphic address, Sabine, Tex.

This station serves the ports of Sabine, Port Arthur, Port Neches, Beaumont, and Orange, Tex., and Lake Charles, La. The boarding, inspection, and fumigation of vessels are done at Sabine, while the headquarters for general administration of the entire district are maintained in the Federal Building at Port Arthur, Tex.

Outgoing cargoes from the port of Sabine consist of oil and its products, lumber, wheat, and rice. Incoming cargoes are steel, oil, and small shipments of general merchandise. No vessels were detained during the year.

In the annual report for this station during the fiscal year 1929 mention was made of a tract of land, consisting of 11.2 acres, which had been recommended as a suitable site for a new quarantine station at this port. Proceedings for the acquisition of this site are still in progress.

San Diego, Calif.—Surg. J. W. Tappan in charge. Post-office address, San Diego Quarantine Station, Point Loma, Calif.; telegraphic address, San Diego, Calif.

Vessels inspected at this port are principally fishing boats which outfit in San Diego and fish off the coast of Baja California, Mexico, putting in before their return to some Mexican port for food, water, or fuel. Of a total of 634 vessels inspected during the year, 400 were of this class. Another class, of which 178 were inspected, consists of small vessels, carrying any cargo offered, plying between Mexican ports and San Diego, and yachts or other pleasure craft. Foreign vessels, not including those from Mexican ports, numbered 29.

The only vessel entering port with quarantinable disease aboard was the American steamship *Dorothy Alexander*, a coastwise passenger ship, which had left San Pedro, Calif., May 3, with 251 passengers and a crew of 132, for a cruise along the west coast of Mexico. After leaving Ensenada, Mexico, a case of smallpox was discovered in one of the crew. The vessel put back to this port and the patient was removed to the county hospital. The passengers and crew were vaccinated.

Quarantine inspections incident to the arrival of airplanes from Mexico have continued during the fiscal year. It is anticipated that this work will be greatly increased in the near future as resorts at Ensenada, Tahiti Beach, and San Sebastian, Baja California, Mexico, which have recently been constructed, have been opened to the public. The total number of planes inspected during the year is 841.

San Francisco, Calif.—Surg. J. R. Ridlon in charge. Post-office and telegraphic address, Angel Island, Calif.

There has been an increase in the number and size of the vessels arriving at this port. Several new vessels have been put into service from oriental and European ports. Vessels from the Orient and South America regularly call at ports which are reported to be infected with several of the quarantinable diseases. No vessel arrived with any of the quarantinable diseases aboard. Four vessels arrived upon which epidemic cerebrospinal meningitis had occurred during the voyage. A total of 270 bacteriological examinations of crews and passengers were made and three meningococcus carriers

were found. These were detained at the quarantine station until negative cultures were obtained from them.

The number of vessels inspected at quarantine during the year was 605, of which number 503 were fumigated. There were found 1,874 dead rats after fumigation, classified as to species as follows: *Rattus norvegicus*, 5; *Rattus alexandrinus*, 1,047; *Rattus rattus*, 801; unidentified, 21. The dead rats were distributed as follows: In holds, 1,240; storerooms, 113; galleys, 25; crews' quarters, 62; other superstructures, 434. All dead rats were examined in the laboratory and were found to be free from plague infection. Rats killed by fumigation were examined for dead fleas, and a limited number of fleas were recovered. A limited amount of rat trapping has been done on vessels and piers.

During the year one vessel has been constructed at a local shipyard in a rat-proof manner, under the supervision of the San Francisco station. Several other vessels have been inspected, the officials have been furnished specifications as to rat proofing, and the necessary work has been partially completed. An extended series of experiments have been conducted, during the year, as to the lethal effects of various fumigants on cockroaches.

San Pedro, Calif.—Surg. H. A. Spencer in charge. Post-office and telegraphic address, 111 West Seventh Street, San Pedro, Calif.

The administrative activities are performed in a suite of offices convenient to the water front. Ships arriving are reported by the marine lookout to the boarding officer. Vessels are boarded in the bay, a distance of approximately 30 minutes' running time from the more distant docks. Close cooperation is maintained with the customs, Department of Agriculture, and immigration officials, representatives from which services board vessels simultaneously with the quarantine officer. Fumigations are, with but few exceptions, performed at the dock. Cyanide, in the form Zyklon-B, is used almost exclusively, sulphur being used only in certain selected cases. Inspection of vessels for rat infestation is assuming greater importance from year to year. Not only is this procedure economical from a Government standpoint but the savings resulting to shipping in both time and money is impressive. Navigators are realizing the advantages of having clean ships and are endeavoring to remedy faulty conditions, thus assisting in preventing the possible introduction of disease into the United States.

Trade lanes are practically the same as in previous years, but a few additional regular lines have been instituted. Thirty-four passenger lines operate from, or call at, Los Angeles Harbor, including those coming coastwise. There were inspected at this station during the year 666 cargo and passenger vessels, 548 tankers, 312 fish boats, and 54 yachts. Vessels arrived from nearly all the principal ports of the world, bringing silks, vegetable oils, rags, rubber, copra, coffee, and nuts from the Orient; canned fruits, paints, glass, iron, and steel from Europe; sugar from the West Indies; fruits, minerals, and vegetables from Central America and Mexico; spices from Africa; coffee, mineral ore, fertilizer, nuts, and grain from South America. A number of the passenger liners operating from this port are engaged in a regular round-the-world service.

In addition to his quarantine and immigration duties in connection with the arrival of vessels the medical officer in charge also

performs the required quarantine and medical immigration examination incident to the arrival of airplanes at the designated airports of entry at that place. During the year two landing fields adjacent to Los Angeles were designated as official ports of entry for aircraft. Planes arrived at these fields principally from Agua Caliente, Mexico, with a few from Mexico City via Nogales, Ariz., and a still smaller number from Ensenada, Mexico. The Mexico City planes pass quarantine at Nogales and continue to Los Angeles via Mexicali.

Savannah, Ga.—Acting Asst. Surg. Barton Brown in charge. Post-office and telegraphic address, Savannah, Ga.

There has been a slight decrease in the number of vessels arriving during the fiscal year 1930 as compared with the fiscal year 1929. About 34 per cent of the vessels inspected were from Cuba, with raw sugar cargoes. Another rather large percentage of the vessels which arrived at the port of Savannah requiring inspection carried general and potash cargoes from the United Kingdom, north European, and German ports. During the year no vessels were detained nor were any quarantinable diseases encountered. However, the quarantine risks from the occasional vessel arriving with cargoes of burlap from India is much greater by reason of their having come from plague-infected ports and by the character of their cargo, and such vessels are permitted to enter under provisional pratique.

Seattle, Wash.—Senior Surg. L. D. Fricks in charge. Post-office and telegraphic address, 216 Grand Trunk Dock, Seattle, Wash.

Seattle is the largest and most important port of entry on Puget Sound. Practically all vessels entering Puget Sound pass Port Townsend quarantine station and stop there for quarantine inspection, thence proceeding to Seattle for fumigation after discharge of cargo. During the fiscal year, 188 vessels were fumigated by cyanide, 14 of which were in Tacoma, and 20 were fumigated by sulphur, which is an increase in cyanide fumigations over previous years. Following recommendations of the board of quarantine officers appointed to make a study of quarantine matters on the Puget Sound, plans were completed whereby the administration of quarantine matters in Puget Sound ports would be centralized and the work treated as a unit, under the direction of the chief quarantine officer with headquarters at Seattle. Since that time all fumigations required under the quarantine laws and regulations of the United States in Puget Sound ports, including the port of Tacoma, have been performed by fumigating crews from Seattle. This plan is considered decidedly advantageous, as it insures uniformity of procedure and economic administration of the quarantine laws and regulations in the various closely associated ports on Puget Sound.

The reciprocal quarantine agreement with Canada, placed in effect on January 1, 1930, whereby vessels entering Puget Sound destined for ports in Canada and the United States would be required to undergo but one quarantine inspection, has been of great benefit to shipping interests and convenience to passengers but has resulted in a corresponding increase of immigration work at this port, since the majority of the vessels affected receive their quarantine inspection at the Canadian port of entry and their immigration examination upon arrival at an American port, usually Seattle.

During the year it became necessary to board five vessels at Victoria for quarantine purposes on account of meningitis on board.

From these vessels 12 cases of meningitis and 123 contacts were landed at the Diamond Point station. The United States Coast Guard cutter *Chelan*, with two cases of meningitis and 67 of the ship's personnel, was held at Diamond Point until throat cultures were found negative.

A large majority of the vessels entering Puget Sound which are subject to quarantine come from the Orient with general cargoes and silk. Quarantine inspections are made either at Williams Head or at Port Townsend, but passengers and silk-carrying vessels coming direct to Seattle pass Port Townsend late at night and are allowed to proceed to Seattle for inspection. Sixteen such vessels entered during the year. There has been considerable improvement noted in the type of trans-Pacific vessels calling at this port. Oil is rapidly replacing coal as fuel.

The cooperative rat-control program with the health department of the city of Seattle was continued during the year under the supervision of the Seattle quarantine station. A new concrete rat laboratory was completed by the city and has been occupied the greater part of the year. During the year 21,424 rats were trapped and 1,281 dead rats were collected following fumigation of vessels. Of these rats 3,890 were examined at the laboratory for evidence of plague. In addition, 380 pounds of prepared poison were distributed and 200 pounds of cyanogen dust were scattered on the city fills.

In addition to his quarantine and immigration duties in connection with the arrival of vessels from foreign ports, the medical officer in charge also performs, where necessary, the required quarantine and medical immigration examinations incident to the arrival of airplanes. The majority of airplanes arriving at this port, however, come direct from near-by Canadian ports, and therefore are not required to undergo quarantine inspection.

Tampa, Fla.—Surg. J. T. Burkhalter in charge. Post-office address, Tampa, Fla. Telegraphic address, St. Petersburg, Fla.

The Tampa Bay quarantine station is located on Mullet Key, 28 miles southwest of Tampa, at the entrance to Tampa Bay. This station serves the ports of Tampa, Port Tampa, and St. Petersburg. Arriving vessels are inspected at anchor off the quarantine station.

Foreign commerce entering the ports served by this station consist chiefly of crude oil and gasoline from Mexico; bananas from Cuba and Mexico; cedar logs from Mexico; and marble, cheese, olives, and bone meal from Mediterranean ports. During the fiscal year 364 vessels were inspected. Of this number 202 arrived in ballast and 162 were cargo laden. These vessels carried 279 passengers and 9,022 seamen. No quarantinable diseases were discovered among this number.

During the year the United States Coast Guard laid a Government cable from Egmont Key to Mullet Key and thence to the mainland, connecting it with a leased line owned by the Peninsular Telephone Co. The installation was completed in April and provides the station with direct telephonic communication with the St. Petersburg exchange. This service has proved of great benefit to the station, particularly as it provides a means of establishing direct telegraphic communication with the bureau and the outside world.

Practically all vessels are fumigated at the quarantine station. A few arrivals in cargo, from noninfected ports, enter and discharge

and are fumigated at the docks in Tampa or Port Tampa, or when outbound, if no cargo is taken in the ports mentioned. During the year 91 vessels with a total tonnage of 232,279 net tons were fumigated; a total of 29,421,326 cubic feet of space was exposed to fumigation.

West Palm Beach, Fla.—Acting Asst. Surg. James H. Pittman in charge. Post-office and telegraphic address, West Palm Beach, Fla.

Practically all vessels entering this port are from the British West Indies, located about 70 miles from West Palm Beach. With the exception of private yachts, all are small boats with crews of about four in number. Occasionally a schooner enters this port for lumber. The medical officer in charge also has been designated to make the required quarantine and medical immigration examination incident to the arrival of aircraft at the officially designated airport of entry at this port. These arrivals have increased materially during the past fiscal year.

During the fiscal year ended June 30, 1930, a total of 253 vessels arrived at this port with crews numbering 961 and passengers numbering 617.

MEXICAN BORDER STATIONS

TABLE 3.—Summary of quarantine transactions on the Mexican border for the fiscal year ended June 30, 1930

Stations	Number inspected from interior Mexico	Number of local passengers inspected	Total number of passengers inspected	Total number of persons disinfested	Total number of persons passed without treatment	Total number of persons vaccinated	Total number of sick held for observation	Total number of sick refused admission	Total pieces of baggage disinfested
Brownsville, Tex.	2,070	881,825	883,895	647	883,456	1,747	0	1	0
Calxico, Calif.	420	5,323	5,743	0	5,631	359	0	112	0
Columbus, N. Mex.	977	24,410	25,387	0	25,200	164	2	21	0
Del Rio, Tex.	2,520	120,580	122,900	783	121,184	1,033	0	0	2,021
Douglas, Ariz.	1,516	5,321	6,837	0	6,106	667	0	64	0
Eagle Pass, Tex.	15,794	997,899	1,013,693	8,475	1,005,218	3,689	0	145	9,707
El Paso, Tex.	6,525	2,659,321	2,665,846	22,843	2,619,893	22,967	0	43	1,684
Guadalupe Gate, Tex. ¹	0	724	724	0	278	446	0	0	0
Hidalgo, Tex.	3,217	299,232	302,449	7	301,125	1,317	0	0	1
Laredo, Tex.	44,701	1,789,779	1,834,480	5,278	1,791,496	42,984	134	0	7,326
Minerva, Tex.	0	2,597	2,597	0	2,104	493	0	5	0
Naco, Ariz.	97	3,752	3,849	0	3,003	600	0	45	0
Nogales, Ariz.	6,167	23,248	29,415	407	28,297	603	81	37	13
Presidio, Tex.	1,076	73,510	74,586	481	71,464	2,585	8	48	292
Rio Grande, Tex.	812	15,948	16,760	12	15,590	1,158	0	0	1,035
Roma, Tex.	1,832	49,100	50,932	64	49,812	1,056	0	0	64
San Ysidro, Calif.	588	5,578	6,166	0	5,365	714	4	83	0
Sasabe, Ariz.	2	632	634	0	487	146	0	1	0
Thayer (Mercedes), Tex.	53	167,764	167,817	60	166,920	819	0	18	140
Ysleta, Tex. ¹	0	38,323	38,323	0	37,658	665	0	0	0
Zapata, Tex.	607	17,508	18,115	175	16,781	1,334	0	0	120
Total	88,974	7,182,174	7,271,148	39,232	7,157,128	85,546	229	623	22,403

¹ Made a separate station.

QUARANTINE OPERATIONS ALONG THE MEXICAN BORDER

Traffic along the Mexican border has greatly increased during the past few years, owing to the opening of new railroads, the construction of good roads, and the establishment of air routes from various points in Mexico. This latter traffic, of course, is in its early stages,

but promises to increase steadily with the coming years and has already added greatly to the work along the border. To date official airports of entry have been established at Ajo, Douglas, and Nogales, Ariz., and Brownsville, El Paso, Eagle Pass, and Laredo, Tex. While the type of passengers carried on these planes has been very good, thus reducing the quarantine risks—the journey by airplane in most instances is less than the incubation period for quarantinable diseases and it becomes necessary to be ever on the alert to detect any possible cases that might arrive. It is quite probable that as this method of travel becomes more popular and less expensive, the high standard of passengers carried will be supplemented by others of a lower sanitary type, making it necessary to be even more watchful of the dangers incident to such travel.

As typhus fever and smallpox are the diseases most likely to be encountered at ports along the border, the measures in force have been directed principally against their introduction. Smallpox was somewhat prevalent during the past year, particularly along the Mexican side. In August, 1929, this disease became unduly prevalent in the city of Juarez, across the border from El Paso. Shortly thereafter it made its appearance in El Paso. The El Paso City Health Department made a house-to-house inspection in the Mexican quarter of the city, vaccinating all unprotected persons and quarantining all cases and contacts. This produced satisfactory results and within a month or two after putting these measures into effect the epidemic had subsided. Stringent measures were taken at the Santa Fe Street Bridge with regard to entrants from Mexico, which also proved effectual. This disease made its appearance also in the Mexican town of Zaragoza, and other small towns along the border, but the Mexican population are fast realizing the importance of vaccination and are cooperating in this respect to the greatest degree. The continued campaign for vaccination carried on by the Mexican Government has done much to aid this situation and the result is a fairly well vaccinated population.

Typhus fever has not made its appearance at any of the United States ports of entry along the Mexican border during the year. However, preventive measures such as delousing, when necessary, together with complete disinfection of the clothing and baggage has been continued.

In March, 1930, on account of the presence of epidemic meningitis in Palomas, Mexico, adjacent to Columbus, it was deemed advisable, in the absence of laboratory facilities or other methods to determine carriers, to effect quarantine against this port. After nine days of strict quarantine, no new cases of this disease having developed in either Palomas or Columbus, this measure was deemed no longer necessary and was discontinued.

On September 29, 1929, there was inaugurated a through train from Mexico City to St. Louis, Mo., over the National Railways of Mexico and the Missouri Pacific Lines, which is scheduled to leave Laredo at 4.20 a. m. This train is boarded at the International Railroad Bridge and the passengers are given a preliminary inspection en route from the border to San Antonio where final inspection is made by a medical officer of the Public Health Service. Since the inauguration of this service, the number of passengers arriving on this train from Mexico requiring inspection totaled 6,634. It is

proposed that a new train between San Antonio, Tex., and Monterrey, Mexico, will be inaugurated effective July 20, 1930. This train is scheduled to arrive at Laredo from Mexico at 5 p. m. With the inauguration of this service there will then be three daily trains arriving at Laredo from Mexico requiring inspection—one at 7 a. m., one at 2 p. m., and one at 5 p. m.—in addition to the one passing through at 4.20 a. m. and inspected en route to San Antonio.

Clandestine crossing of the border continues, but probably due to the more severe penalty inflicted for illegal entry, these crossings appear to be decreasing somewhat.

TRANSACTIONS AT INSULAR QUARANTINE STATIONS

TABLE 4.—Summary of transactions at insular stations for fiscal year ended June 30, 1930

	Vessels in-spected	Vessels fumigated ¹		Passengers in-spected	Crews in-spected	Bills of health and port sanitary statements issued
		Cyanide	Sulphur			
Hawaii:						
Ahukini.....	0	0	0	0	0	29
Hilo.....	18	0	0	367	2,318	203
Honolulu.....	214	5	0	44,597	28,202	860
Kahului.....	2	0	0	0	72	161
Kihai.....	0	0	0	0	0	0
Koloa.....	3	0	0	0	98	70
Lahaina.....	1	0	0	0	36	46
Mahukona.....	0	0	0	0	0	24
Makaweli.....	0	0	0	0	0	0
Total.....	238	5	0	44,964	30,726	1,393
Philippines:						
Cavite.....	38	0	0	63	5,556	0
Cebu.....	120	23	151	755	6,482	288
Davao.....	45	0	0	870	3,694	182
Iloilo.....	98	0	134	23	5,421	274
Jolo.....	27	0	0	1,017	911	26
Legaspi.....	7	0	0	0	301	4
Manila.....	1,102	106	165	74,248	96,809	1,391
Olongapo.....	3	0	0	84	1,183	0
Zamboanga.....	33	0	13	1,176	2,764	128
Total.....	1,473	129	463	78,236	123,121	2,293
Porto Rico:						
Aguadilla.....	4	0	0	9	76	72
Arecibo.....	1	0	0	0	34	33
Arroyo.....	4	0	0	0	28	46
Central Aguirre.....	0	0	0	0	0	30
Fajardo.....	30	0	0	3	122	245
Guanica.....	169	0	2	536	9,370	37
Humacao.....	14	0	0	0	81	41
Mayaguez.....	31	0	0	0	371	70
Ponce.....	88	4	0	25	1,692	143
San Juan.....	554	24	0	13,894	33,835	818
Total.....	895	28	2	14,467	45,609	1,535
Virgin Islands:						
Christiansted.....	6	0	0	0	33	148
Frederiksted.....	48	0	0	1,664	3,073	78
St. Johns.....	0	0	0	0	0	2
St. Thomas.....	366	8	12	2,085	13,763	555
Total.....	420	8	12	3,749	16,869	783
Alaska: Ketchikan.....	0	0	0	0	1	0
Total all stations.....	3,026	170	477	141,416	216,326	6,004

¹ Vessel fumigated with formaldehyde not included.

REPORTS FROM INSULAR QUARANTINE STATIONS

OPERATIONS OF THE SERVICE IN HAWAII

Senior Surg. S. B. Grubbs in charge. Post-office address, 202 Federal Building, Honolulu, Hawaii; telegraphic address, Honolulu, Hawaii.

Only one station equipped to carry on all of the quarantine activities is maintained in the Territory of Hawaii. In addition, vessels are inspected at the subports of Hilo, Mahukona, Ahukini, Koloa, Kahului, and Lahaina.

One ship was detained at this port during the fiscal year on account of the presence on board of quarantinable disease—the American steamship *Golden Sun*, which arrived from Manila on January 13 with one case of confluent smallpox in the crew. The patient died on board the vessel after arrival in port, before he could be removed to the quarantine station. The case had been isolated in the ship's hospital, but all members of the crew had been exposed and the entire personnel were vaccinated upon arrival at Honolulu. All showed immune reactions and the vessel was allowed to proceed in three days.

In accordance with Executive Order No. 5143, dated June 21, 1929, and the regulations of the Secretary of the Treasury issued thereunder, cases of epidemic cerebrospinal meningitis and their contacts arriving on vessels during the fiscal year were detained at the quarantine station. The first vessel on which meningitis was found was the American steamship *President Lincoln*, which arrived January 2. Two cases of meningitis had developed on board on December 24 among the Filipino steerage. One case was removed from the ship at Yokohama; the other, a mild case, arrived at Honolulu in the convalescent stage and was removed to the quarantine station together with the members of the three compartments affected, a total of 121 passengers. No new cases developed, and all contacts were released January 7. The American steamship *President Hayes* arrived at this port on March 1 direct from Manila with two cases of meningitis in the Filipino steerage. Thirteen additional cases developed among the 184 contacts quarantined and 1 case in a Japanese employee. Four of these cases proved fatal in addition to the two cases removed from the ship upon arrival. A physical examination, including taking of temperature, and inspection of chest, throat, and eyes, was made twice daily of each person in quarantine, and anyone showing symptoms of any kind was immediately segregated. One case of meningitis developed among the Filipino steerage passengers from the American steamship *President Hayes* 36 hours after her arrival here direct from Manila on December 21. Although no cases of the disease were reported as occurring during the voyage, a death which had occurred on December 14, diagnosed as pneumonia, was probably a result of this disease.

In addition to cases of meningitis, pneumonia has reached epidemic proportions on boats en route from the Philippines to Honolulu, 52 cases having occurred on a recent voyage. It is quite probable that the spread of both of these diseases is the result of overcrowding,

with lack of ventilation, of nonimmune persons accustomed to open-air life.

During the fiscal year a total of 238 vessels were inspected at quarantine and inspection stations on these islands. A total of 44,964 passengers and 30,726 members of crews were carried on these vessels and were inspected.

OPERATIONS OF THE SERVICE IN THE PHILIPPINE ISLANDS

Surg. R. W. Hart, chief quarantine officer. Post-office address, P. O. Box 424, Manila, P. I., office, customhouse; telegraphic address, Quarantine, Manila.

Quarantine inspection is conducted in the Philippine Islands by the service at seven ports of entry and at two naval stations. Officers serving full time are stationed at Manila, Cebu, and Iloilo. Part-time local physicians act as quarantine officers at Davao, Legaspi, Jolo, and Zamboanga. At the naval stations, Cavite and Olongapo, the quarantine work is performed by medical officers of the United States Navy, who are detailed for such service by the admiral commanding. Two detention and disinfection stations are maintained—one at Mariveles, serving Manila and the other ports of Luzon, and one at Cebu for the southern half of the archipelago. There are on duty in the Philippine Islands 5 commissioned officers, 6 acting assistant surgeons, 1 pharmacist, and 70 employees.

The quarantine service in the Philippine Islands carries out practically all the functions of the United States Public Health Service, such as the physical examination of aliens and the maintenance and operation of quarantine stations and floating equipment. Relief stations are maintained at the principal ports of entry and out-patient relief is furnished service beneficiaries by the medical officers of the service, in addition to their quarantine duties. The quarantine laws and regulations of the United States are in effect in the Philippines. In addition, certain laws applying to local conditions have been enacted by the Philippine government. During February, 1930, an executive order was issued by the Governor General of the Philippine Islands, at the suggestion of the chief quarantine officer. This order defined the port area and laid down certain rules governing the type of structures which could be built within this area. Moreover, the destruction of buildings not conforming to the approved architectural design was ordered and effected. Regulations governing the sale and handling of foodstuffs within the port area were also included in this executive order.

From a quarantine viewpoint, the Philippine Islands present an unusual problem. The proximity of the islands to the world's greatest foci of three of the quarantinable diseases—cholera, smallpox, and plague—and the fact that rapidly traveling passenger vessels have brought those infected places much nearer the Philippines, has increased the quarantine responsibility.

During the month of May an epidemic of Asiatic cholera developed in a group of small islands located off the northern coast of the island of Cebu. This epidemic remained strictly localized for several weeks but gradually spread to the mainland of Cebu and to

the neighboring island of Negros. Cooperating with the local health authorities, the various officers of the Public Health Service have been authorized to give all applicants preventive inoculations against cholera. All interisland vessels are periodically fumigated at intervals of six months and all members of the crew are vaccinated against smallpox unless they are able to produce a certificate showing successful vaccination within one year.

Following the outbreak of meningitis and in accordance with Executive order issued June 21, 1929, by the President of the United States, all steerage passengers leaving the Philippine Islands for ports in the United States or its dependencies were required to undergo 14 days' detention and to be found negative for meningitis before being allowed to sail. All cabin passengers were required to present themselves for examination on the day of sailing. If there was no evidence of recent contact with meningitis cases, clearance cards were then issued. After several months, during which time no cases of meningitis developed on board passenger-carrying vessels entering the United States, this order was modified, but in February a recurrence among Filipino steerage passengers necessitated the return to the 14-day quarantine. The laboratory work has been done in two properly equipped laboratories in the city of Manila, which are inspected by the quarantine officer daily in order to see that the quality of the work done is maintained. During the year 11,772 examinations for meningococcus were made, of which number 102 were found to be carriers. A number of cases of meningitis occurred in the city of Manila, some traceable to possible contact with crews and passengers arriving from infected ports along the China coast but others for which no such contact could be demonstrated. There is no doubt that the disease exists in the islands and does occur sporadically. By far the largest number of carriers and cases have been found to occur among the inhabitants of the central portion of the archipelago.

During the months of January and February, 1930, an epidemic of smallpox developed in the islands of Sarangani and Balut. These islands have no open ports and very little communication with the mainland. A total of 317 cases with 102 deaths were reported. Immediately following the first reports all the inhabitants of both islands and of the neighboring barrios in Mindanao proper were vaccinated as rapidly as possible. No cases developed on the mainland, and by February 19 the epidemic had completely subsided.

All steerage passengers leaving the Philippine Islands are required to be vaccinated prior to their departure. During the Hong Kong epidemic, all passengers entering Manila from that port had to show evidence of recent vaccination. All members of the crews of interisland vessels are vaccinated periodically. The total number of vaccinations against smallpox performed during the year was 23,820.

Since the outbreak of cholera in May, 1930, advantage has been taken of the 14-day detention period required for meningitis to make careful laboratory examinations of all prospective steerage passengers. It is of interest to note that the rate of cholera carriers has steadily increased. In years when cholera was not epidemic, the carrier rate for the islands was approximately 1 per cent, rarely

over this figure. At present the percentage of carriers discovered among steerage passengers is approximately 4 per cent, although the majority of the passengers leaving Manila for the States are from areas not infected epidemically with the disease. The total number of stool specimens examined during the year was 14,079, and the number of carriers was 111.

Special efforts have been made during the year to place the port area in a sanitary condition and render it as far as possible rat proof. Trapping and poisoning are carried out in the city of Manila and at Cebu and Iloilo, under the direction of the local bureau of health. A total of 54,331 rats were recovered and examined at Manila. No cases of plague-infected animals were discovered.

FUMIGATION OF VESSELS

During the fiscal year 1930, 593 vessels were fumigated at Philippine Island ports, from which 1,798 rats were recovered and examined; none were found to be plague infected. The majority of the fumigations were carried out in Manila, and particular attention has been paid to vessels which have been engaged in the transportation of foodstuffs from Saigon, India, and Java ports, where plague had been reported. These vessels were fumigated every trip before discharging cargo. An increasing percentage of fumigations has been with Zyklon-B, as this method is particularly well adapted to the conditions at Manila. All interisland shipping, however, has been as heretofore fumigated with sulphur, as these fumigations are carried out while the vessels are at the dock in the congested river area. Fumigation of interisland vessels is done once every six months.

BUILDINGS AND FLOATING EQUIPMENT

At the quarantine stations at Mariveles and Cebu the buildings were kept in as good repair as possible with the appropriations available. No new construction of any kind was authorized or done during the year. At Mariveles a survey of the detention barracks, dock, bath, and disinfection blocks has been made with the idea of obtaining an appropriation from the Philippine Government for new construction and the absolutely essential repair of some of the old buildings.

No new launches have been added to the floating equipment during the past year. The steam launch *Shipboard* was transferred during April from Manila to the station at Cebu, retaining the motor launch *Viola* and the steam launch *Burma* for the work at the Manila station. An elaborate study made by the office of the Governor General, dealing with the expense of launch maintenance by the several departments and bureaus using vessels of this character, showed that the Bureau of Quarantine Service maintained their floating equipment at a figure some 30 per cent lower than the nearest competitor and that the boats were in much better condition. This excellent showing can be accounted for by the fact that annual general overhauls are made and a constant daily attention to minor repairs and painting is enforced. This expense is borne by the Phil-

ippine Government, as is the case in the matter of necessary repairs to and new construction of buildings.

OPERATIONS OF THE SERVICE IN PORTO RICO

Surg. L. E. Hooper, chief quarantine officer. Post-office and telegraphic address, San Juan, P. R.

Quarantine inspection facilities are maintained at all ports of entry. San Juan is the principal port and headquarters of the quarantine service for the island. The Miraflores quarantine station in San Juan Harbor is completely equipped for boarding, fumigation, and detention. Fumigations are effected with Zyklon-B or generated hydrocyanic acid. There is also considerable shipping activity at Ponce and adequate boarding and fumigation facilities are maintained at that port. In addition, boarding inspection is provided at the subports of Aguadilla, Arecibo, Arroyo, Central Aguirre, Fajardo, Guanica, Humacao, and Mayaguez.

A considerable number of foreign vessels enter the ports of this island. Many come from northern Europe. The Spanish Transatlantic Line passenger ships arrive twice each month from Mediterranean ports and the Canary Islands. These vessels are carefully handled to prevent the possible introduction of plague. The cargoes are usually vegetables in crates and these are subjected to fumigation in covered lighters before they are permitted to come to the docks. Commerce with United States ports is very active. The New York and Porto Rico Line, Bull Insular Line, and the Red "D" Line maintain a regular service to New York. They carry passengers and general cargo. The Lykes Line boats from Galveston also call at these island every two weeks. Many of these vessels call en route at ports in Cuba, Haiti, Dominican Republic, and Venezuela. No quarantinable diseases were detected during the year.

The administrative activities of the quarantine station and the relief station are combined and are located in the "Marina," at the old naval station. This office is conveniently situated for all of the shipping interests. Much work on the grounds and buildings at the Miraflores quarantine station has been done during the fiscal year. The work of rebuilding the station roads was also continued during the year.

The floating equipment consists of 3 launches, 2 at San Juan and 1 at Ponce. They have been kept in repair throughout the year by the station personnel.

OPERATIONS OF THE SERVICE IN THE VIRGIN ISLANDS

Passed Asst. Surg. E. H. Carnes, chief quarantine officer. Post-office and telegraphic address, St. Thomas, Virgin Islands.

The office headquarters are located in the business district of St. Thomas. The detention station is located at the harbor entrance, a distance of about 1 mile from the town of St. Thomas. While this is part of the mainland, the detention station may be reached only by water, no road having been built to the station. At the neighboring island of St. Croix boarding is done at the ports of Frederiksted

and Christiansted by medical officers of the Navy on duty in these towns. At the island of St. John, boarding is done when necessary and bills of health are issued by the Navy dispatching secretary, who has also been appointed an acting assistant surgeon in the Public Health Service.

Situated on or near the regular steamship lanes between the Panama Canal and European ports, St. Thomas, with an excellent harbor, furnishes an important refueling depot, and it is for the purpose of taking bunkers that most ships enter the port. As in former years, a number of tourist ships enter during the winter months. As these ships are in port only a few hours, quarantine inspection is expedited as much as possible in order that the tourists may spend all the time available ashore. From time to time warships, both foreign and American, enter the port. As a courtesy to foreign warships, quarantine inspection is minimized, provided no quarantinable diseases have occurred on board. During the winter months, pleasure yachts are frequent visitors. Sailing vessels in the interisland trade enter port during the entire year. Two air lines now operate through St. Thomas—the Pan American Airways and the New York, Rio de Janeiro, Buenos Aires Line, each company operating a weekly north and south bound plane.

No quarantinable diseases were encountered during the past year. Ships from the east coast of Brazil are subjected to close inspection and the regulations to prevent the introduction of yellow fever are strictly enforced. The presence of yellow fever in Brazil is a potential source of danger to the Virgin Islands, as ships from Brazilian ports put into St. Thomas for bunkers, where the *Aedes* index is high. Ships from plague-infected ports of South America constitute a large number of the ships entering, and strict surveillance of these ships while in port is maintained to see that all the regulations relative to the prevention of the introduction of plague are complied with. These ships, in port for bunkers for a few hours only, usually with full cargo, are not fumigated but are required to fend off 4 feet from the dock, apply standard rat guards on all lines, raise or light and guard gangways at night; and, in the case of ships from badly infected ports, are not allowed alongside the wharves after night. Zyklon-B is used as a fumigant in the case of steamships while sulphur is used for small sloops and schooners.

During the year a rat and flea survey of the port of St. Thomas has been made by the Public Health Service. Identification of species of fleas has been made at the New York quarantine station. The daily average number of traps was 42; total number of rats taken 303, of which 300 were classified as *Rattus alexandrinus* and 3 as *Rattus rattus*. No Norway rats were found. A total of 2,034 fleas were obtained, of which practically 99 per cent have been identified as *Xenopsylla cheopis*. Identification of species of fleas has not yet been completed.

TRANSACTIONS AT FOREIGN PORTS

TABLE 6.—Summary of transactions at foreign ports

Station	Vessels inspected	Fumigation of vessels supervised	Passengers and crews inspected		Bills of health countersigned
			Passengers	Crews	
Amoy, China.....	69	0	22,369	7,044	105
Guantanamo Bay, Cuba.....	0	0	0	0	220
Guayaquil, Ecuador.....	280	0	1,425	6,636	280
Habana, Cuba.....	1,943	116	151,835	198,423	1,943
Hong Kong, China.....	496	1	35,130	58,488	745
Progreso, Mexico.....	6	4	1,436	11,660	287
Puerto Mexico, Mexico.....	0	3	16	0	109
Shanghai, China.....	600	86	4,133	80,061	767
Tampico, Mexico.....	539	37	343	19,717	539
Vera Cruz, Mexico.....	316	30	19,213	7,148	316
Total.....	4,249	277	235,900	389,177	5,311
<i>European ports</i>					
Antwerp, Belgium.....	115	77	7,022	0	855
Belfast, Ireland.....	0	0	6,293	0	112
Galway, Ireland.....	3	0	491	0	3
Bremen, Germany.....	0	113	20,664	0	404
Cobh, Irish Free State.....	0	0	21,311	0	199
Copenhagen, Denmark.....	0	0	1,695	0	202
Danzig, Free City.....	170	0	33,780	0	31
Dublin, Ireland.....	0	0	0	0	47
Glasgow, Scotland.....	0	0	23,341	0	346
Goteborg, Sweden.....	27	0	10,717	0	118
Hamburg, Germany.....	4	246	28,997	0	896
Liverpool, England.....	0	79	23,324	0	641
London, England.....	68	0	2,157	0	676
Londonderry, Ireland.....	0	0	5,579	0	31
Naples, Italy.....	170	0	47,176	10,862	278
Oslo and Bergen, Norway.....	0	0	3,770	0	134
Palermo, Italy.....	0	0	1,828	0	149
Patras, Greece.....	30	0	4,063	7,436	30
Piræus, Italy.....	52	0	4,041	3,129	95
Rotterdam, Holland.....	38	60	6,453	0	630
Southampton, England.....	0	0	25,988	0	471
Stockholm, Sweden.....	0	6	0	0	104
Total.....	677	575	278,690	21,427	6,452
Total, all stations.....	4,926	852	514,590	410,604	11,763

REPORTS FROM FOREIGN PORTS

AMOY, CHINA

Acting Asst. Surg. E. J. Strick in charge. Post-office and telegraphic address, care American consulate, Amoy, China.

Health conditions in Amoy during the fiscal year 1930 have been fairly satisfactory. There have been no great epidemics, but some cases of cholera were reported during the latter part of the year. Plague was not reported present in Amoy but its presence was reported in neighboring villages and cities on the mainland, the nearest town being 15 miles distant. Sporadic cases of cerebrospinal meningitis were reported from time to time during the year. Smallpox is also reported present in the surrounding district.

There are no direct ships between Amoy and United States ports, but there is direct traffic between Amoy and Manila, the passengers consisting mostly of laborers and some merchants. The usual precautions against the introduction of smallpox into the Philippine Islands have been observed; passengers must demonstrate immunity before being allowed to embark.

During the fiscal year 1930, 69 vessels were inspected, the crew on which totaled 7,044 and passengers 22,369; 105 bills of health were countersigned.

GUAYAQUIL, ECUADOR

Acting Asst. Surg. Carlos V. Coello in charge. Post-office and telegraphic address, care American consulate, Guayaquil, Ecuador.

During the calendar year 1929, 160 cases of plague occurred, with 56 deaths. A total of 153,850 rats were trapped; of this number 32,600 were examined and 95 were found infected with the *Bacillus pestis*. The Ecuadorian Public Health Service has carried on an intensive flea survey. The prevalence of the *cheopis* was apparent. In September, 1929, under the direction of a representative of the Pan American Sanitary Bureau, and in cooperation with the Ecuadorian health authorities, an intensive deratization campaign was started in Ecuador, with the most satisfactory results. The last case of human plague occurred in March, 1930.

During the fiscal year 280 vessels bound for ports in the United States or the Canal Zone were inspected. These vessels carried 6,636 members of crew and 1,425 passengers.

HABANA, CUBA

Acting Asst. Surg. Richard Wilson in charge. Post-office address, box 629, Habana, Cuba. Telegraphic address, Machina, Habana, Cuba.

The work of this office in brief is as follows: (1) To countersign bills of health issued by the consul general of the United States to vessels going to ports in the United States and its dependencies, either direct or via foreign ports (these bills of health are delivered to the vessel at the last moment after all the requirements have been complied with); (2) to report the sanitary condition of the city and port and, if possible, of the surrounding country; (3) to supervise the fumigation of vessels bound for United States ports when necessary; (4) to inspect vessels, cargoes, crews, and passengers bound for United States ports when necessary; (5) to examine American seamen who are sick enough to be sent to a hospital and to report to the consul general, recommending appropriate action to be taken.

The vessels fumigated in this port are divided into three classes: (1) Vessels fumigated by the service. These include vessels going direct to the United States or its dependencies that are fumigated to comply with the quarantine regulations. (2) Vessels fumigated by the Cuban quarantine under the supervision of the service. These include vessels that require fumigation by the Cuban quarantine regulations and intend going to the United States, usually via Cuban ports. (3) Vessels recommended for fumigation at a United States port, either on arrival or when empty, according to circumstances. These include vessels in transit with more or less cargo or passengers on board, on which account fumigation here is not advisable.

During the past fiscal year 1,943 bills of health were issued at this port and a total of 198,423 crew and 151,835 passengers were inspected.

HONG KONG, CHINA

Passed Asst. Surg. F. C. Stewart in charge. Post-office and telegraphic address, care American consulate, Hong Kong, China.

Particular attention has been given throughout the year to the inspection of steerage passengers embarking for the United States and its dependencies. During this period 496 vessels were inspected and 745 bills of health were countersigned. These vessels carried a total of 58,488 crew and 35,130 passengers.

The procedure instituted a few years ago requiring steerage passengers to be vaccinated against smallpox and to show a recent "take" or an "immune" reaction before being allowed to purchase steamship tickets was continued throughout the year. At the outbreak of epidemic smallpox early in January, 1930, orders were issued to the steamship companies requiring all passengers and crew destined for or calling at American ports to be vaccinated before departure or present a valid vaccination certificate issued within one year. The number of cases of smallpox reported during the fiscal year was 424, with 331 deaths; 323 cases and 259 deaths occurred from December, 1929, to June, 1930.

Meningococcus (cerebrospinal) meningitis has been important from a quarantine standpoint in the Far East, though there has been no epidemic in Hong Kong during the past year; the number of cases being 17 with 9 deaths. A large proportion of Chinese passengers for the United States come from Canton, where meningitis has been prevalent during the year, and from districts farther inland, from which reports are not available. In view of these conditions such passengers are not given meningitis clearance until it has been ascertained that they have not lived in such districts for the two weeks preceding their embarkation. During the year 35,130 passengers were given meningitis clearance. There were 2,663 throat smears made on the Chinese crew of the Dollar Line ships, of which 21 were found positive for meningococcus.

PUERTO MEXICO, MEXICO

Acting Asst. Surg. J. J. Sparks in charge. Post-office and telegraphic address, care British consulate, Puerto Mexico, Mexico.

The vice consulate at this port was closed during the fiscal year 1928 and the Public Health Service officer has since that date issued bills of health to departing vessels. The total number of such bills of health issued during the current fiscal year was 109.

Occasionally a tanker or cargo vessel arrives at this port from South American ports, and in all cases where such vessels had called at a port where yellow fever was reported to exist, they have been fumigated by the Federal health officer. Three fumigations were performed during the year on tugs belonging to the Aguila Co. before these tugs were sent to Mobile, Ala., for repairs and general overhauling.

SHANGHAI, CHINA

Acting Asst. Surg. Thomas B. Dunn in charge. Post-office and telegraphic address, care American consulate, 1 Canton Road, Shanghai, China.

The work in Shanghai during the past year has been largely centered about the inspection of passengers and crews departing on vessels for United States ports for possible epidemic meningitis. During the year ended June 30, 1930, there were 526 cases reported by the Municipal Councils of Shanghai, and during this period there were 4,133 passengers boarding at Shanghai for America, Honolulu, or the Philippine Islands. These were inspected 24 hours before sailing, and clearance cards were issued. Six hundred and twenty-nine Chinese and foreign sailors signing on in Shanghai were cultured for meningococci, with entirely negative findings. This work was done by the local laboratories. It was discontinued in November, 1929, but Chinese signing on in this port are given a careful inspection prior to embarking. There has been no meningitis discovered on any ship during the year. One case of plague, however, was removed from the ship *City of Tokyo* by the customs port doctor at this port. This ship had come from India to Japan, and thence to Shanghai. No other cases developed.

At the request of the Philippine quarantine service, stool cultures for cholera continued on passengers and crews destined for the Philippines during the cholera season of 1929; 516 cultures being made but no carriers were found.

TAMPICO, MEXICO

Acting Asst. Surg. W. J. Lynn in charge. Post-office and telegraphic address, Comercio 52, Oriente, Tampico, Mexico.

During the last three years the port of Tampico has lost much of its importance as an oil-shipping center, partially owing to exhaustion of the oil fields and more particularly to difficulties met by the oil companies through new unfavorable laws governing the exploitation of the fields. Most of the smaller companies have closed up or sold out to the larger concerns and there has been a continual exodus of skilled labor to Venezuela and Colombia, reducing the population of the town to about 80,000.

During the fiscal year 1930, 539 vessels, tankers predominating, carrying 19,717 crew and 343 passengers destined to United States ports, were cleared from Tampico. All fumigations at this port are performed with the use of hydrocyanic-acid gas. Inspections of moorings of vessels at rat-infested wharves are made daily by the service inspector at this port. Airplane service was extended during the year to several places in the interior and on the coast beside the regular daily service to Brownsville.

Twenty-one cases of smallpox originated in Tampico during the year, with eight deaths. Vaccination was made compulsory and all cases were immediately isolated and infected houses were fumigated.

VERA CRUZ, MEXICO

Acting Asst. Surg. H. E. Gimler in charge. Post-office and telegraphic address, care of the American consulate, Vera Cruz, Mexico.

No cases of yellow fever, human plague, or rodent plague were reported during the year. Anti plague work during this period resulted in the trapping and examining of 21,302 rodents, of which none was found infected. Antimosquito work resulted in the finding

of 63,956 mosquito breeding places. The examination of the larvae showed a great number of *Anopheles* but only 24 *Aedes argenteus*. On account of the smallpox outbreak in Mexico City, about 80 per cent of the population were vaccinated against smallpox.

During the year 316 vessels, carrying 19,213 crew and 7,148 passengers, were cleared from Vera Cruz for United States ports. Fumigation by the service was carried out with hydrocyanic-acid gas on 30 vessels. Cyanide fumigations by the Mexican health department on 23 vessels were inspected. Vessels visiting this port are mostly combination freight and passenger steamers, bringing in general cargo and taking out bananas, coffee, broom root, minerals, hides, and other Mexican products.

SERVICE OPERATIONS IN EUROPE

Medical Director Rupert Blue in charge. Post-office and telegraphic address, American Embassy, 5 Rue de Chaillot, Paris, France.

The office in Paris is the supervisory headquarters of the operations of the Public Health Service in Europe, which embraces quarantine and immigration activities and includes also miscellaneous medical services at the various consulates, to which officers are attached as medical advisers. In addition, this office is in close contact with the International Office of Public Hygiene, facilitating the exchange of sanitary information and simplifying cooperative activities of the service.

There has been no change in the United States quarantine regulations enforced at foreign ports during the past year with the exception of a slight reduction in the period of detention for typhus fever. In order to conform with the provisions of the International Sanitary Convention of Paris, 1926, the detention period for this disease was reduced from 14 to 12 days.

Quarantine activities at this port consist of the following: (1) The inspection of passengers and vessels destined to the United States and also of passengers bound for other countries sailing on ships that would, before or after debarkation of such persons, enter American ports; (2) supervision of the deratization (periodic) of vessels that are destined for the United States and the issuance to such vessels of certificates of fumigation or exemption from fumigation; and (3) countersigning bills of health issued by the American consuls at the various ports.

A new port was opened at Gdynia, Poland, by the Polish authorities during the year. It is the intention to use this port for Polish immigration to the exclusion of Danzig Free City. There will be both direct and indirect sailings of vessels conveying immigrants to the United States, although there is no American consul stationed at Gdynia, and, in consequence, no bills of health can be issued. The use of this port will, it is believed, deprive Danzig of 90 per cent of its present passenger traffic.

Shipside inspection was partially discontinued by service officers at Cobh, Galway (Irish Free State), and Southampton, England, in order that more of their time might be devoted to the medical examination of immigrants. The inspections, however, were made

by ship surgeons and other officers of the steamship companies concerned. The cooperation of these companies has been continued throughout the year.

A decrease in the number of passengers embarking at Hamburg, amounting to 25 per cent less than the number embarking last year, is noted. It is probably due to the marked decrease in the German quota beginning July 1, 1929. The reduction in the Swedish quota, beginning July 1, 1929, made it advisable to reduce the number of officers stationed in Sweden and to have the officer on duty in the consulate at Stockholm cover the port of Gothenburg as well. An arrangement was made, effective January 1, 1930, whereby this officer could divide his time between the above-mentioned ports. A similar arrangement, for the same reason, was effected in Norway, and the immigration and quarantine procedures at the ports of Oslo and Bergen are now supervised by one officer.

During the year, 288,750 passengers and 21,427 members of crews were inspected at European ports of embarkation. This number included all persons who embarked by direct lines to the United States from ports where medical officers were stationed, as well as those who were transhipped to such lines from some other port. Of the passengers thus embarked, 56,115 were vaccinated against smallpox, and 74,509 were deloused and their effects disinfected for the purpose of preventing the occurrence of typhus fever on board.

Typhus fever continued to prevail in European and Mediterranean countries throughout the year, Poland again leading with the greatest number of cases, although Rumania followed closely with respect to the number of cases and the greatest number of deaths resulting therefrom. In view of the uninterrupted travel communications between certain countries on the Mediterranean littoral with European States, it has been deemed advisable to include both under the same quarantine restrictions.

An outbreak of smallpox occurred in Holland from July, 1929, to January, 1930. It was introduced from the Dutch West Indies in the person of a seaman. When first introduced it prevailed in mild form and was diagnosed as "alastrim," but later it appeared in virulent type, claiming many victims and causing much suffering among the poorer classes in Rotterdam and vicinity. There occurred during this period 694 cases with 22 deaths. During the course of the epidemic, vaccination of second and third class passengers and crews coming from infected areas was advised by the service officer in charge and carried out by the steamship companies concerned. A mild type of this disease also prevailed in Great Britain throughout the year, 12,797 cases with 100 deaths having been reported from July, 1929, to June, 1930. This disease also occurred with less severity in other sections of Europe.

Statistics for the year show a very low incidence of plague in Europe. Russia heads the list with 188 cases with 92 deaths; Greece with 33 cases and 8 deaths; and Portugal with 39 cases and 1 death. This disease was reported also in Egypt, Tunisia, Algeria, Turkey, and Syria.

The accompanying four tables summarize the quarantine activities of the various European ports where officers are stationed.

TABLE 7.—Primary treatment of passengers and crew prior to embarkation

Port	Passen- gers in- spected	Crew in- spected	Passen- gers vac- cinated	Crew vac- cinated	Passen- gers de- loused	Crew de- loused	Passen- gers de- tained	Passen- gers re- jected
Antwerp.....	6,832	0	0	0	877	0	877	0
Belfast.....	6,293	0	0	0	994	0	0	9
Bremen.....	20,664	0	0	0	2,956	0	1,867	57
Cobh.....	21,311	0	0	0	9,065	0	0	0
Copenhagen.....	1,695	0	0	0	0	0	0	0
Danzig.....	8,818	0	0	0	7,635	0	0	0
Galway.....	491	0	0	0	250	0	1	0
Glasgow.....	23,341	0	0	0	0	0	0	0
Goteborg.....	10,717	0	0	0	461	0	0	0
Hamburg.....	28,861	0	5	0	3,039	0	2,352	5
Liverpool.....	23,324	0	984	0	810	0	15	1
London.....	2,157	0	0	0	0	0	0	0
Londonderry.....	5,579	0	0	0	802	0	0	0
Naples.....	47,176	10,862	47,176	0	16,612	0	0	0
Oslo.....	3,770	0	0	0	0	0	0	0
Patras.....	4,063	7,436	2,188	192	1,548	180	0	16
Piræus.....	3,756	3,129	3,657	850	3,401	0	307	13
Palermo.....	1,828	0	1,682	0	321	0	0	0
Rotterdam.....	6,453	0	97	5,422	784	0	748	3
Southampton.....	25,988	0	0	0	13	0	1	3
Total.....	253,117	21,427	55,789	6,464	49,568	180	6,168	109

TABLE 8.—Treatment of passengers coming from other points for embarkation (transmigrants)

Treatment	Antwerp	Copen- hagen	Gote- borg	Liver- pool	Rotter- dam	South- ampton	Total
Passengers inspected.....	239	2,093	189	2,303	870	4,366	10,060
Passengers vaccinated.....	0	0	0	1	0	0	1
Passengers deloused.....	0	0	125	2	0	39	166
Passengers detained.....	0	0	125	0	0	0	125
Passengers rejected.....	0	0	1	0	0	39	40
Baggage disinfected and passed.....	98	0	215	2	0	0	315
Baggage inspected and passed.....	71	0	0	0	0	0	71

TABLE 9.—Primary treatment of passengers proceeding to another port for embarkation

Treatment	Class	Ant- werp	Danzig	Ham- burg	Piræus	Total
Total transmigrants.....	Second.....	0	869	24	66	959
	Third.....	190	24,093	112	219	24,614
Passengers vaccinated.....	Second.....	0	0	0	59	59
	Third.....	0	0	49	217	266
Passengers deloused and passed.....	Second.....	0	592	2	36	630
	Third.....	179	23,671	79	216	24,145
Passengers inspected and passed without delousing.....	Second.....	0	277	22	30	329
	Third.....	11	422	33	3	469
Baggage disinfected and passed.....	Second.....	0	623	5	63	691
	Third.....	111	21,670	93	238	22,112
Baggage inspected and passed.....	Second.....	0	0	25	36	61
	Third.....	54	0	66	51	171
Country of departure:						
Albania.....		0	0	0	6	6
Austria.....		0	0	1	0	1
Cyprus.....		0	0	0	16	16
Czechoslovakia.....		4	0	0	4	8
Danzig.....		0	29	0	0	29
Estonia.....		0	89	0	0	89
Germany.....		0	7	36	0	43
Greece.....		0	0	0	223	223
Hungary.....		16	0	0	0	16
Italy.....		0	0	0	40	40
Latvia.....		0	260	0	0	260
Lithuania.....		0	641	61	0	702
Poland.....		1	23,694	0	0	23,695
Rumania.....		98	0	30	0	128
Russia.....		0	242	2	0	244
Yugoslavia.....		71	0	0	0	71

TABLE 10.—Treatment of baggage, vessels, and service beneficiaries

Port	Baggage disinfected and passed	Baggage inspected and passed	Vessels inspected	Vessels fumigated	Bills of health countersigned	Medical examination of service beneficiaries
Antwerp.....	1017	1,205	115	77	855	18
Belfast.....	167	1,153	0	0	112	19
Bremen.....	2,735	1,385	0	113	404	2
Cobh.....	4,541	6,675	0	0	199	0
Copenhagen.....	0	0	0	0	202	12
Danzig.....	7,448	0	170	0	31	0
Dublin.....	0	0	0	0	47	50
Galway.....	169	0	3	0	3	0
Glasgow.....	0	0	0	0	346	4
Goteborg.....	0	0	27	0	118	0
Hamburg.....	5,707	49,941	4	246	896	3
Liverpool.....	4	0	0	79	641	0
London.....	0	0	68	0	676	5
Londonderry.....	163	1,360	0	0	31	0
Naples.....	44,364	39,405	170	0	278	118
Oslo.....	0	0	0	0	134	0
Patras.....	2,836	3,296	30	0	30	32
Piræus.....	2,150	995	52	0	95	10
Palermo.....	810	1,653	0	0	149	0
Rotterdam.....	1,126	3,087	38	60	630	3
Southampton.....	26	0	0	0	471	1
Stockholm.....	0	0	0	0	104	6
Total.....	73,263	110,155	677	575	6,452	283

SUMMARY OF QUARANTINE TRANSACTIONS AT CONTINENTAL, INSULAR, AND FOREIGN STATIONS

TABLE 11.—Summary of quarantine transactions at continental, insular, and foreign stations for the fiscal year ended June 30, 1930

Station	Vessels inspected	Vessels fumigated	Passengers inspected ¹	Crew inspected	Bills of health, or port sanitary statements issued
Continental.....	17,619	3,690	914,878	1,163,915	42,481
Insular.....	3,026	647	141,416	216,326	6,004
Foreign.....	4,926	852	514,590	410,604	11,763
Total.....	25,571	5,189	1,570,884	1,790,845	60,248

¹ Maritime stations, 825,904; border stations, 88,974. Statistics do not include "local" travelers at border stations, numbering 7,182,174, who, however, were under surveillance.

MEDICAL INSPECTION OF ALIENS

During the fiscal year there were examined by medical officers of the United States Public Health Service 1,211,796 alien passengers for the purpose of detecting physical or mental defects or diseases, as provided by the United States immigration laws, as compared with 973,974 for the fiscal year ended June 30, 1929, 1,178,482 for the fiscal year ended June 30, 1928, 881,699 for the fiscal year ended June 30, 1927, 614,972 for the fiscal year ended June 30, 1926, and 545,472 for the fiscal year ended June 30, 1925.

In addition, 988,759 alien seamen were inspected during the fiscal year ended June 30, 1930, as provided for in the act of February 5, 1917, as compared with 984,771 for the fiscal year ended June 30, 1929, 928,423 for the fiscal year ended June 30, 1928, 996,198 for the

fiscal year ended June 30, 1927, 872,842 for the fiscal year ended June 30, 1926, and 854,915 for the fiscal year ended June 30, 1925. The accompanying tables present in detail the data relative to the inspection and certification of alien passengers and alien seamen.

EXAMINATION OF PROSPECTIVE IMMIGRANTS ABROAD

There has been no material change during the past year in the system of making medical examinations of applicants for immigration visas in their countries of origin. This system of the examination of intending immigrants has proved so satisfactory that it is proposed to extend it to additional foreign countries as soon as trained medical officers are available for this purpose.

There were 156,370 applicants for immigration visas in countries of origin examined by medical officers abroad. Of this number, 2,645 were reported to the consular officers as afflicted with one or more of the diseases listed in class A as mandatorily excludable; 17,522 were reported as afflicted with a disease or condition listed as class B and liable to affect their ability to earn a living; all of the applicants reported in class A and 5,963 of those reported in class B were refused immigration visas by the consular officers for medical reasons.

Of 147,762 aliens who had been passed in the preliminary medical examination abroad and to whom visas had been issued, only 23 were finally rejected upon arrival at a United States port as being afflicted with class A diseases, resulting in mandatory deportation.

TABLE 12.—*Alien passengers inspected and certified at maritime ports in the United States and its dependencies*

Place	Number of alien passengers examined	Alien passengers certified				Total	Important diseases for which class A certification was made											
		Class A		Class B	Class C		Idiocy, imbecility, feeble-minded	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Other dangerous or loathsome contagious diseases
		(1) Idiocy, imbecility, feeble-minded, insanity, epilepsy, chronic alcoholism	(2) Tuberculosis or other loathsome or dangerous contagious diseases	Diseases or defects which affect ability to earn a living	Diseases or defects of less degree													
Atlantic coast																		
Baltimore, Md.	134		5	10		15										1	4	
Beaufort, S. C.	0					0												
Boston, Mass.	8,599	3	2	460	64	529		1	2				1				1	
Brunswick, Ga.	0					0												
Charleston, S. C.	140					0												
Fall River, Mass.	7					0												
Fernandina, Fla.	0					0												
Fort Everglades, Fla.	0					0												
Fort Monroe, Va.	120				1	1												
Fort Pierce, Fla.	0					0												
Georgetown, S. C.	0					0												
Gloucester, Mass.	0					0												
Jacksonville, Fla.	4					0												
Key West, Fla.	8,559	1	1	23		25	1											1
Lewes, Del.	0					0												
Miami, Fla.	3,690		1			1										1		
New Bedford, Mass.	28				1	1												
New London, Conn.	0					0												
Newport, R. I.	0					0												
New York, N. Y. (Ellis Island)	304,355	51	91	12,502	1,005	13,649	7	2	15	10		17	31		7	8	39	6
Perth Amboy, N. J.	1					0												
Philadelphia, Pa.	396			1		1												
Plymouth, Mass.	0					0												
Portland, Me.	107			1		1												
Providence, R. I.	3,070		17	88	7	112						16					1	
Savannah, Ga.	23					0												
Searsport, Me.	0					0												
Vineyard Haven, Mass.	0					0												

TABLE 12.—*Alien passengers inspected and certified at maritime ports in the United States and its dependencies—Continued*

Place	Number of alien passengers examined	Alien passengers certified				Total	Important diseases for which class A certification was made											
		Class A		Class B	Class C		Idiocy, imbecility, feeble-minded	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Other dangerous or loathsome contagious diseases
		(1) Idiocy, imbecility, feeble-minded, insanity, epilepsy, chronic alcoholism	(2) Tuberculosis or other loathsome or dangerous contagious diseases	Diseases or defects which affect ability to earn a living	Diseases or defects of less degree													
Washington, N. C.	0					0												
West Palm Beach, Fla.	0					0												
Wilmington, N. C.	39					0												
Total	329, 272	55	117	13, 085	1, 078	14, 335	8	3	17	10	0	17	48	0	7	10	45	7
Gulf coast																		
Boca Grande, Fla.	0					0												
Carrabelle, Fla.	0					0												
Cedar Keys, Fla.	0					0												
Corpus Christi, Tex.	77					0												
Freeport, Tex.	0					0												
Galveston, Tex.	273					0												
Gulfport, Miss.	0					0												
Mobile, Ala.	95					0												
Morgan City, La.	0					0												
New Orleans, La.	3, 977					0												
Panama City, Fla.	0					0												
Pascagoula, Miss.	0					0												
Pensacola, Fla.	2					0												
Port St. Joe, Fla.	0					0												
Sabine Pass, Tex.	33					0												
Tampa, Fla.	162					0												
Total	4, 619	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific coast																		
Aberdeen, Wash.	0					0												
Angel Island, Calif. (San Francisco)	10, 808		10	192	178	380						1			1	1	7	

Astoria, Oreg.	5					0												
Eureka, Calif.	0					0												
Fort Bragg, Calif.	0					0												
Marshfield, Oreg. (Coos Bay)	1					0												
Monterey, Calif.	0					0												
Newport, Oreg.	0					0												
San Diego, Calif.	1,086	1	8	4		13	1				1			5		2		
San Luis Obispo, Calif.	0					0												
San Pedro, Calif.	8,384			26	8	34												
Santa Barbara, Calif.	0					0												
Seattle, Wash.	2,500	6	19	66	82	173	2	2	1	1		2		3	2	11	1	
South Bend, Wash.	0					0												
Portland, Oreg.	3	1		2		3	1											
Total	22,787	8	37	290	268	603	4	2	1	1		4		9	3	20	1	
<i>Insular</i>																		
Hawaii: Honolulu	10,576	1	3	44	42	90			1					1		2		
Philippines:																		
Manila	20,794		69	52		121									1		68	
Cebu	0					0												
Davao	105					0												
Iloilo	0					0												
Jolo	128					0												
Legaspi	0					0												
Zamboanga	501	7				7	7											
Total	21,528	7	69	52		128	7								1		6	
Porto Rico:																		
San Juan	8,390			1	1	2												
Aguadilla	0					0												
Arecibo	0					0												
Arroyo	0					0												
Central Aguirre	0					0												
Fajardo	0					0												
Guanica	27					0												
Humacao	0					0												
Mayaguez	0					0												
Ponce	5					0												
Total	8,422			1	1	2												
Alaska: Ketchikan	13					0												
Total all stations	397,217	71	226	13,472	1,389	15,158	19	5	19	11	0	21	48	0	17	14	67	76

TABLE 13.—*Alien passengers inspected and certified at international border stations*

Place	Number persons making permanent entry examined	Number persons making temporary entry examined	Alien passengers certified				Total	Important diseases for which class A certifications were made											
			Class A		Class B	Class C		Idiocy, imbecility, feeble-minded	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Other dangerous or loathsome contagious diseases
			(1) Idiocy, imbecility, feeble-minded, insanity, epilepsy, chronic alcoholism	(2) Tuberculosis or other loathsome or dangerous contagious diseases	Diseases or defects which affect ability to earn a living	Diseases or defects of less degree													
Mexican border																			
Ajo, Ariz.	3	252		2		2						1							
Brownsville, Tex.	1,048	7,313	8	60	207	45	2			6		1				1	1	54	
Calexico, Calif.	1,945	3,798	3	85	15	59	3					2				4	2	15	1
Columbus, N. Mex.	0	7,803		3															
Del Rio, Tex.	213	3,292			1		1												
Douglas, Ariz.	1,516	5,321	5	38	32	152	2		1		1		36					2	1
Eagle Pass, Tex.	4,531	4,312	5	5	48	23	81		1		3		4						
El Paso, Tex.	3,652	18,531	22	75	520	315	932	12	3	3		3	9	12	8	13	1	32	1
Guadalupe Gate, Tex.	0	724				52	52												
Hidalgo, Tex.	423	4,565	4	76	100	14	194	4			2								
Laredo, Tex.	23,366	21,335	5	43	442	20	510	4			1		1			2	5	24	3
Naco, Ariz.	228	3,621	17	32	15	161	225	1	1	8	7			8		13		7	
Nogales, Ariz.	6,208	19,047	31	170	307	292	800	8	5	8	9	1	3	30	3	15	5	96	18
Presidio, Tex.	83	17,117	6	4	27	120	157	3			2	1	1			2			1
Rio Grande, Tex.	17	1,518	3	6	1	6	16				3							2	2
Roma, Tex.	25	774		19	17	13	49							2	11	1		1	6
San Ysidro, Calif.	458	5,738	5	28	188	99	320	3		1	1		2			17		8	1
Sasabe, Ariz.	6	628	1				1	1											
Thayer, Tex.	52	761	1	8	17	4	30	1											
Tucson, Ariz.	573	0	18	114	36	2	170	2	1	6	9		5	4		48	2	20	7
Ysleta, Tex.	0	824				26	26												
Zapata, Tex.	141	466		1	9	1	11											1	
Total	44,488	127,740	134	769	1,982	1,404	4,289	45	11	27	43	6	29	292	12	116	17	264	41

Canadian border

Bellingham, Wash.	0	0					0												
Blaine, Wash.	1,200	432	28	13	70	34	145	8	2	3	14	1	6			3	1	3	
Buffalo, N. Y.	499	262	18	1	41		60	9		8		1		1					
Calais, Me.	896	99	7	4	81	41	133	4			3							4	
Detroit, Mich.	1,795	3,727	25	17	324	294	660	11	7	6	1		8			4		5	
Duluth, Minn.	5	1,585			3	1	4												
Eastport, Idaho	1,707	26,560	3	1	42	32	78		1		2							1	
Eastport, Me.	12	59,168	1		3		4				1								
Erie, Pa.	0	0					0												
Halifax, Nova Scotia, Canada	2,261	221	5	8	146	306	465		1		4		1			1	1	5	
Havre, Mont.	22	18					0												
Houlton, Me.	1,122	5	3	3	3		9		1		1							3	1
International Falls, Minn.	205	195,782	2	1	31	2	36				2							1	
Jackman, Me.	241	0	4		16	78	98			1	3								
Lewiston, N. Y.	27,132	0	3	1	6	1	11				3								
Malone, N. Y.	61	786	1	5		1	7		1				1			1		2	1
Montreal, Canada	10,496	6,919	44	78	1,315	183	1,620	26	3	11	4		24	34		4	2	7	7
Newport, Vt.	683	1,025	12	2	79	40	133	5		6	1		2						
Niagara Falls, N. Y.	527	1,583	7	11	64	9	91	1	1	3	2					4		6	1
Northport, Wash.	0	0					0												
Noyes, Minn.	77	201	15	3	32	11	61	5		6	3	1		1		1		1	
Ogdensburg, N. Y.	503	7	4	3	10	6	23			1	3		1			1		1	
Oroville, Wash.	28	12,448					0												
Portal, N. Dak.	95	66	3	6	31	17	57	2		1			1	1		3		1	
Port Huron, Mich.	805	752	19	9	99	49	176	8	1	2	8		9						
Quebec, Canada	3,728	5,595	2	1	254	164	421			1	1								1
Rouses Point, N. Y.	745	0	10	11	28	2	51	6	1	3			3			1	1	6	
St. Albans, Vt.	87	58	4	4	13	3	24	1		1	1	1	3			1			
St. Johns, New Brunswick, Canada	1,728	459	2	3	72	44	121	1			1		3						
Saulte Ste. Marie, Mich.	446	355	2		3		5			2									
Scobey, Mont.	3	15	2	1	5	5	13			2			1						
Sumas, Wash.	198	212,291	2	10	69	13	94	1		1			2			2		5	1
Sweetgrass, Mont.	459	34,679	2	2			4			1									4
Van Buren, Me.	172	6		2	1	5	8						2						
Vanceboro, Me.	1,923	803	1	4	1		6				1		2					2	
Vancouver, Canada	5,528	0	6	12	173	29	220	3		3			7	1		1	2		1
Victoria, Canada	1,712	0	3		12	59	74			3									
Winnipeg, Manitoba, Canada	3,962	3,115	16	15	787	318	1,136		8	3	4	1	7	2		2		2	1
Yarmouth, Nova Scotia, Canada	2,252	14	19	2	94	49	164	6	1		11		1			1			
Total	73,315	569,036	275	233	3,908	1,796	6,212	99	26	68	73	5	85	40	0	30	7	55	20

TABLE 14.—*Alien seamen inspected and certified at all ports in the United States and possessions*

Place	Number of alien seamen examined	Alien seamen certified				Total	Important diseases for which class A certification was made											
		Class A		Class B	Class C		Idiocy, imbecility, feeble-minded	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Other dangerous or loathsome contagious diseases
		(1) Idiocy, imbecility, feeble-minded, insanity, epilepsy, chronic alcoholism	(2) Tuberculosis or other loathsome or dangerous contagious diseases	Diseases or defects which affect ability to earn a living	Diseases or defects of less degree													
Atlantic coast																		
Baltimore, Md.	21,075	3	112	34	0	149		1	1	1		1	2		23	31	55	
Beaufort, S. C.	0					0												
Boston, Mass.	57,832		93	221	5	319						8			5	43	37	
Brunswick, Ga.	364		2	1		3									1	1		
Charleston, S. C.	4,148		11			11									1	7	3	
Fall River, Mass.	1,563					0												
Fernandina, Fla.	39					0												
Fort Everglades, Fla.	0					0												
Fort Monroe, Va.	17,848		76	9	11	96						2			4		69	
Fort Pierce, Fla.	0					0												
Georgetown, S. C.	0					0												
Gloucester, Mass.	158		2	3	2	7											2	
Jacksonville, Fla.	2,265		15			15									2	2	11	
Key West, Fla.	3,045					0												
Lewes, Del.	37					0												
Miami, Fla.	12,556		8			8												
New Bedford, Mass.	41			1		1									1	1	6	
New London, Conn.	0					0												
Newport, R. I.	0					0												
New York, N. Y. (Ellis Island)	575,052	7	508	22	5	542	1		4	2		7	24		86	166	225	
Perth Amboy, N. J.	2,748			5		5												
Philadelphia, Pa.	29,797		118	1		119						2			46	6	63	1
Portland, Me.	4,695		2			2												
Providence, R. I.	5,700		6	3		9						1				2	3	
Plymouth, Mass.	90					0												
Searsport, Me.	0					0												
Savannah, Ga.	2,255		7	1		8										4	3	
Vineyard Haven, Mass.	6					0												
Washington, N. C.	0					0												

West Palm Beach, Fla.	86					0												
Wilmington, N. C.	1,391		1			1									1			
Total	742,791	10	961	301	23	1,295	1	1	5	3	0	13	34	0	170	263	478	3
<i>Gulf coast</i>																		
Boca Grande, Fla.	0					0												
Carrabella, Fla. (St. George Sound)	0					0												
Cedar Keys, Fla.	0					0												
Corpus Christi, Tex.	1,125					0												
Freeport, Tex.	442					0												
Galveston, Tex.	17,574		43			43						1				19	23	
Gulfport, Miss.	0					0												
Mobile, Ala.	6,575					0												
Morgan City, La. (Atchafalaya)	0					0												
New Orleans, La.	49,434	1	144	15	20	180		1							72	9	63	
Panama City, Fla.	82					0												
Pascagoula, Miss.	0					0												
Pensacola, Fla.	1,747		6		5	11										6		
Port St. Joe, Fla.	0					0												
Sabine Pass, Tex.	5,766		3			3											3	
Tampa, Fla.	3,757		5	22		27						1				3		1
Total	86,502	1	201	37	25	264	0	0	1	0	0	0	2	0	72	37	89	1
<i>Pacific coast</i>																		
Aberdeen, Wash.	1,869					0												
Astoria, Oreg.	4,540		5	1		6									1	2	2	
Angel Island, Calif. (San Francisco)	15,068		16	3	2	21					1				3	6	6	
Marshfield, Oreg. (Coos Bay)	949					0												
Eureka, Calif.	0					0												
Fort Bragg, Calif.	0					0												
Monterey, Calif.	0					0												
Newport, Oreg.	0					0												
Portland, Oreg.	641		3			3						1			1		1	
San Diego, Calif.	8,762		1	1		2									1			
San Luis Obispo, Calif.	152					0												
San Pedro, Calif.	51,349	2	58	16	5	31			2		4				15	15	23	1
Santa Barbara, Calif.	0					0												
Seattle, Wash.	3,579				1	1												
South Bend, Wash.	0					0												
Total	86,909	2	83	21	8	114	0	0	0	2	0	5	1	0	21	23	32	1

TABLE 14.—*Alien seamen inspected and certified at all ports in the United States and possessions—Continued*

Place	Number of alien seamen examined	Alien seamen certified				Total	Important diseases for which class A certification was made											
		Class A		Class B	Class C		Idiocy, imbecility, feeble-minded	Epilepsy	Insanity	Psychopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Other dangerous or loathsome contagious diseases
		(1) Idiocy, imbecility, feeble-minded, insanity, epilepsy, chronic alcoholism	(2) Tuberculosis or other loathsome or dangerous contagious diseases	Diseases or defects which affect ability to earn a living	Diseases or defects of less degree													
Canadian border																		
Blaine, Wash.	0					0												
Bellingham, Wash.	155					0												
Buffalo, N. Y.	13,665			8		80												
Detroit, Mich.	0					0												
Duluth, Minn.	235			1	1	2												
Erie, Pa.	536					0												
Ogdensburg, N. Y.	383		1	2		3											1	
Port Huron, Mich.	0					0												
Sault Ste. Marie, Mich.	0					0												
Lewiston, N. Y.	145					0												
Eastport, Me.	3,368					0												
Calais, Me.	0					0												
Total	18,487	0	1	83	1	85	0	0	0	0	0	0	0	0	0	0	1	0
Insular																		
Hawaii: Honolulu	25,525		8	5	2	15						3					2	3
Philippine Islands:																		
Cebu	0					0												
Davao	0					0												
Iloilo	0					0												
Jolo	0					0												
Legaspi	0					0												

Manila.....	0					0												
Zamboanga.....	0					0												
Total.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Porto Rico:																		
Aguadilla.....	8					0												
Arecibo.....	0					0												
Arroyo.....	28					0												
Central Aguirre.....	0					0												
Fajardo.....	58					0												
Guanica.....	6,700		6			6								1	5			
Humacao.....	55					0												
Mayaguez.....	208					0												
Ponce.....	1,206		9			9										5	4	
San Juan.....	20,281		8	1		9										4	4	
Total.....	28,544	0	23	1	0	24	0	0	0	0	0	0	0	0	1	14	8	
Alaska: Ketchikan.....	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total all stations.....	988,759	13	1,277	448	59	1,797	1	1	6	5	0	21	37	0	264	339	611	5

TABLE 15.—*Summary of medical inspection of aliens*

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.....	88,775	888	88,478	5	23	216	53	297
Second.....	75,883	1,778	75,157	5	12	650	59	726
Third.....	126,415	18,930	122,651	42	151	2,363	1,208	3,764
Stowaways.....	968	749	895	5	33	32	3	73
Total.....	292,041	22,345	287,181	57	219	3,261	1,323	4,860

GROUP II.—ALIEN PASSENGERS EXAMINED ABROAD, REEXAMINED ON ARRIVAL

Class	Total examined	Inten- sively exam- ined	Passed abroad	Passed on arrival	Certified on arrival (con- dition noted abroad)					Certified on arrival (con- dition not noted abroad)					Total certi- fied	
					A-I	A-II	B	C	Number certi- fied	A-I	A-II	B	C	Number certi- fied		
First.....	3, 119	309	2, 923	2, 920			192	4	196			1	2	3	199	
Second.....	26, 893	2, 879	24, 236	24, 224			2, 655	2	2, 657		5	3	2	2	12	2, 669
Third.....	75, 164	8, 719	67, 812	67, 734			7, 328	24	7, 352		9	4	33	32	78	7, 430
Total.....	105, 176	11, 907	94, 971	94, 878			10, 175	30	10, 205		14	7	36	36	93	10, 298

GROUP III.—ALIEN SEAMEN, EXAMINED ON ARRIVAL

	Total examined	Intensively examined	Passed	Certified				Total certified
				A-I	A-II	B	C	
Alien crew.....	988,496	350,881	986,697	13	1,284	445	57	1,799
Workaways.....	263	133	258	0	0	3	2	5
Total.....	988,759	351,014	986,955	13	1,284	448	59	1,804

TABLE 16.—*Summary of medical inspection of aliens*

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).....	114,727	99,187	109,235	285	561	3,026	1,620	5,492
Statistical, making temporary entry.....	59,329	24,017	58,098	55	88	794	294	1,231
Nonstatistical, making entry (local crossers, etc.).....	633,326	152,914	629,767	68	352	1,891	1,248	3,559
Total.....	807,382	276,118	797,100	408	1,001	5,711	3,162	10,282

TABLE 16.—*Summary of medical inspection of aliens—Continued*

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	
Statistical, making permanent entry (bona fide immigrants).....	3, 076	2, 675	2, 881	2, 857	-----	-----	177	18	195	1	1	2	20	24	219
Statistical, making temporary entry.....	4, 121	4, 121	4, 121	4, 121	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nonstatistical, making entry (local crossers, etc.).....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Total.....	7, 197	6, 796	7, 002	6, 978	-----	-----	177	18	195	1	1	2	20	24	219

GROUP III.—ALIEN SEAMEN, EXAMINED ON ARRIVAL

	Total examined	Intensively examined	Passed	Certified				Total certified
				A-I	A-II	B	C	
Alien crew.....	18, 487	15, 081	18, 402	0	1	83	1	85
Workaways.....	-----	-----	-----	-----	-----	-----	-----	-----
Total.....	18, 487	15, 081	18, 402	0	1	83	1	85

EUROPEAN PORTS

Medical Director Rupert Blue in charge. Post office and telegraphic address, American Embassy, 5 Rue de Chaillot, Paris, France.

There has been no change in the system of the medical examination of applicants for visas at the consulates during the year. In 1928 the practical importance of establishing a better basis for evaluating the mental capacities of the various races was recognized and the necessary tests to determine the variations, if any, have been gradually extended and improved. A series of intelligence tests was given, by or under the direction of Surg. Lawrence Kolb, to about 900 aliens applying during the year at Dublin, Cologne, Oslo, Southampton, and Naples, and a shorter series was given to 280 applying at Hamburg, Stockholm, and Gothenburg.

The system of intensive examination of applicants for immigration visas has not been extended to other countries during the year. Such examinations have been confined to England, Scotland, Northern Ireland, Irish Free State, Belgium, Holland, Germany, Poland, Czechoslovakia, Italy, Norway, Sweden, and Denmark. Beginning July 1, 1930, an office will be opened at the American Consulate General, Vienna, Austria, with a medical officer in charge, where applicants will be examined according to the intensive method before visas are granted.

Cooperation between the services engaged in immigration work abroad, namely, the Department of State, the Department of Labor,

and the Public Health Service, has been characterized by the greatest cordiality on the part of the officials at all stations. The attitude of the public toward the examinations as reported from the stations is tolerant and favorable in most countries.

There were medically examined during the year 156,370 applicants, which figure represents a decrease of 17,370 from the number examined during the preceding year. The decrease is due mainly to the quota reduction for Germany, Norway, and Sweden, and, to some extent, to a diminished nonquota immigration from all countries excepting Italy. Of the total examined, 123,526 were quota, 32,814 nonquota, and 30 nonimmigrant. The quota applicants comprised 78.9 per cent; nonquota applicants, 21 per cent; and nonimmigrants, 0.01 per cent.

TABLE 17.—*Distribution according to class of applicants for immigration visas who were medically examined at each station from July 1, 1929, to June 30, 1930*

Country and consular office	Total applicants examined	Number of applicants in each class			Percentage of applicants in each class		
		Quota	Non-quota	Nonimmigrants	Quota	Non-quota	Nonimmigrants
Belgium: Antwerp.....	1,443	1,154	289	0	79.9	20.0	0
England, total.....	20,329	18,453	1,874	2	90.7	9.2	.01
Liverpool.....	8,907	8,323	582	2	93.4	6.5	.02
London.....	7,524	6,429	1,095	0	85.4	14.5	0
Southampton.....	3,898	3,701	197	0	94.9	5.1	0
Irish Free State, total.....	20,195	19,610	582	3	97.1	2.9	.01
Cobh.....	7,203	6,989	214	0	97.0	2.9	0
Dublin.....	12,992	12,621	368	3	97.1	2.8	.02
Northern Ireland: Belfast.....	9,999	9,172	225	2	97.6	2.4	.02
Scotland: Glasgow.....	22,018	21,214	804	0	96.3	3.6	0
Germany, total.....	29,169	26,968	2,184	17	92.4	7.5	.06
Berlin.....	5,789	5,146	642	1	88.9	11.1	.02
Bremen.....	3,922	3,604	318	0	91.9	8.1	0
Cologne.....	7,107	6,698	408	1	94.2	5.7	.01
Hamburg.....	2,417	2,017	386	14	83.4	15.9	.58
Stuttgart.....	9,934	9,503	430	1	95.6	4.3	.01
Holland: Rotterdam.....	3,840	3,622	215	3	94.3	5.6	.08
Poland: Warsaw.....	11,236	7,357	3,879	0	65.5	34.5	0
Denmark: Copenhagen.....	1,327	1,051	276	0	79.2	20.8	0
Norway, total.....	2,974	2,472	500	2	83.1	16.8	.06
Bergen.....	1,318	1,144	174	0	86.8	13.2	0
Oslo.....	1,656	1,328	326	2	80.2	19.7	.12
Sweden, total.....	3,593	3,176	416	1	88.4	11.6	.03
Gothenburg.....	1,933	1,696	237	0	87.7	12.2	0
Stockholm.....	1,660	1,480	179	1	89.1	10.8	.06
Italy, total.....	25,571	6,069	19,502	0	23.7	76.3	0
Genoa.....	4,188	1,217	2,971	0	29.1	70.9	0
Naples.....	16,222	3,488	12,734	0	21.5	78.5	0
Palermo.....	5,161	1,364	3,797	0	26.4	73.6	0
Czechoslovakia: Prague.....	5,276	3,208	2,068	0	60.8	39.2	0
All countries.....	156,370	123,526	32,814	30	78.9	20.9	.02

TABLE 18.—*Distribution according to sex of applicants for immigration visas who were medically examined at each station from July 1, 1929, to June 30, 1930*

Country and consular office	Number of each sex examined		Percentage of each sex examined	
	Male	Female	Male	Female
Belgium: Antwerp.....	790	653	54.7	45.2
England:				
Liverpool.....	4,399	4,508	49.4	50.6
London.....	3,787	3,737	50.3	49.6
Southampton.....	2,212	1,686	56.8	43.2
Irish Free State:				
Cobh.....	3,375	3,828	46.8	53.1
Dublin.....	5,932	7,060	45.6	54.4
Northern Ireland: Belfast.....	4,919	4,480	52.3	47.6
Scotland: Glasgow.....	10,715	11,303	48.6	51.3
Germany:				
Berlin.....	2,932	2,857	50.6	49.4
Bremen.....	2,255	1,667	57.4	42.5
Cologne.....	3,765	3,342	53.0	47.0
Hamburg.....	1,320	1,097	54.6	45.3
Stuttgart.....	4,733	5,201	47.5	52.4
Holland: Rotterdam.....	2,377	1,463	61.9	38.0
Poland: Warsaw.....	5,143	6,093	45.8	54.2
Denmark: Copenhagen.....	729	598	54.8	45.1
Norway:				
Bergen.....	806	512	61.1	38.8
Oslo.....	852	804	51.4	48.5
Sweden:				
Gothenburg.....	1,294	639	66.9	33.1
Stockholm.....	940	720	56.6	43.4
Italy:				
Genoa.....	1,463	2,725	34.9	65.1
Naples.....	6,505	9,717	40.0	59.9
Palermo.....	1,992	3,169	38.5	61.4
Czechoslovakia: Prague.....	2,406	2,870	45.6	54.4
All countries.....	75,641	80,729	48.3	51.6

It will be noted in the columns of Table 18 that of the total number examined the males comprised 48.3 per cent and the females 51.6 per cent. The countries furnishing an excess of females over male applicants were Great Britain, Northern Ireland, Irish Free State, Poland, and Italy. In the preceding year the percentages were males 47.6 per cent and females 52.4 per cent.

TABLE 19.—*Number and percentage of applicants medically examined who were notified for different classes of disabilities from July 1, 1929, to June 30, 1930*

Country and consular office	Number notified for—			Percentage of applicants examined notified for—		
	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium: Antwerp.....	9	105	114	0.6	7.3	7.9
England:						
Liverpool.....	26	1,316	1,342	.3	14.7	15.0
London.....	31	554	585	.4	7.3	7.7
Southampton.....	20	264	284	.2	3.5	3.7
Irish Free State:						
Cobh.....	159	888	1,047	2.2	12.3	14.5
Dublin.....	220	1,581	1,801	1.7	12.2	13.9
Northern Ireland: Belfast.....	222	2,014	2,236	2.3	21.4	23.7
Scotland: Glasgow.....	157	1,673	1,830	.7	7.6	8.3
Germany:						
Berlin.....	135	565	700	2.3	9.7	12.0
Bremen.....	57	315	372	1.5	8.0	9.5
Cologne.....	38	449	487	.5	6.3	6.8
Hamburg.....	26	190	216	1.1	7.8	8.9
Stuttgart.....	97	791	888	1.0	7.9	8.9
Holland: Rotterdam.....	40	343	383	1.0	8.9	9.9

TABLE 19.—*Number and percentage of applicants medically examined who were notified for different classes of disabilities from July 1, 1929, to June 30, 1930—Continued*

Country and consular office	Number notified for—			Percentage of applicants examined notified for—		
	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Poland: Warsaw.....	332	1,418	1,750	2.9	12.6	15.5
Denmark: Copenhagen.....	2	144	146	.1	10.9	11.0
Norway:						
Bergen.....	1	160	161	.1	12.1	12.2
Oslo.....	12	304	316	.7	18.3	19.0
Sweden:						
Gothenburg.....	18	189	207	.9	9.8	10.7
Stockholm.....	8	177	185	.5	10.6	11.1
Italy:						
Genoa.....	147	816	963	3.5	19.4	22.9
Naples.....	357	1,785	2,142	2.2	11.0	13.2
Palermo.....	413	1,061	1,474	8.0	20.5	28.5
Czechoslovakia: Prague.....	118	420	538	2.2	7.9	10.1
All countries.....	2,645	17,522	20,167	1.7	11.2	12.9

Table 19 covers a study of the percentage disposition of applicants notified for various mental and physical defects. Of the number examined 2,645 were class A, or mandatorily excludable diseases, and 17,522 were class B conditions, a percentage of 1.7 for the former and 11.2 for the latter class. These figures show an increase in the number notified of 2,320 as compared with the preceding year, and this increase is noted in both alien classes.

TABLE 20.—*Percentage distribution of male and female applicants examined, modified according to class of disability, from July 1, 1929, to June 30, 1930*

Country and consular office	Percentage of applicants who had—		Percentage of males who had—		Percentage of females who had—	
	Class A conditions	Class B conditions	Class A conditions	Class B conditions	Class A conditions	Class B conditions
Belgium: Antwerp.....	0.6	7.3	0.6	6.7	0.6	7.5
England:						
Liverpool.....	.3	14.7	.3	13.1	.3	16.4
London.....	.4	7.3	.6	6.9	.2	7.8
Southampton.....	.2	3.5	.4	5.3	.6	6.9
Irish Free State:						
Cobh.....	2.2	12.3	1.8	12.0	2.5	12.6
Dublin.....	1.7	12.2	1.6	12.9	1.7	11.5
Northern Ireland: Belfast.....	2.3	21.4	1.4	20.8	3.4	22.1
Scotland: Glasgow.....	.7	7.6	.6	9.6	.7	5.6
Germany:						
Berlin.....	2.3	9.7	2.4	8.5	2.2	11.0
Bremen.....	1.5	8.0	1.6	8.1	1.2	7.9
Cologne.....	.5	6.3	.5	5.0	.6	7.7
Hamburg.....	1.1	7.8	1.1	7.0	1.0	9.0
Stuttgart.....	1.0	7.9	.6	7.4	1.2	8.4
Holland: Rotterdam.....	1.0	8.9	1.1	9.3	.9	8.2
Poland: Warsaw.....	2.9	12.6	3.2	11.8	2.7	13.3
Denmark: Copenhagen.....	.1	10.9	.1	9.2	.2	12.8
Norway:						
Bergen.....	.1	12.1	.1	13.0	.2	10.7
Oslo.....	.7	18.3	.6	15.7	.8	21.1
Sweden:						
Gothenburg.....	.9	9.8	1.1	7.7	.7	14.1
Stockholm.....	.5	10.6	.7	7.0	.1	15.4
Italy:						
Genoa.....	3.5	19.4	3.5	22.3	3.5	18.0
Naples.....	2.2	11.0	1.8	12.5	2.5	9.9
Palermo.....	8.0	20.5	9.4	23.2	7.1	18.9
Czechoslovakia: Prague.....	2.2	7.9	1.8	6.3	2.6	9.3
All countries.....	1.7	11.2	1.5	11.0	1.9	11.3

Table 20 shows the percentage distribution of male and female applicants notified according to the character of disability found. Of the total examined 1.5 per cent of males was notified for class A and 11 per cent for class B, while of the females 1.9 per cent was notified for class A and 11.3 per cent for class B conditions. It will be noted that Italy leads all other countries in both classes of disabilities.

TABLE 21.—*Number and percentage of quota applicants examined who were notified for different classes of disabilities from July 1, 1929, to June 30, 1930*

Country	Total number of quota applicants examined	Number notified			Per cent of total examined who were notified		
		Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium.....	1,154	8	81	89	0.7	7.0	7.7
England.....	18,453	72	1,934	2,006	.4	10.4	10.8
Irish Free State.....	19,610	372	2,327	2,699	1.9	11.8	13.2
Northern Ireland.....	9,172	215	1,948	2,163	2.3	21.2	23.5
Scotland.....	21,214	156	1,627	1,783	.7	7.7	8.4
Germany.....	26,968	318	2,046	2,364	1.2	7.5	8.7
Holland.....	3,622	35	317	352	.9	8.7	9.6
Poland.....	7,357	197	1,160	1,357	2.7	15.7	18.4
Denmark.....	1,051	0	110	110	0	10.4	10.4
Norway.....	2,472	7	365	372	.3	14.7	15.0
Sweden.....	3,176	22	294	316	.7	9.2	9.9
Italy.....	6,069	202	2,109	2,311	3.3	34.7	38.0
Czechoslovakia.....	3,208	54	294	348	1.7	9.2	10.9
All countries.....	123,526	1,658	14,612	16,270	1.3	11.8	13.1

TABLE 22.—*Number and percentage of nonquota applicants examined who were notified for different classes of disabilities from July 1, 1929, to June 30, 1930*

Country	Total number of nonquota applicants examined	Number notified			Per cent of total examined who were notified		
		Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium.....	289	1	24	25	0.3	8.3	8.6
England.....	1,874	4	199	203	.2	10.6	10.8
Irish Free State.....	582	7	140	147	1.2	24.0	25.2
Northern Ireland.....	225	7	66	73	3.1	29.3	32.4
Scotland.....	804	1	46	47	.1	5.7	5.8
Germany.....	2,184	34	262	296	1.5	12.0	13.5
Holland.....	215	5	23	28	2.3	10.7	13.0
Poland.....	3,879	135	258	393	3.5	6.6	10.1
Denmark.....	276	2	34	36	.7	12.3	13.0
Norway.....	500	6	98	104	1.2	19.6	20.8
Sweden.....	416	4	72	76	.9	17.3	18.2
Italy.....	19,502	715	1,553	2,268	3.6	8.0	11.6
Czechoslovakia.....	2,068	64	126	190	3.0	6.1	9.1
All countries.....	32,814	985	2,901	3,886	3.0	8.8	11.8

Tables 21 and 22 show the numbers and percentage of quota and nonquota applicants examined who were notified for different classes of disabilities. For all countries there were 123,526 quota and 32,814 nonquota immigrants medically examined. Of these numbers, 16,270 quota and 3,886 nonquota aliens were notified, the percentages (of those examined) being 13.1 of the former and 11.8 of the latter. According to class of disability, the quota immigrant showed 1.3 per cent class A, and 11.8 per cent class B conditions,

while the nonquota alien exhibited 3 per cent class A, and 8.8 per cent of class B disabilities.

Great Britain led all countries in the number of quota applicants examined, namely 39,667; Germany follows with 26,968; Irish Free State 19,610; and Northern Ireland, 9,172. Italy leads the nonquota group with 19,502.

TABLE 23.—Percentage distribution of total quota and nonquota applicants of each sex examined who were notified for different classes of disabilities from July 1, 1929, to June 30, 1930

Country	Quota						Nonquota					
	Male			Female			Male			Female		
	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B
Belgium.....	0.6	6.3	6.9	0.7	7.9	8.6	0.6	10.4	11.0	0.0	5.9	5.9
England.....	.5	9.3	9.8	.3	11.7	12.0	.1	7.5	7.6	.3	13.1	13.4
Irish Free State.....	1.7	12.3	14.0	2.1	11.5	13.6	1.5	21.8	23.3	.9	25.7	26.6
Northern Ireland.....	1.4	20.6	22.0	3.3	21.9	25.2	.9	28.2	29.1	5.2	30.4	35.6
Scotland.....	.7	9.6	10.3	.8	5.7	6.5	.3	8.9	9.2	0	3.0	3.0
Germany.....	1.2	6.8	8.0	1.2	8.4	9.5	1.1	11.4	12.5	2.0	12.5	14.5
Holland.....	1.1	8.8	9.9	.7	8.6	9.3	1.9	17.9	19.8	2.7	3.6	6.3
Poland.....	2.9	13.6	16.5	2.4	17.6	20.0	3.6	6.9	10.5	3.3	6.5	9.8
Denmark.....	0	9.2	9.2	0	12.1	12.1	.8	9.0	9.8	.7	15.4	16.1
Norway.....	.3	13.4	13.7	.3	16.5	16.8	.8	19.8	20.6	1.5	19.4	20.9
Sweden.....	.8	6.7	7.5	.4	13.6	14.0	1.9	13.1	15.0	0	21.7	21.7
Italy.....	3.1	34.6	37.7	3.5	34.6	38.3	3.7	8.3	12.0	3.6	7.7	11.3
Czechoslovakia.....	1.2	6.7	7.9	2.1	11.7	13.8	3.1	5.7	8.8	3.1	6.4	9.5
All countries.....	1.2	11.4	12.6	1.5	12.2	13.7	2.9	8.9	11.8	3.1	8.7	11.8

Table 23 shows that the notification rate for quota females class A conditions was 0.3 per cent greater than the rate for males, while for class B it was 0.8 per cent greater. In the nonquota group the rate for females class A conditions is 0.2 per cent higher than for males, and for class B it is 0.2 per cent lower. Italy had the highest rate for class A conditions for both sexes.

TABLE 24.—Number and percentage of total applicants examined who were refused visas on medical notification for different classes of disabilities from July 1, 1929, to June 30, 1930

Country and consular office	Number visas refused for—			Percentage of applicants examined who were refused visas for—		
	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium: Antwerp.....	9	9	18	0.6	0.6	1.2
England:						
Liverpool.....	26	649	675	.3	7.3	7.6
London.....	31	69	100	.4	.9	1.3
Southampton.....	20	41	61	.2	1.1	1.3
Irish Free State:						
Cobh.....	159	616	775	2.2	8.5	10.7
Dublin.....	220	1,060	1,280	1.7	8.1	9.8
Northern Ireland: Belfast.....	222	1,006	1,228	2.3	10.7	13.0
Scotland: Glasgow.....	157	738	895	.7	3.4	4.1
Germany:						
Berlin.....	135	175	310	2.3	3.0	5.3
Bremen.....	57	73	130	1.5	1.8	3.3
Cologne.....	38	288	326	.5	4.1	4.6
Hamburg.....	26	76	102	1.1	3.1	4.2
Stuttgart.....	97	306	403	1.0	3.1	4.1
Holland: Rotterdam.....	40	123	163	1.0	3.2	4.2
Poland: Warsaw.....	332	209	541	2.9	1.8	4.7
Denmark: Copenhagen.....	2	42	44	.1	3.2	3.3
Norway:						
Bergen.....	1	46	47	.1	3.5	3.6
Oslo.....	12	54	66	.7	3.4	4.1

TABLE 24.—*Number and percentage of total applicants examined who were refused visas on medical notification for different classes of disabilities from July 1, 1929, to June 30, 1930—Continued*

Country and consular office	Number of visas refused for—			Percentages of applicants examined who were refused visas for—		
	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Sweden:						
Gothenborg.....	18	35	53	.9	1.8	2.7
Stockholm.....	8	15	23	.5	.9	1.4
Italy:						
Genoa.....	147	55	202	3.5	1.3	4.8
Naples.....	357	84	441	2.2	.5	2.7
Palermo.....	413	34	447	8.0	.7	8.7
Czechoslovakia: Prague.....	118	160	278	2.2	3.0	5.2
All countries.....	2,645	5,963	8,608	1.7	3.8	5.5

In the matter of rejections, in Table 24 it is found that 8,608 applicants, or 5.5 per cent of the total examined, were refused visas. Of the number refused, 1 per cent were for mandatorily excludable mental or physical disabilities, and 3.8 per cent for other diseases and defects. These figures represent an increase over the number refused during the preceding year. Visas were denied last year to 7,750 applicants, or 4.6 per cent of the total examined. For the highest number refused the Irish Free State is in the lead with 2,055; Northern Ireland comes next with 1,228.

TABLE 25.—*Percentage distribution of male and female applicants examined who were refused visas on medical notification for different classes of disabilities from July 1, 1929, to June 30, 1930*

Country and consular office	Percentage of males who were refused visas for—			Percentage of females who were refused visas for—		
	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium: Antwerp.....	0.6	1.1	1.7	0.6	0.0	0.6
England:						
Liverpool.....	.3	8.2	8.5	.3	6.3	6.6
London.....	.6	1.2	1.8	.2	.6	.8
Southampton.....	.4	1.4	1.8	.6	.6	1.2
Irish Free State:						
Cobh.....	1.8	8.8	10.6	2.5	8.2	10.7
Dublin.....	1.6	9.7	11.3	1.7	6.8	8.5
Northern Ireland: Belfast.....	1.4	12.4	13.8	3.4	8.7	12.1
Scotland: Glasgow.....	.6	4.7	5.3	.7	2.0	2.7
Germany:						
Berlin.....	2.4	3.1	5.5	2.2	2.9	5.1
Bremen.....	1.6	2.5	4.1	1.2	.9	2.1
Cologne.....	.5	3.8	4.3	.6	4.3	4.9
Hamburg.....	1.1	3.3	4.4	1.0	2.8	3.8
Stuttgart.....	.6	3.6	4.2	1.2	2.6	3.8
Holland: Rotterdam.....	1.1	3.9	5.0	.9	1.9	2.8
Poland: Warsaw.....	3.2	3.6	6.8	2.7	.4	3.1
Denmark: Copenhagen.....	.1	4.1	4.2	.2	2.0	2.2
Norway:						
Bergen.....	.1	4.3	4.4	.2	2.1	2.3
Oslo.....	.6	4.2	4.8	.8	2.2	3.0
Sweden:						
Gothenburg.....	1.1	1.9	3.0	.7	1.6	2.3
Stockholm.....	.7	.8	1.5	.1	.9	1.0
Italy:						
Genoa.....	3.5	2.3	5.8	3.5	.8	4.3
Naples.....	1.8	1.1	2.9	2.5	.2	2.7
Palermo.....	9.4	1.3	10.7	7.1	.3	7.4
Czechoslovakia: Prague.....	1.8	3.8	5.6	2.6	2.3	4.9
All countries.....	1.5	4.7	6.2	1.9	2.9	4.8

Table 25 shows that the percentage examined who were refused visas is greater by 1.4 per cent for males than it is for females. There were 0.4 per cent more female applicants, however, refused for class A conditions than males. In the class B group the males predominate by 1.8 per cent over the females.

TABLE 26.—Percentage of male and female applicants notified for Class B disabilities who were refused visas on medical grounds from July 1, 1929, to June 30, 1930

Country and consular office	Number of applicants notified for class B conditions			Number of applicants who were refused visas for class B conditions			Percentage of applicants notified who were refused visas for class B conditions		
	Male	Female	Total, male and female	Male	Female	Total, male and female	Male	Female	Total, male and female
Belgium: Antwerp.....	56	49	105	9	0	9	16.0	0.0	8.5
England:									
Liverpool.....	575	741	1,316	365	284	649	63.5	38.3	49.2
London.....	260	294	554	45	24	69	17.3	8.1	13.3
Southampton.....	117	147	264	31	10	41	26.5	6.8	15.5
Irish Free State:									
Cobh.....	406	482	888	300	316	616	73.8	65.5	69.3
Dublin.....	764	817	1,581	576	485	1,060	75.4	59.3	67.0
Northern Ireland: Belfast.....	1,023	991	2,014	614	392	1,006	60.0	39.5	49.9
Scotland: Glasgow.....	1,034	639	1,673	511	227	738	49.4	35.5	44.1
Germany:									
Berlin.....	250	315	565	90	85	175	36.0	26.9	30.9
Bremen.....	183	132	315	58	15	73	31.7	11.3	23.1
Cologne.....	189	260	449	144	144	288	76.1	55.4	64.1
Hamburg.....	92	98	190	45	31	76	48.9	31.6	40.0
Stuttgart.....	351	440	791	172	134	306	49.0	30.4	38.6
Holland: Rotterdam.....	221	122	343	93	30	123	42.1	24.6	35.8
Poland: Warsaw.....	609	809	1,418	185	24	209	30.3	29.6	14.7
Denmark: Copenhagen.....	67	77	144	30	12	42	44.7	15.6	29.1
Norway:									
Bergen.....	105	55	160	35	11	46	33.3	20.0	28.7
Oslo.....	134	170	304	36	18	54	26.8	10.5	17.7
Sweden:									
Gothenburg.....	99	90	189	25	10	35	25.2	11.1	18.5
Stockholm.....	66	111	177	8	7	15	12.1	6.3	8.4
Italy:									
Genoa.....	326	490	816	33	22	55	10.1	4.5	6.7
Naples.....	815	970	1,785	69	15	84	8.4	1.5	4.7
Palermo.....	462	599	1,061	25	9	34	5.4	1.5	3.2
Czechoslovakia: Prague.....	153	267	420	93	67	160	60.8	25.1	38.1
All countries.....	8,357	9,165	17,522	3,592	2,371	5,963	42.9	25.8	34.0

Out of 17,522 applicants notified for class B conditions, Table 26, 9,165 were females and 8,357 males. Of this number, 3,592, or 42.9 per cent, of males and 2,371, or 25.8 per cent, of females were refused visas on medical grounds. The difference may be due to a more rigid application of the factors which control refusals for class B conditions to the wage-earning class rather than to the housewife whose occupation is not so strenuous.

TABLE 27.—*Number and percentage of total quota applicants examined who were refused visas on medical notification for different classes of disabilities from July 1, 1929, to June 30, 1930*

Country	Total number of quota applicants examined	Number who were refused visas			Per cent of number examined who were refused visas		
		Class A conditions	Class B conditions	Total classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium.....	1,154	8	7	15	0.7	0.6	1.3
England.....	18,453	72	746	818	.4	4.0	4.4
Irish Free State.....	19,610	372	1,626	1,998	1.9	8.3	10.2
Northern Ireland.....	9,172	215	997	1,212	2.3	10.9	13.2
Scotland.....	21,214	156	729	885	.7	3.4	4.1
Germany.....	26,968	318	881	1,199	1.2	3.2	4.4
Holland.....	3,622	35	120	155	.9	3.3	4.2
Poland.....	7,357	197	170	367	2.7	2.3	5.0
Denmark.....	1,051	0	38	38	0	3.6	3.6
Norway.....	2,472	7	94	101	.3	3.8	4.1
Sweden.....	3,176	22	43	65	.7	1.3	2.0
Italy.....	6,069	202	54	256	3.3	.9	4.2
Czechoslovakia.....	3,208	54	104	158	1.7	3.2	4.9
All countries.....	123,526	1,658	5,609	7,267	1.3	4.5	5.8

Of the 123,526 quota applicants examined, 1,658 were refused visas for class A disabilities, and 5,609 for class B conditions (Table 27). The percentage in each class is 1.3 per cent for the former and 4.5 per cent for the latter. The highest percentage of those refused of class A is for the Irish Free State, the number being 372, or 1.9 per cent of the total examined for that country. Germany and Northern Ireland also furnished high percentages in this class.

TABLE 28.—*Number and percentage of total nonquota applicants examined who were refused visas on medical notification for different classes of disabilities from July 1, 1929, to June 30, 1930*

Country	Total number of nonquota applicants examined	Number who were refused visas			Per cent of number who were refused visas		
		Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium.....	289	1	2	3	0.3	0.7	1.0
England.....	1,874	4	12	16	.2	.6	.8
Irish Free State.....	582	7	48	55	1.2	8.2	9.4
Northern Ireland.....	225	7	9	16	3.1	4.0	7.1
Scotland.....	804	1	9	10	.1	1.1	1.2
Germany.....	2,184	34	35	69	1.5	1.6	3.1
Holland.....	215	5	2	7	2.3	.9	3.2
Poland.....	3,879	135	39	174	3.5	1.0	4.5
Denmark.....	276	2	4	6	.7	1.1	2.1
Norway.....	500	6	6	12	1.2	1.2	2.4
Sweden.....	416	4	7	11	.9	1.7	2.6
Italy.....	19,502	715	119	834	3.6	.6	4.2
Czechoslovakia.....	2,068	64	56	120	3.1	2.7	5.8
All countries.....	32,814	985	348	1,333	3.0	1.0	4.0

Table 28 shows that 32,814 nonquota applicants were examined during the year and that 1,333, or 4 per cent of the entire group, were refused visas, of which 3 per cent were for class A, and 1 per cent for class B conditions. There is an increase here of 0.6 per cent over the number rejected during the preceding year.

TABLE 29.—Percentage distribution of the total quota applicants notified for each class of disabilities who were refused visas on medical grounds from July 1, 1929, to June 30, 1930

Country	Number notified			Number refused visas			Per cent of notified refused visas		
	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium.....	8	81	89	8	7	15	100.0	8.6	16.8
England.....	72	1,934	2,006	72	746	818	100.0	38.5	40.7
Irish Free State.....	372	2,327	2,699	372	1,626	1,998	100.0	69.8	74.0
Northern Ireland.....	215	1,948	2,163	215	997	1,212	100.0	51.2	56.0
Scotland.....	156	1,627	1,783	156	729	885	100.0	44.8	49.6
Germany.....	318	2,046	2,364	318	881	1,199	100.0	43.0	50.7
Holland.....	35	317	352	35	120	155	100.0	37.6	44.0
Poland.....	197	1,160	1,357	197	170	367	100.0	14.6	27.0
Denmark.....	0	110	110	0	38	38	0	34.5	34.5
Norway.....	7	365	372	7	94	101	100.0	25.7	27.1
Sweden.....	22	294	316	22	43	65	100.0	14.6	20.5
Italy.....	202	2,109	2,311	202	54	256	100.0	25.6	11.1
Czechoslovakia.....	54	294	348	54	104	158	100.0	35.4	45.4
All countries.....	1,658	14,612	16,270	1,658	5,609	7,267	100.0	38.3	44.6

TABLE 30.—Percentage distribution of total nonquota applicants notified for each class of disability who were refused visas on medical grounds from July 1, 1929, to June 30, 1930

Country	Number notified			Number refused visas			Per cent of notified refused visas		
	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B	Class A conditions	Class B conditions	Total, classes A and B
Belgium.....	1	24	25	1	2	3	100.0	8.3	12.0
England.....	4	199	203	4	12	16	100.0	6.0	7.8
Irish Free State.....	7	140	147	7	48	55	100.0	34.3	37.4
Northern Ireland.....	7	66	73	7	9	16	100.0	13.6	21.9
Scotland.....	1	46	47	1	9	10	100.0	19.5	21.3
Germany.....	34	262	296	34	35	69	100.0	13.3	23.3
Holland.....	5	23	28	5	2	7	100.0	8.7	25.0
Poland.....	135	258	393	135	39	174	100.0	15.1	44.2
Denmark.....	2	34	36	2	4	6	100.0	11.1	16.6
Norway.....	6	98	104	6	6	12	100.0	6.1	11.5
Sweden.....	4	72	76	4	7	11	100.0	9.7	14.5
Italy.....	715	1,553	2,268	715	119	834	100.0	7.6	36.7
Czechoslovakia.....	64	126	190	64	56	120	100.0	44.4	63.1
All countries.....	985	2,901	3,886	985	348	1,333	100.0	11.9	34.3

Tables 29 and 30 show that of the quota applicants notified for each class of disability, 44.6 per cent were refused visas on medical grounds. In the nonquota group, 34.3 per cent of those notified were refused.

TABLE 31.—Percentage distribution of total quota and nonquota applicants of each sex examined who were refused visas on medical notification from July 1, 1929, to June 30, 1930

Country	Quota						Nonquota					
	Male			Female			Male			Female		
	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B
Belgium.....	0.6	1.1	1.7	0.7	0.0	0.0	0.6	1.3	1.9	0.0	0.0	0.0
England.....	.5	4.5	5.0	.3	3.5	3.8	.1	.4	.5	.3	.8	1.1
Irish Free State.....	1.7	9.4	11.1	2.1	7.3	9.4	1.5	10.1	11.6	.9	6.1	7.0
Northern Ireland.....	1.4	12.6	14.0	3.3	8.8	12.1	.9	4.5	5.4	5.2	3.4	8.6
Scotland.....	.7	4.8	5.5	.8	2.1	2.9	.3	2.1	2.4	0	.2	.2
Germany.....	1.2	3.5	4.7	1.2	2.9	4.1	1.1	1.3	2.4	2.0	1.8	3.8
Holland.....	1.1	4.0	5.1	.7	2.1	2.8	1.9	1.8	3.7	2.7	0	2.7
Poland.....	2.9	4.2	7.1	2.4	.4	2.8	3.6	2.0	5.6	3.3	.3	3.6
Denmark.....	0	4.5	4.5	0	2.4	2.4	.8	2.3	3.1	.7	.7	1.4
Norway.....	.3	4.6	4.9	.3	2.6	2.9	.8	2.1	2.9	1.5	.4	1.9
Sweden.....	.8	1.4	2.2	.4	1.2	1.6	1.9	1.8	3.7	0	1.4	1.4
Italy.....	3.1	1.2	4.3	3.5	.6	4.1	3.7	1.2	4.9	3.6	2.2	5.8
Czechoslovakia.....	1.2	3.7	4.9	2.1	2.7	4.8	3.1	4.2	7.3	3.1	1.8	4.9
All countries.....	1.2	5.3	6.5	1.5	3.7	5.2	2.9	1.8	4.7	3.1	.6	3.7

Of the quota immigrants refused, 6.5 per cent were males, and 5.2 per cent were females, or class A 1.2 per cent and class B 5.3 per cent for males, and class A 1.5 per cent and class B 3.7 per cent for females (Table 31). In the nonquota group the sex distribution is as follows: Percentage of males refused, 4.7 per cent; females, 3.7 per cent. According to types of disability, the males showed 2.9 per cent of class A and 1.8 per cent of class B; the females, 3.1 per cent of class A, and 0.6 per cent of class B conditions.

TABLE 32.—Percentage distribution of total quota and nonquota applicants of each sex notified who were refused visas on medical grounds from July 1, 1929, to June 30, 1930

Country	Quota						Nonquota					
	Male			Female			Male			Female		
	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B	Class A	Class B	Classes A and B
Belgium.....	100.0	17.5	25.0	100.0	0.0	8.8	100.0	12.5	17.6	0.0	0.0	0.0
England.....	100.0	49.0	51.3	100.0	29.6	31.5	100.0	6.4	7.9	100.0	5.8	7.8
Irish Free State.....	100.0	76.2	79.1	100.0	64.0	69.4	100.0	46.4	50.0	100.0	26.2	28.7
Northern Ireland.....	100.0	61.4	63.8	100.0	40.5	48.5	100.0	16.1	18.7	100.0	11.4	24.4
Scotland.....	100.0	50.2	53.5	100.0	36.1	43.8	100.0	24.2	26.4	0	7.6	7.6
Germany.....	100.0	52.2	59.2	100.0	35.1	43.2	100.0	11.8	19.3	100.0	14.6	26.3
Holland.....	100.0	45.2	51.3	100.0	25.0	30.9	100.0	1.1	19.0	100.0	0	42.8
Poland.....	100.0	30.5	42.8	100.0	2.6	14.1	100.0	29.5	54.0	100.0	5.2	37.5
Denmark.....	0	49.1	49.1	0	20.0	20.0	100.0	25.0	30.7	100.0	4.5	8.7
Norway.....	100.0	34.3	35.7	100.0	16.1	17.6	100.0	10.8	14.6	100.0	1.9	8.9
Sweden.....	100.0	21.1	29.8	100.0	8.9	11.7	100.0	14.2	25.0	0	6.8	6.8
Italy.....	100.0	3.5	11.3	100.0	1.6	10.9	100.0	15.6	42.0	100.0	2.9	33.6
Czechoslovakia.....	100.0	55.0	62.0	100.0	23.8	35.6	100.0	75.0	83.8	100.0	28.0	51.6
All countries.....	100.0	46.6	51.8	100.0	30.3	37.8	100.0	19.7	39.4	100.0	6.8	30.9

TABLE 33.—*Number and percentage of quota and nonquota applicants of each sex who were refused visas for mental conditions from July 1, 1929, to June 30, 1930*

Country	Quota						Nonquota					
	Male			Female			Male			Female		
	Number examined	Number re-refused	Per cent re-refused	Number examined	Number re-refused	Per cent re-refused	Number examined	Number re-refused	Per cent re-refused	Number examined	Number re-refused	Per cent re-refused
Belgium.....	637	2	0.31	517	3	0.58	153	1	0.65	136	0	0.00
England.....	9,567	21	.21	8,886	13	.14	829	1	.12	1,045	2	.19
Irish Free State.....	9,050	82	.91	10,560	167	1.58	256	2	.78	326	3	.92
Northern Ireland.....	4,808	49	1.02	4,364	133	3.04	110	1	.91	115	3	2.61
Scotland.....	10,345	60	.58	10,869	82	.75	370	1	.27	434	0	0.00
Germany.....	13,963	102	.73	13,005	78	.59	1,033	7	.68	1,151	13	1.12
Holland.....	2,270	14	.61	1,352	5	.37	106	1	.94	109	1	.91
Poland.....	3,628	23	.63	3,729	35	.93	1,515	11	.72	2,364	25	1.06
Denmark.....	596	0	0.00	455	0	0.00	133	1	.75	143	1	.69
Norway.....	1,424	1	.07	1,048	0	0.00	232	0	0.00	268	3	1.06
Sweden.....	2,020	13	.64	1,156	2	.17	214	3	1.40	202	0	0.00
Italy.....	2,945	9	.31	3,124	33	1.05	7,015	54	.76	12,487	142	1.14
Czechoslovakia.....	1,628	5	.30	1,580	17	1.07	778	9	1.16	1,290	27	2.09
All countries.....	62,881	381	.61	60,645	568	.93	12,744	92	.72	20,070	220	1.09

In an analysis of Table 33, it will be found that 62,881 quota males and 60,645 quota females were examined, and that 0.61 per cent of males and 0.93 per cent of females were refused visas for excludable mental conditions. Of the nonquota applicants there were examined 12,744 males and 20,070 females, of which 0.72 per cent for the former and 1.09 per cent of the latter were rejected for excludable mental conditions. Of quota aliens refused, the highest percentages were observed for the Irish Free State, Germany, and Poland, in the order named. It will be noted that the percentages of women rejected are very high for Northern Ireland and the Irish Free State as compared with other countries.

TABLE 34.—*Number and character of the more serious mandatorily excludable conditions notified from July 1, 1929, to June 30, 1930*

Nature of defect	Belgium	England	Irish Free State	Northern Ireland	Scotland	Germany	Holland	Poland	Denmark	Norway	Sweden	Italy	Czechoslovakia	Total
Alcoholism.....	0	0	2	0	0	0	0	0	0	0	0	0	0	3
Dementia præcox.....	0	0	0	0	0	2	0	0	0	0	0	3	0	5
Epilepsy.....	0	0	0	0	0	3	0	0	0	0	1	2	0	6
Favus.....	0	0	0	0	0	0	1	0	0	0	0	62	0	63
Feeble-mindedness.....	4	5	1	2	0	9	5	32	1	0	1	74	5	139
Imbecility.....	0	1	0	0	0	4	0	5	0	0	0	8	1	19
Insanity.....	0	3	1	0	0	11	0	2	1	1	0	7	0	26
Idiocy.....	0	0	0	0	0	1	0	0	0	0	0	2	0	3
Loathsome contagious diseases.....	2	2	36	8	3	7	7	61	0	0	1	46	4	177
Mentally defective.....	0	12	233	182	143	83	12	31	0	4	7	112	51	870
Mentally depressed.....	0	0	0	0	0	3	0	0	0	0	0	0	0	3
Mentally retarded.....	0	7	0	0	0	41	0	0	0	0	5	9	0	62
Maniac depressive psychosis.....	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Nervous instability.....	0	0	0	0	0	6	0	0	0	0	0	0	0	6
Organic nervous disease.....	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Psychopathic inferiority.....	2	2	17	1	0	34	4	1	0	0	4	16	1	82
Senile dementia.....	0	0	0	0	0	2	0	0	0	0	0	5	0	7
Trachoma.....	0	18	15	1	0	5	3	134	0	0	0	502	36	714
Tuberculosis, pulmonary.....	0	18	43	14	1	84	3	49	0	4	4	33	12	265
Tuberculosis, other forms.....	0	1	18	1	10	26	2	12	0	1	1	25	6	103
Venereal diseases.....	1	7	13	12	0	31	3	4	0	3	2	12	2	90

Table 34 contains information of great interest and importance from the public-health standpoint. Referring to these data it will be observed that 265 aliens suffering from pulmonary tuberculosis and 103 suffering from other forms of tuberculous infection were denied admission to the United States. Among the other infections are noted the following: Loathsome contagious diseases, 177; trachoma, 714; and venereal diseases, 90. In addition, there were excluded 870 cases of mentally defectives, 139 cases of feeble-mindedness, 26 cases of insanity, and 82 cases of psychopathic inferiority. The importance from the national health point of view of the examination of prospective immigrants abroad is amply set forth in this table.

REPRESENTATION AT INTERNATIONAL AND OTHER CONFERENCES

The chief medical officer in supervisory charge of the work of the service in Europe attended the following meetings: Conference for the Revision of the International Classification of the Causes of Deaths, held at Paris from October 16 to 19, 1929; meeting of the Permanent Committee of the Office International d'Hygiene Publique, held at Paris from October 21 to 30, 1929. The chief medical officer also represented the ambassador at the inauguration of the Cancer Institute and laying of the corner stone of the Cancer Hospital at Villejuif, near Paris, on March 17, 1930, and presented the John Scott medal on behalf of the city of Philadelphia to Doctors Levaditi and Sazerac. In addition, medical officers of the Public Health Service also represented the service at the First International Congress of Communal Sanitary Technique and Hygiene, held at Prague from March 16 to 18, 1930; Congress of the Royal Institute of Public Health, held at Portsmouth, England, from June 4 to 9, 1930; Forty-first Conference of the Royal Sanitary Institute, held at Margate, England, from June 21 to 28, 1930; International Congress on Leisure of Workers, held at Liege, Belgium, from June 7 to 10, 1930; and the Tenth Session of Medical Days, held at Brussels from June 28 to July 2, 1930.

REPORTS FROM IMMIGRATION STATIONS

NEW YORK (ELLIS ISLAND), N. Y.

Senior Surg. C. H. Lavinder in charge. Post-office and telegraphic address, Ellis Island, N. Y.

In general the major administrative units have remained the same and the activities are, as in former years, divided into three divisions: Boarding division, line division, and hospital division. Each of the divisions is supervised by an executive officer under the general supervision of the chief medical officer. It is very necessary, of course, that close cooperation be maintained at all times between these three units, which is accomplished through the chief medical officer.

The work of the boarding division is conducted from offices located in the barge office building at the Battery. The location of this office is ideal for its purpose. The work of this division has increased considerably in the past few years, there being 41,177 more persons inspected during the present fiscal year as compared with

the fiscal year 1929, and the number of passenger vessels boarded increased by 146. Following the inauguration of the conduct of the medical examination of prospective immigrants abroad, it became unnecessary to conduct at Ellis Island the medical examination of such third-class or steerage passengers as have been examined abroad, and such persons now receive a confirmatory medical examination on shipboard. Only alien third-class or steerage passengers who have not been medically examined abroad and alien passengers of first and second classes who are suspected upon arrival to be afflicted with a certifiable condition are now removed to Ellis Island. The net result of this change in procedure has been to shift the major part of the work from Ellis Island to shipboard, which is taken care of by the boarding division. The hours of duty for medical officers attached to the boarding division are the same as those fixed by the Commissioner of Immigration for the inspectors, and during the summer months are from 7.05 a. m. to 9.30 p. m.

During the past year a total of 163,385 alien passengers in the third class were examined on shipboard. Prior to the inauguration of the system of making medical examinations of prospective immigrants abroad, all passengers in the above class were inspected at Ellis Island. For the past five years this part of the work has been carried by the boarding division. As a result of this examination, all aliens with diseases or defects, whether observed by the examining officer or ascertained from medical memoranda executed by officers of the Public Health Service stationed abroad for the purpose of making preliminary medical examinations, are set aside for a further examination to the extent indicated in each particular case under consideration. As a result of this second examination, an alien may be passed, certified, or held for further observation at Ellis Island. In view of the fact that four months may elapse between time of the preliminary medical examination and the granting of a visa, and the actual arrival of an alien, it is obvious that diseases or defects may become existent which are not covered by the medical memorandum furnished the alien by the Public Health Service officer abroad at the time of the preliminary medical examination; also any medical condition noted on the memorandum may have become more serious or, on the other hand, may have been cured or remedied by the time the passenger reaches this country; hence it is most essential that a final medical inspection be made just prior to landing in the United States. After the examination of alien passengers has been completed, the alien members of the crew are examined in accordance with section 20 (a) of the immigration act of 1924 to detect any mandatory excludable diseases. During the fiscal year, 568,409 alien seamen were medically examined, 157,232 of whom were given an intensive examination.

The activities of the line division are concerned largely with the medical examination of aliens who were not given an examination abroad by officers of the Public Health Service prior to embarkation; reexamination of aliens held for further medical examination; reexamination of landed aliens, when requested by the immigration authorities; serving on medical boards; giving medical testimony before boards of special inquiry; furnishing the Bureau of Immigration with medical opinion regarding certain aliens, and other miscellaneous duties in connection with the conduct of the

medical inspection of aliens. Warrant aliens are brought to Ellis Island for deportation from all parts of the United States. Most of these cases are presented to the medical division for the purpose of determining whether their physical condition is such as to require their detention in the hospital at Ellis Island or in the detention rooms of the Immigration Service. If afflicted with class A or serious class B conditions, they are sent to the hospital for detention prior to deportation; if they are mentally clear and free from contagious diseases, they are sent to the immigration rooms for detention.

Since the inauguration of the conduct of the medical examination of intending immigrants abroad, Public Health Service officers detailed for this work are given a final intensive course of training at Ellis Island prior to taking up these duties abroad. This training has proved very beneficial, as the medical officers not only review the laws and regulations in force pertaining to this work, but also are afforded a better understanding of the problems actually confronted by the medical officers on this side in connection with arriving aliens who have had preliminary medical examination abroad prior to securing visa.

During the past year there has been prepared and published a Hospital Manual of Procedure for the Examination of Aliens. This manual sets forth in detail the procedure at Ellis Island in connection with the medical examination of arriving aliens, and is the result of experience of many officers of this service detailed for duty in connection with this work.

BOSTON, MASS.

Surg. Carl Ramus in charge. Post-office and telegraphic address, 287 Marginal Street, East Boston, Mass.

Immigration passing through the port of Boston represents all types, physically and mentally. Alien passengers of all classes are examined after steamers are alongside their docks. On large steamers the first and second cabin passengers are usually inspected on board the vessel; tourist and steerage passengers, who usually considerably outnumber the first and second cabin, are inspected at suitable locations provided on the docks. The present excellent system of medical examination at foreign ports of embarkation considerably facilitates and expedites the routine examination of arriving aliens at this port. Alien passengers detained for further medical or mental examination, regardless of class, are sent to the immigration station and, if found necessary, from there to suitable hospitals. A total of 8,599 alien passengers were examined at this port during the year.

Boston being a port of entry for Chinese, a considerable number of this race are medically examined at the immigration station. In addition to routine physical examination, stool examinations are made to ascertain the presence or absence of hookworm and other intestinal parasites. Aliens, warrant cases, and others detained at the Boston immigration station for immigration reasons are visited daily. Any found sick or injured are treated at the station if found to have only trivial conditions; if found more serious, they are sent

to a suitable hospital. The number of warrant aliens brought to the immigration station is gradually increasing as restrictions on immigration and registry of aliens increase. All such cases receive preliminary medical inspections as soon as they arrive. Any found to have communicable or mental diseases are sent to appropriate hospital and held until recovered or deported.

In addition to the medical examination of alien passengers, the crews of the large passenger steamers are medically examined when the steamers are alongside the wharves. Boston is usually a port of call for a few hours only for the large passenger steamers. To expedite the immigration medical examination and not delay steamers unnecessarily, the passengers and crews are examined simultaneously, one medical officer handling the passengers while another examines the crew. A total of 57,832 members of crew were examined during the year.

By special arrangement with the medical officer in charge of the Boston quarantine station there is a certain amount of interchange of immigration and quarantine functions between the two stations. For instance, in the case of freighters calling at this port without passengers, an officer from the immigration station performs the required quarantine inspection in conjunction with the required medical immigration inspection. This arrangement is not only expeditious to service operations but also considerably facilitates the passage of these vessels through quarantine and immigration, thus conserving a great deal of time for the vessel.

AJO, ARIZ.

Acting Asst. Surg. O. B. Patton in charge. Post-office and telegraphic address, Ajo, Ariz.

There was a slight decrease in the number of aliens inspected at this port during the year as compared with the preceding fiscal year. However, because of the prevalence of smallpox in this port, the work was somewhat increased owing to the vaccinations performed as a measure to prevent the spread of this disease.

The majority of aliens presented for medical inspection at this port are of the Mexican peon class, coming from the rural sections, who enter for a short visit to the United States or to make purchases. The country south of Ajo in Mexico is a farming country and is rather free from disease. Only two cases of contagious diseases appeared during the year—one of tuberculosis and one of trachoma.

ANACORTES, WASH.

Acting Asst. Surg. S. G. Brooks in charge. Post-office and telegraphic address, Anacortes, Wash.

Anacortes is the terminus and home port of an international ferry connecting Victoria, British Columbia, with this port. Most of the persons passing through are of the tourist class, but there are a few aliens who are presented for examination. Examination of alien seamen constitutes the greater part of the work.

BLAINE, WASH.

Acting Asst. Surg. M. A. Keyes in charge. Post-office and telegraphic address, Blaine, Wash.

During the past year the number of aliens entering the United States at this point totaled 287,704, of which 5,066 were aliens seeking permanent homes. These persons arrive at this port from Canada by trains, auto stages, and by foot. Travel by trains remains constant, while that by automobile and stage increases steadily at both the Pacific Highway and Peace Portal entrances. There has been a general improvement in the type of immigrant crossing the border at this point. With the completion of the new customs immigration building here the facilities available for making the medical inspection of aliens at this port will be much improved.

BROWNSVILLE, TEX.

Surg. R. R. Tomlin in charge. Post-office and telegraphic address, Brownsville, Tex.

During the last fiscal year there were 8,361 aliens medically examined for immigration purposes at the port of Brownsville. Of those examined, 1,048 were bona fide immigrants seeking permanent homes in the United States; 19 were temporary entries, and 7,294 were "local crossers," who were crossing the border at this point for purposes of business and trade in the United States.

There are two bridges for passenger and vehicular traffic at Brownsville over which aliens enter the United States. The Public Health Service and immigration offices are at the foot of one of these bridges; at the other bridge, about one-half mile distant, the Immigration Service keeps a motorbus in readiness, and any alien requiring medical examination for immigration purposes is immediately transported to the Public Health Service offices. The aliens examined at this port are practically all of Mexican nationality and belong to the working classes. These examinations are conducted daily from 9 a. m. to 5 p. m. At the Brownsville municipal airport, 5 miles distant, 667 medical immigration examinations were made during the last fiscal year. About 75 per cent of these were Mexican members of crew.

The Public Health Service officer stationed at this port unofficially cooperates with the United States consul stationed in Metamoros, which is just across the river, by giving advice regarding the physical and mental condition of aliens seeking visas at that consulate.

BUFFALO, N. Y.

Acting Asst. Surg. W. L. Savage. Post-office and telegraphic address, Buffalo, N. Y. Under the general supervision of Surg. Floyd C. Turner.

During the past fiscal year 9,808 aliens were examined medically at this port. Of this number 761 were examined intensively and 62 were certified. Owing to the quota law, the examination of immigrants abroad, and the granting of visas for admission to the United States, the physical and mental condition of arriving aliens is of a much higher type. The medical officer examines all aliens held by the immigration authorities at the Peace Bridge and ferry which connect with Fort Erie across the Niagara River. During the season of navigation the medical work is much heavier. There were 579 ships and 13,665 seamen examined. Due to the fact that most of the ships

examined here are freighters and grain boats from Canada, there are very few alien passengers. Most of the persons arriving at the Peace Bridge and ferry are tourists, excursionists, and commuters. Taken as a whole, the physical condition of these people is good.

A total of 393 airships from Canada carrying 273 passengers arrived at the local airport during the year ended June 30, 1930. Of this number 120 were aliens requiring examination. No certifications were made.

CALEXICO, CALIF.

Acting Asst. Surg. A. L. Rice in charge. Post-office and telegraphic address, Calexico, Calif.

The majority of aliens seeking entry at this port are Mexicans, with a few Canadians, Chinese, Japanese, and a few other nationalities. The medical examinations are made at the immigration office, the hours of duty for such work being from 9 a. m. to 1 p. m.

During the year, 5,743 aliens were inspected, with 161 certifications for various causes. Of the number inspected, 1,945 were seeking permanent homes, 341 were making temporary entry, and 3,454 were "local crossers." Three hundred and sixty vaccinations were performed.

COLUMBUS, N. MEX.

Acting Asst. Surg. E. J. Thornberry in charge. Post-office and telegraphic address, Columbus, N. Mex.

Few, if any, of the aliens passing through this port enter the United States for the avowed purpose of making it their permanent home; some come to the United States for the purpose of working in the mines or railroads, while the great majority are "locals," passing between Palomas and Columbus for the purpose of shopping, visiting, or business. During the fiscal year ended June 30, 1930, there was a total of 7,803 in the latter class passing through this port.

DETROIT, MICH.

Surg. H. E. Trimble in charge. Post-office and telegraphic address, Detroit, Mich.

The majority of aliens seeking entry at this port are native-born Canadians. As all aliens applying for admission from Canada must have a medical examination prior to securing a visa, it is seldom that diseased aliens are encountered here.

With the opening of the Ambassador Bridge, on November 18, 1929, an additional medical officer, at the request of the Immigration Service, was detailed to full-time duty there. The number of aliens requiring medical examination there was, however, relatively so small as compared with the number arriving via the ferry that the medical inspection work there was discontinued on March 17, 1930, and thereafter all cases requiring medical examination were brought over to the Public Health Service officer at the ferry. Within the next year the new tunnel under the Detroit River will be open to traffic. As the entrance to the tunnel is adjacent to the ferry landing, it is anticipated that the aliens arriving by tunnel will also be brought to medical officer at the ferry building for examination.

DOUGLAS, ARIZ.

Acting Asst. Surg. E. W. Adamson in charge. Post-office and telegraphic address, Douglas, Ariz.

The type of Mexican alien applying for admission at this port is of rather high class. The majority have been vaccinated successfully against smallpox, as a result of the activities of the company surgeons of the several mining companies, and their physical condition is very good. These passengers arrive at Nogales by train and are inspected between the hours 11.30 a. m. and 1 p. m., or if necessary, this inspection is supplemented by an afternoon inspection between 2.30 and 3 p. m. All aliens requiring inspection are presented to the medical officer by the immigration inspector. Six thousand eight hundred and thirty-seven aliens were inspected during the fiscal year ended June 30, 1930. Of this number, 1,516 were seeking permanent entry.

EASTPORT, ME.

Acting Asst. Surg. J. E. Brooks in charge. Post-office and telegraphic address, Eastport, Me.

During the past year 59,180 persons entered the United States through this port, 5,018 of whom made temporary entry for periods varying from a week to six months to visit relatives or to work in the canning factories and lumbering camps. A comparatively small number came seeking permanent homes and the balance came over for the purpose of trading in the United States and remained only for a few hours or days. The trend of immigration seems to be into Canada at present; many families unable to find work are returning to their homes.

An international ferry service for automobiles is expected to open between this port and Canada in the very near future. This service will shorten the distance of the trunk line to St. John by more than 50 miles and it is contemplated that a considerable portion of the through traffic now crossing at Calais will be transferred to this port.

EASTPORT, IDAHO

Acting Asst. Surg. S. H. Hodgson in charge. Post-office and telegraphic address, Eastport, Idaho.

Eastport is located on the Spokane International Railroad in the extreme northern tip of Idaho, 141 miles from Spokane. The Spokane International Railroad is closely affiliated with the Canadian Pacific and for this reason, perhaps, the volume of travel between Canada and the United States over it is greater than that over any other railroad which crosses the border in this district. Automobile travel west of the Cascades increases border crossings above Eastport, Idaho; in fact, the majority of aliens entering through this port come by automobile. Over 6,000 of these aliens were in transit, going to British Columbia via Spokane and Seattle. The roads through Canada are in very bad condition, and because of the distance around the mountains this route is preferred by many. Aliens are received from 8 a. m. until 9 p. m. for medical inspection. During the year the border patrol apprehended 72 warrant cases and all were examined and deported. One thousand seven hundred and seven aliens were inspected during the year, of which number 78 were certified for disease or defect.

EL PASO, TEX.

Surg. J. R. Hurley in charge. Post-office and telegraphic address, 321 Mills Building, El Paso, Tex.

There has been a considerable and steady decline in the number of statistical aliens arriving at this port during the past year, particularly among those seeking a permanent home in the United States. Nearly every month has witnessed a decline in their numbers as compared with the preceding month. This situation has been brought about principally through the requirements of visa fees for children as well as adults, together with more rigorous restrictions in other matters by American consuls in Mexico in connection with the granting of visas on passports to prospective immigrants. The type of immigrant seeking entry at this port remains the same as in previous years. To offset this decline in the number of aliens seeking permanent homes and requiring medical inspection, there has been a considerable increase in the number of local crossers examined at El Paso during the year, amounting to a total of 13,296. Each one of these when first appearing for a permit card must, among other things, undergo medical inspection, as in the case of all other aliens. Said permit card is issued conditionally only to their being found not afflicted with any communicable disease or mental defect. In this class of aliens a number of physical defects or disabilities that would fall in the "B" or "C" classifications that are not disease conditions per se, do not necessarily operate to prevent them securing their local crossers' permit card. Such defects as are found, however, are entered upon their manifest card by the examining medical officer. Should such an alien later make application to enter this country as a statistical immigrant, his condition is already on record, and should his defects or disabilities be of a nature considered liable to impair his ability to earn a living or render him liable to become a public charge, appropriate action in his case is immediately facilitated.

Only local crossers are admitted, subject to medical inspection, at the subports of Guadalupe Gate and Ysleta Bridge. Aliens desiring a more extended period of admittance who appear at those ports are referred to the Santa Fe Street Bridge station at El Paso.

It would be expected that, upon making the requirements for legal entry into the United States more difficult for the Mexicans, there would result an increase in clandestine or illegal entries. Such was the effect at first, but the border patrol force has been increased and has been quite active. Moreover, during the past year the expedient was adopted of arresting and arraigning in a United States commissioner's court all aliens picked up in the United States without proper credentials. This in most cases results in a rather heavy jail sentence with prompt deportation upon expiration of the sentence. These measures have considerably discouraged illegal entry into the United States.

FALL RIVER, MASS.

Acting Asst. Surg. Thomas Cox in charge. Post-office and telegraphic address, 1244 Pleasant Street, Fall River, Mass.

During the fiscal year ended June 30, 1930, a total of 79 vessels arrived at this port on which were carried 1,563 alien seamen and 7

alien passengers. Three alien seamen were certified for disease or defect.

The number of ships arriving at this port during the year from foreign ports was double that of the preceding fiscal year. This is probably accounted for by the fact that the local oil plant has been placed under new management, with resulting increase in business and shipping.

FORT MONROE, VA.

Surg. J. W. Kerr in charge. Post-office and telegraphic address, Fort Monroe, Va.

During the fiscal year 108 passengers and 17,845 seamen were inspected at this port. Practically no passengers are destined for this port. It is understood, however, that a regular passenger line is to be established between European ports and Hampton Roads. Sixty-nine vessels not subject to quarantine inspection, carrying 2,285 alien seamen, were boarded for the purpose of examining aliens. These vessels were in transit from Australia and the west coast of North and South America.

GLOUCESTER, MASS.

Acting Asst. Surg. E. B. Hallett in charge. Post-office and telegraphic address, 139 Main Street, Gloucester, Mass.

For the most part the medical inspection of aliens at this station consists of the examination of alien seamen, most of whom come from the British Provinces. There are also a considerable number who come from European ports in salt ships. Upon the arrival at this port of a ship on which there are aliens, the medical officer is notified by the immigration inspector and immediately boards the ship and makes the medical immigration examination. During the fiscal year 151 alien seamen were inspected, 7 of whom were certified as having disease or defects.

HALIFAX, NOVA SCOTIA

Acting Asst. Surg. F. V. Woodbury in charge. Post-office and telegraphic address, Halifax, Nova Scotia.

During the year, 6,548 aliens of all classes applied for the privilege of entry at this port. Two thousand four hundred and eighty-two of these received medical examination. All bona fide immigrants (2,261) seeking permanent homes were medically examined. Three thousand and thirty-two aliens made temporary entry into the United States at this port for purposes of business or pleasure, and 133 of this class were referred for medical examination. In addition, there were 3,090 nonstatistical aliens, mostly returning residents, who entered through this port, 88 of these were examined. Of a group of 396 aliens examined by the Public Health Service in European ports prior to embarkation, only 1 required deportation. This was the result of disease acquired shortly after sailing, which manifested itself during the voyage.

Both border and seaport immigration passing through this port is of a good sanitary type. The great majority of the border cases go to the New England States, whence many of their ancestors

came to Nova Scotia. The seaport class go to the far West. A rather unusual degree of activity in the vicinity of Halifax has caused a slight decrease in the number of applicants for permanent entry. A recently created harbor commission is responsible for greatly increased facilities at this port.

HAVRE, MONT.

Acting Asst. Surg. Charles W. Houtz in charge. Post-office and telegraphic address, Havre, Mont.

Havre, Mont., is located on the main line of the Great Northern Railroad in the north central part of the State, about 50 miles from the Canadian border. A port of entry has been maintained at Havre for many years because of its importance as a business center and railroad junction, although there is no railroad communication extending north from Havre to the Canadian line. Havre is the business center of a territory extending as far north as Govenlock, Saskatchewan, and there are several highways extending from Canadian territory into Havre.

The number of aliens entering the United States through this port is not large, numbering 3,036 during the past year. Of this number, 243 were statistical aliens seeking permanent homes and the balance were nonstatistical or temporary entrants. Twenty-two of the former class and 18 of the latter class were referred to the medical officer by the immigration authorities for medical examination.

HIDALGO, TEX.

Acting Asst. Surg. W. P. Woodall in charge. Post-office and telegraphic address, Hidalgo, Tex.

Immigration at this port is almost exclusively Mexican. During the year 4,988 aliens were medically examined. Of this number, 423 were bona fide immigrants seeking homes and were required by the immigration authorities to undergo an intensive examination. Clandestine crossings continue in spite of increasing activities of the border-patrol forces. Of these illegal entrants a greater proportion are found to be subject to deportation on account of physical disability than of the legal crossers, showing that those who are physically unqualified to enter are disposed to avoid the ports of entry.

HONOLULU, HAWAII

Senior Surg. S. B. Grubbs in charge. Post-office and telegraphic address, Honolulu, Hawaii.

During the fiscal year 10,576 aliens entered the port of Honolulu. The majority of such aliens were resident orientals who had been to China and Japan and were returning to their homes. The other aliens were those passing through in transit or stopping over as temporary visitors. The medical inspection of first and second class passengers is conducted on board arriving vessels, while practically all third-class passengers are taken to the immigration station for examination. In addition to the alien passengers examined a total of 25,525 alien seamen were also inspected during the year.

HOULTON, ME.

Acting Asst. Surg. E. C. Bates in charge. Post-office and telegraphic address, Houlton, Me.

Immigration at this port consists for the most part of aliens arriving from Canada, being mostly farmers and laborers and their families who are of good sanitary type. Of a total of 1,127 aliens medically examined, only 9 were certified as being afflicted with disease or defect.

JACKSONVILLE, FLA.

Acting Asst. Surg. R. S. Wynn in charge. Post-office and telegraphic address, Jacksonville, Fla.

Because of the fact that the foreign ships entering this port are, for the most part, cargo vessels, the immigration work consists almost exclusively of the examination of alien seamen. No passenger lines bringing immigrants entered during the year. The total number of aliens arriving in this port as passengers were 4, of which 1 English, 1 Canadian, and 2 Portuguese, constitute bona fide immigrants seeking permanent homes. The medical examination is performed aboard ship immediately upon arrival. The number of alien seamen examined during the year totaled 2,265, of which number 15 were certified for disease or defect.

JACKMAN, ME.

Acting Asst. Surg. E. D. Humphreys in charge. Post-office and telegraphic address, Jackman, Me.

The immigration work at this port consists for the most part of aliens arriving from Canada. A majority of these persons are farmers and other laboring classes. The total number of aliens entering this port during the fiscal year was 94,073. Of this number 502 were immigrants seeking homes in the United States, 3,814 were statistical aliens making temporary entry, and 89,757 were nonstatistical aliens making entry for a few hours or days.

KETCHIKAN, ALASKA

Acting Asst. Surg. R. V. Ellis in charge. Post-office and telegraphic address, Ketchikan, Alaska.

The majority of aliens entering at this port are from Canada and enter for the purpose of seeking homes in this country. In a few instances small family groups come from Norway for the same purpose, but these constitute a very small number. The aliens applying at this port are a very desirable class and no certifications were made during the year. The volume of work along this line at Ketchikan is not very large, as the majority of immigrants enter at Seattle or some other port of entry in the States. Those requiring medical examination are referred to the Public Health Service officer by the immigration inspector.

KEY WEST, FLA.

Acting Asst. Surg. J. Y. Porter, jr., in charge. Post-office and telegraphic address, Key West, Fla.

During the past year 8,559 aliens were inspected, which was a slight decrease of the preceding year. The class of alien is, as a rule, high, the vast majority being from Cuba, with a small number from Central and South America, Mexico, and the Cayman Islands, with a still smaller number from Europe and Asia. The medical inspection of aliens is conducted in conjunction with the quarantine activities at this port. During the year 160 vessels were boarded solely for immigration medical inspections.

LEWISTON, N. Y.

Acting Asst. Surg. Norman J. Wolf in charge. Post-office and telegraphic address, Lewiston, N. Y.

Aliens arrive at Lewiston via boat from Toronto, Canada, directly across Lake Ontario. The majority of travelers arriving here are tourists, excursionists, or persons coming over for business reasons. With the advent of good roads and international bridges these classes of travelers have taken more to the automobile method of transportation and boat travel is correspondingly lessened.

The total number of aliens medically examined during the year was 27,132, of which number but 4 were certified for mandatorily excludable conditions.

MALONE, N. Y.

Acting Asst. Surg. P. F. Dalphin in charge. Post-office and telegraphic address, Malone, N. Y.

On June 13, 1929, a medical officer of the Public Health Service was detailed to the port of Malone, N. Y., in connection with the medical examination of immigrants. Since that date to the close of the fiscal year 1930 a total of 847 aliens applied for admission to the United States through this port, and 61 of this number were referred by the immigration authorities to the medical officer for examination. The type of immigrant applying for admission through this port have been almost entirely of the laboring class, and fully 90 per cent have come for the purpose of obtaining employment.

The medical examination of aliens applying for admission to the United States through the ports of Fort Covington, Trout River, and Chateaugay, N. Y., is also performed at the port of Malone. Any alien applying for admission at the above ports are referred to the medical officer at the port of Malone, which is only a short distance away.

MOBILE, ALA.

Surg. F. M. Faget in charge. Post-office and telegraphic address, Mobile, Ala.

During the fiscal year, 6,670 aliens were medically examined at this station. Of these, 6,575 were alien seamen and 95 alien passengers.

Most of the alien passengers arriving here are visitors coming to the United States for short periods from Central American countries or merchants from these countries on short business trips.

Aliens presenting evidence of class A diseases and requiring further observation or laboratory confirmation prior to certification are usually referred to the marine hospital in Mobile by the immigration authorities for such observation or additional examination and certification.

MONTREAL, CANADA

Surg. G. M. Corput in charge. Post-office and telegraphic address, care American Consulate General, Montreal, Canada.

During the preceding fiscal year the medical officer of the Public Health Service attached to the United States immigration station at Montreal, in connection with the medical examination of intending immigrants, was also detailed as technical adviser to the American consul at this port. During the past fiscal year this work has progressed in a very satisfactory manner and there has been a gradual increase in the number of aliens refused visas on medical grounds. The work at the immigration station, which is about 1 mile from the consulate general, has been comparatively light. This is due to the fact that only Canadian-born aliens who are making temporary entry only are examined at the immigration station. A total of 17,415 aliens was medically examined during the year. This figure includes both temporary entrants and those seeking permanent entry.

During the year a series of lectures has been delivered at the consulate covering causes for the rejection of aliens on medical grounds, which has resulted, it is believed, in a better understanding between both the Medical and Consular Service as to the classes of aliens who should be refused visas.

NACO, ARIZ.

Acting Asst. Surg. B. C. Tarbell in charge. Post-office and telegraphic address, Naco, Ariz.

The aliens encountered at this port are mostly of Mexican race and nationality, being of the laboring class and entering for business, pleasure, and in transit. Aliens held for deportation proceedings by immigration officers are also accorded examination at this port. During the year 600 vaccinations were performed. The majority of alien passengers arrive at this port by automobile, there being daily automobile stage service from Cananea, Agua Prieta, and Naco, Sonora, Mexico. A small number also come by train from Cananea and Nogales, Sonora, Mexico, which arrives three times a week. During the year an average of 10,000 automobiles entered the United States each month at this port. Inspection is maintained for 24 hours each day, but only United States citizens and aliens previously lawfully admitted are allowed to enter the port from 5 p. m. to 9 a. m.

During the year a total of 3,849 aliens were medically examined at this port, and 225 of this number were certified for disease or defect.

NEW BEDFORD, MASS.

Acting Asst. Surg. E. F. Cody in charge. Post-office and telegraphic address, New Bedford, Mass.

Immigration inspections at this port are conducted in conjunction with the quarantine inspection. The amount of this work performed during the year was very small, numbering 28. These arrivals were traveling under temporary permits from their native homes in the Cape Verde Islands. The Cape Verdean is a good type of unskilled laborer, physically well fit. Five thousand of these immigrants are employed in industry in this city and many are engaged in farming

on the cultivated areas of Cape Cod. Increasing numbers are to be found in Connecticut and Pennsylvania, and a few are rendering good service in Indianapolis.

NEW ORLEANS, LA.

Surg. J. G. Wilson in charge. Post-office and telegraphic address, room 305, customhouse, New Orleans, La.

The conduct of the medical examination of aliens at this port is performed in conjunction with quarantine inspection as occasion demands. During the year a total of 3,977 alien passengers entered through the port of New Orleans. Of this number, 3,431 were bona fide immigrants seeking permanent homes. The alien passengers entering this port either for permanent or temporary residences come mainly from the West Indies and South and Central America, and the type is generally good, many traveling first class. Of greater number, however, are the alien seamen examined, 49,434 being examined during the year. It is the routine practice at this port for all alien seamen suffering from venereal disease to be sent to the immigration station for detention at the expense of the steamship company, and this has resulted in a marked diminution in the numbers of such cases because captains usually refuse to sign on a new crew member until he is reasonably certain that such seaman is not infected. That such practice actually results in a remarkably low incidence of venereal disease is witnessed by the fact that out of nearly 50,000 inspected only 180 were found infected.

NEWPORT, VT.

Acting Asst. Surg. J. F. Blanchard in charge. Post-office and telegraphic address, Newport, Vt.

There has been a slight decrease in the number of immigrants examined at this port during the past fiscal year as compared with the years immediately preceding. The lessened demand for labor in the United States is partially responsible for this, as is also the fact that owing to the financial depression fewer Canadians who have previously entered the United States are returning from visits to Canada. Certain classes of disabilities which were formerly included in the medical reports now seldom appear, probably owing to the fact that the Canadian people now realize the futility of those afflicted with serious mental or physical disabilities applying for admission. During the past fiscal year 1,708 aliens were examined at this port; 683 of this number came for the purpose of seeking permanent homes.

NIAGARA FALLS, N. Y.

Acting Asst. Surg. Raymond Hensel in charge. Post-office and telegraphic address, Niagara Falls, N. Y.

A large percentage of aliens applying for admission at this port are of British extraction, but most of the other European races are well represented. Most of the latter would probably have emigrated directly to this country had they been able to obtain visas in their native countries.

Entry is made at this port via two vehicular and passenger bridges and two railroad bridges. Medical examinations are conducted

either at the bridges or at the main immigration office which is located near the railroad station.

The total number of aliens who entered this port during the fiscal year was 1,890,720. Of this number, 2,110 were medically examined, and 91 of these were certified for physical and mental defects. A great many of the aliens applying for admission at this port were transient visitors.

NOGALES, ARIZ.

Passed Asst. Surg. L. B. Byington in charge. Post-office and telegraphic address, Nogales, Ariz.

The majority of aliens entering through this port are Mexicans, with an occasional European or Ceneral American, and nearly all applying for permanent entry are of the better class. Stringent restriction on the issuance of visas by American consuls in Mexico has apparently eliminated many applicants of an inferior type. During the year, 25,255 aliens entered through this port. Of these, 6,208 were classified as statistical aliens making permanent entry; 7,812 were aliens making temporary visits on business and 11,235 were "local crossers." During this period 599 aliens were vaccinated at this port, and 175 laboratory examinations were made.

NOYES, MINN.

Acting Asst. Surg. George R. Waldren in charge. Post-office and telegraphic address, Noyes, Minn.

The past year has seen another increase in the number of aliens passing through the port of Noyes, Minn. The majority of this number are composed of the automobile tourist traffic, a great many of whom are passing in transit through from eastern to western Canada and vice versa. Most of the aliens who are referred to the medical officer at this port by the immigration authorities for medical examination are those seeking medical treatment in this country; only a very small proportion of the aliens coming over for temporary visits or for business are referred for examination. Likewise but a small number of the statistical aliens making permanent entry are referred for medical examination. The majority of these latter classes are given the required medical examination at Winnipeg prior to leaving that port by train.

During the past year a great many illegal entries have been apprehended by the immigration authorities and referred for medical examination. This increase in illegal entries is probably the result of labor conditions in Canada.

OGDENSBURG, N. Y.

Acting Asst. Surg. R. L. Stacy in charge. Post-office and telegraphic address, Ogdensburg, N. Y.

The great majority of aliens entering through the port of Ogdensburg were either farmers or laborers, coming chiefly from Canada, England, Ireland, Scotland, and Holland. These examinations are conducted either at the office of the medical officer or at the immigration office. Practically all of the arriving foreign seamen were examined on shipboard. During the fiscal year ended June 30, 1930, 510 alien passengers and 383 alien seamen were examined.

OROVILLE, WASH.

Acting Asst. Surg. Frank S. Beale in charge. Post-office and telegraphic address, Oroville, Wash.

Oroville, Wash., is located on a branch of the Great Northern Railroad, at the head of the Okanogan Valley, north of Wenatchee, Wash. Automobile traffic through this port is not large, and train service is limited to one train per day from Canada. During the year 28 aliens making permanent entry were admitted at Oroville, of whom none were certified for disease or defect. In addition, 72 temporary entrances and 12,476 nonstatistical or "local crossers" entered at this port, 12,448 of these being medically examined by the Public Health Service officer.

PHILADELPHIA, PA.

Surg. D. J. Prather in charge. Post-office and telegraphic address, Marcus Hook, Pa.

The routine inspection of aliens, both crew and passengers, is made at the quarantine station at Marcus Hook, Pa., in conjunction with quarantine inspections. Aliens on vessels which do not have to stop at quarantine are medically examined at the wharf upon arrival at Philadelphia, Chester, and Wilmington. A medical officer is also on duty at the office of the Immigration Service in Philadelphia, who furnishes medical services to cases in that office; also a medical officer is detailed to the immigration station at Gloucester, N. J., for the purpose of making medical examinations and furnishing medical treatment.

During the year 29,797 members of crew, 71 stowaways, and 396 passengers were medically examined under the immigration laws.

PHILIPPINE ISLANDS

Surg. R. W. Hart in charge. Post-office and telegraphic address P. O. Box 424, Customhouse, Manila, P. I.

The United States immigration laws and regulations, in a somewhat modified form, are in force in the Philippine Islands. The collectors of customs act as immigration officers and are charged with the enforcement of the laws and regulations concerning immigration. Provision is made at every port of entry in the Philippines for the medical inspection of arriving aliens, this work being performed by the medical officers of the service in addition to their quarantine duties. These inspections are conducted on board arriving vessels. Intensive examinations are made in the quarantine offices, the aliens being presented to that office by the immigration inspectors. The laboratory work in connection with the medical inspection of aliens was performed by the service officers in the quarantine office as a part of the daily routine. During the year the aliens examined totaled 21,528. Of this number, 128 were certified for disease or defect in accordance with the provisions of the immigration laws and regulations.

PORT HURON, MICH.

Acting Asst. Surg. George M. Kesi in charge. Post-office and telegraphic address, Port Huron, Mich.

During the fiscal year ended June 30, 1930, 1,141,499 aliens entered the United States at Port Huron. Of these, 2,878 signified their intention of seeking permanent homes and 805 were referred for medical examination by the immigration authorities. In addition 355 aliens seeking admission at this port for temporary residence in the United States and 397 "local crossers" or visitors were given a medical examination by the Public Health Service officer.

The type of immigrant applying for admission at this port continued to be very good, the majority being natives of Canada. Approximately 70 per cent of all arriving aliens are examined at the St. Clair Tunnel immigration station, situated $2\frac{1}{2}$ miles from the center of the city. The remaining 30 per cent are examined either at the out-patient office of the Public Health Service in the Federal Building or at the wharf of the ferry which crosses the St. Clair River bringing passengers from the neighboring city of Sarnia, Ontario, Canada. In addition to making medical examinations of aliens passing through this port, the medical officer provided medical attention for the aliens in the county jail awaiting deportation.

PENSACOLA, FLA.

Acting Asst. Surg. C. W. D'Alemberte in charge. Post-office and telegraphic address, Pensacola, Fla.

Immigration operations at this station consist for the most part of the examination of alien seamen, there being very little alien passenger traffic encountered here. The type of immigrant seaman varies greatly in view of the fact that vessels of nearly all nationalities call here. During the fiscal year there were examined 1,747 alien seamen, 2 alien passengers, and 2 stowaways.

PORTLAND, OREG.

Asst. Surg. F. S. Fellows in charge. Post-office and telegraphic address, Portland, Oreg.

Immigration activities at this station are limited almost entirely to the examination of foreign seamen upon arrival, there being no direct passenger liners coming to this port. This examination is performed in conjunction with the quarantine inspection. During the year 641 seamen were examined, only 1 certification being made. These examinations are made on shipboard.

PORTO RICO

Surg. L. E. Hooper in charge. Post-office and telegraphic address, San Juan, P. R.

The routine medical examination of aliens arriving in Porto Rico is effected aboard the vessels in conjunction with the quarantine inspection. Suspicious or doubtful cases are sent to the Public Health Service office for further examination.

The majority of the immigrants to Porto Rico come from the other islands of the West Indies or from Central or South America. A few come from European countries. The type is generally good, many of them traveling first class.

At San Juan 8,390 alien passengers and 20,281 alien seamen were medically examined during the year, and a total of 48 alien passengers and 8,263 alien seamen were medically examined at the nine subports of Porto Rico.

PRESIDIO, TEX.

Acting Asst. Surg. C. M. Hatcher in charge. Post-office and telegraphic address, Presidio, Tex.

The general type of immigrant examined at this station is of the laboring class; practically all are Mexicans and are very poor. Most of the immigrants locate on near-by farms; some go to the mines in this vicinity; and a very few go into the interior of the United States. During the year 17,200 aliens entered this port requiring examination; 83 of this number were bona fide immigrants seeking permanent homes.

PROVIDENCE, R. I.

Surg. H. G. Ebert in charge. Post-office and telegraphic address, 403 Federal Building, Providence, R. I.

During the fiscal year the gross amount of immigration transactions closely approximates the general average for the past few years during which the quota system of immigration has been in effect. There were examined 3,070 alien passengers and 5,700 alien seamen during the year, of which number 96 passengers and 9 crew were certified to the Immigration Service. One hundred and nine alien passengers had been examined abroad, and 16 of these had been certified for various physical defects. Those so certified were again examined and the defects were noted on the medical certificate.

The class of immigrants entering the United States through this port represents all races and nationalities resident in countries along the Mediterranean and Black Seas. Portuguese and Italians predominate in numbers, with Greeks, Turks, Hebrews, Syrians, Armenians, Russians, and Rumanians about equally divided. The physical standard of arriving aliens continues to be relatively high, probably due to the examinations abroad prior to embarkation made by medical officers of this service.

QUEBEC, CANADA

Acting Asst. Surg. Jos. L. Gilbert in charge. Post-office and telegraphic address, Quebec, Canada.

The immigration station is located in the Canadian Government Immigration Building on the Government docks at Quebec. During the year a total of 2,584 examinations were made of immigrants from Canada making temporary or permanent entry into the United States.

Quebec is also a seaport of entry for aliens destined to the United States. During the year 6,739 overseas aliens were also examined. This medical examination is conducted on board ship for cabin and tourist third cabin passengers and in the Canadian Immigration Building for the steerage and third-class passengers. The average number of ships arriving each week during the season is from six to nine.

RIOGRANDE, TEX.

Acting Asst. Surg. C. J. Martin in charge. Post-office and telegraphic address, Riogrande, Tex.

This office is located on the military reservation, Fort Ringgold, Tex., about 1 mile from the town of Rio Grande City, and is jointly occupied by Public Health and Immigration Services. Camargo Tamaulipas, situated approximately 6 miles from the river, is the nearest Mexican town.

Practically all aliens presented for examination at this port are Mexicans of the laboring class. Of a total of 1,535 such aliens presented for examination during the year only 17 of this number were bona fide immigrants seeking permanent homes, the remainder being temporary entrants.

ROUSES POINT, N. Y.

Acting Asst. Surg. J. L. P. Remillard in charge. Post-office and telegraphic address, Rouses Point, N. Y.

The medical examination of aliens at this port is conducted at the immigration office. The station is situated about 2 miles south of the boundary line. Aliens arrive by railroad and highway, Canadians being the most numerous. It is necessary that the medical officer be present upon the arrival of all trains in order to examine medically any alien who might be removed by the immigration officers for medical examination. During the year a total of 745 such aliens were referred for medical examination.

ST. JOHN, NEW BRUNSWICK

Acting Asst. Surg. D. C. Malcolm in charge. Post-office and telegraphic address, St. John, New Brunswick, Canada.

The number of aliens entering the United States through the port of St. John increased somewhat during the past fiscal year; the number entering for permanent stay, however, was not as large as in previous years. The port of St. John is open all the year, but most of its operations are carried on during the winter months, from December until April, during which period the ports of Montreal and Quebec are icebound. The types of immigrant arriving at this port are very good, aliens from the British Islands and Scandinavia predominating. During the year 31 vessels of the Canadian Pacific Line arrived, carrying alien passengers totaling 13,397.

SAULT STE. MARIE, MICH.

Acting Asst. Surg. C. Willison in charge. Post-office and telegraphic address, Sault Ste. Marie, Mich.

The aliens examined at this station are wholly of the Caucasian race, about 80 per cent of whom are Canadians going to the industrial centers of Michigan for work. These aliens arrive by the Canadian Pacific Railroad and by the ferry operating on the Sault Ste. Marie River. The trains enter by bridge and aliens are medically examined at the depot which is located about three-fourths of a mile from the Federal Building. Aliens entering by ferry are taken to the Federal Building, where they are examined by the medical officer. The total number of aliens given an intensive medical examination during the year was 84.

SCOBEY, MONT.

Acting Asst. Surg. T. M. Morrow in charge. Post-office and telegraphic address, Scobey, Mont.

Practically all aliens encountered at this port are British subjects but of various races, such as Scotch, Irish, English, Russians, Australians, etc. The majority are engaged in agricultural pursuits. The greater part of immigration through this port consists of "local crossers," or persons entering the United States for a few hours only for the purpose of trading or business, or are tourists. During the year 4,389 aliens entered this port; 18 of this number were referred to the medical officer by the immigration authorities for examination and but 3 of these were seeking permanent entry.

SAN DIEGO, CALIF.

Surg. J. W. Tappan in charge. Post-office address, Point Loma, Calif.; telegraphic address, San Diego, Calif.

The greater part of the medical immigration examinations at this port is done aboard arriving vessels at Point Loma, in conjunction with quarantine inspection. Those requiring a more extensive examination than is practicable to make at quarantine are referred to the Public Health Service office in San Diego for further examination. The majority of the larger vessels are intercoastal, taking on passengers en route from the West Indies, South America, and the Canal Zone. Aliens included on the passenger lists of these ships are of the better type, being for the most part tourists. There have been several Scandinavian, French, and British vessels also touching at this port, which carry a good sanitary type of alien. A large proportion of the alien seamen encountered are the local fishermen who fish in Mexican waters. They are all residents of San Diego, although not citizens, the majority being Portuguese, and having touched at Mexican ports they are included in the examination as aliens upon each return to San Diego.

The Public Health Service officer on duty at this port also makes examinations of aliens taken in custody by the Immigration Service in deportation proceedings.

During the year, 1,086 alien passengers were medically examined, 12 of this number being certified for disease or defect; 8,762 alien crew were medically examined, and only 2 were certified.

Medical examination of aliens is also made by officers attached to this station at the Mexican border port of entry, San Ysidro. Approximately 70 per cent of all aliens crossing here are Mexicans and, due to the general prosperity of the district, they are of an unusually good class. There are also considerable numbers of British, German, Russian, Greek, Spanish, Japanese, and Chinese nationals. During the fiscal year the total number of aliens entering this port was 708,503. Of these, 6,196 were medically examined. All aliens not showing signs of recent successful vaccination against smallpox were vaccinated. There were 714 vaccinations thus performed.

SAN FRANCISCO, CALIF.

Surg. Dunlop Moore in charge. Post-office and telegraphic address, San Francisco, Calif.

The activities of the Public Health Service at this station may be described under the following headings: (1) Medical examination of aliens; (2) hospital; (3) laboratory; (4) miscellaneous.

Medical examination of aliens.—The general procedure as regards the medical examination of aliens remains as described in previous annual reports. In recent years the number of Asiatic alien immigrants arriving at San Francisco has shown a decline. There has been a steady increase each year in the number of immigrants arriving at San Francisco on the numerous liners plying between various European ports and the Pacific coast of the United States via the Panama Canal. In recent years the number of passenger vessels engaged in this trade has shown a decided increase also, and it seems quite probable that in the future a considerable number of European immigrants may enter the United States through this gateway.

Following prophylactic measures instituted by the service, there has been a marked decrease in the incidence of meningococcus meningitis among steerage passengers on Pacific liners arriving at San Francisco during the past year, as compared with the preceding year. During this period a total of 10,808 alien passengers and 15,068 alien members of crew were medically examined on arrival at this port.

Hospital.—The small immigrant hospital, with its somewhat limited facilities, continues to serve a useful purpose as a place for the observation of aliens pending diagnosis and certification, for the isolation of cases of minor communicable disease, and for the medical and surgical treatment of a variety of diseases occurring in immigrants, arrest cases, and others. During the early part of the fiscal year eight cases of meningococcus meningitis were admitted to the hospital, all of whom apparently contracted the infection through contact with carriers in the detention quarters. With the approval and active aid of the local commissioner of immigration, the medical officer at this station has been cooperating with the medical director of the district in carrying out stringent prophylactic measures against this disease, with the result that no new cases of meningitis have been observed at this station since July 14, 1929.

Laboratory.—During the past year a study of the relationship of eosinophilia to helminthiasis has been made. Specimens of parasites and ova have been furnished to several scientific institutions; 1,872 specimens of feces were examined with special reference to the presence of helminthic ova and embryos; 743 specimens gave negative results. In the 1,129 positive specimens the presence of parasites was determined with the following frequency: *Trichuris trichiura*, 712; *Ascaris lumbricoides*, 619; hookworm, 490; *Clonorchis sinensis*, 203; *Fasciolopsis buski*, 13; *Metagonimus yokogawai*, 7; *Trichostrongylus orientalis*, 6; *Enterobius vermicularis*, 4; *Strongyloides stercoralis*, 3; *Hymenolepis nana*, 3; *Taenia saginata*, 2. *Clonorchis* was found exclusively in Chinese and Japanese; *Fasciolopsis buski* only in Chinese; *Metagonimus yokogawai* only in Japanese and in one Russian; *Trichostrongylus orientalis* only in Japanese and Koreans; *Strongyloides stercoralis* in Chinese and one Panaman; *Hymenolepis nana* only in Russians and one Armenian. Notable is the entire absence in Chinese of *Trichostrongylus orientalis*, *Enterobius vermicularis*, *Hymenolepis nana*, and *Metagonimus yokogawai*. In southern Chinese polyparasitism is the rule. Two instances of quintuple helminthic infestation were observed.

Miscellaneous.—With the cooperation of the Commissioner of Immigration special precautions have been taken to prevent the introduction and spread of contagious disease among persons detained at the immigration station. In addition to the routine medical inspection of arriving aliens, 1,389 arrest cases and others were medically examined at the time of admission to the detention quarters with special reference to communicable diseases. In this connection 3 cases of *Pediculosis capitis*, 5 of *Pediculosis corporis*, 4 of *Pediculosis pubis*, and 3 of gonorrhea were detected. There were administered 1,572 medical and surgical treatments to aliens and others suffering from minor ailments not requiring hospitalization. Seventy-one aliens were vaccinated against smallpox; 49 applicants for admission to the United States were specially examined for the purpose of determining their approximate ages; 15 aliens applying for extension of temporary stay in the United States for medical reasons were specially examined.

Of the aliens examined, 3,339 were regarded as bona fide immigrants.

SAN PEDRO, CALIF.

Surg. H. A. Spencer in charge. Post-office and telegraphic address, 111 West Seventh Street, San Pedro, Calif.

A total of 59,733 persons were examined during the year, of which number 8,384 were passengers and 51,349 were members of crew. Of the passengers a large proportion came from the Orient, South and Central America, and Mexico. Passenger traffic between this port and Europe, particularly Norway, Sweden, and Germany, is increasing.

With few exceptions the medical immigration examinations are conducted on board ship. It is believed that the examination of steerage passengers could be more effectively conducted ashore at the immigration station, and this plan was suggested to the immigration authorities. However, because of the lack of funds for the procurement of the necessary facilities for conducting these examinations, it has been impossible to effect this change. Aliens having a suspected certifiable disease are placed in the San Pedro General Hospital for verification and certification by the Public Health Service, upon the request of the immigration authorities.

SASABE, ARIZ.

Acting Asst. Surg. John M. Hardy in charge. Post-office and telegraphic address, Sasabe, Ariz.

There were 634 aliens examined at this port during the year. Of this number 6 were bona fide immigrants seeking permanent homes, 175 were returning United States residents, and the remainder were ranchers or merchants and their families entering for a temporary visit for business or pleasure. In general aliens admitted through Sasabe are Mexicans of the better classes, constituting merchants, ranchers, and miners. In addition there were two Japanese merchants admitted on temporary visits and four immigrants of Canadian nationality. The hours for conducting these medical inspections are from 9 a. m. to 5 p. m.; United States citizens, however, and other well-known "local crossers" are permitted to enter at hours other than these.

SUMAS, WASH.

Acting Asst. Surg. E. S. Clark in charge. Post-office and telegraphic address, Sumas, Wash.

Aliens arrive at the port of Sumas by trains of the Canadian Pacific and Great Northern Railroad, by auto stages and British Columbia electric trains (both of which make six trips daily), by privately owned automobiles, and on foot. While most of the aliens come direct from Canada, some arrive via Canada from other countries. These entries comprise all known occupations—farmers, laborers, skilled and unskilled mechanics, professional classes, and similar occupations. In addition the medical officer is often called to make medical examinations of aliens who have gained a surreptitious entry into the United States and are apprehended by the border patrol. During the year a total of 212,489 aliens entered the United States through this port; 198 of these were bona fide immigrants seeking permanent homes.

SWEETGRASS, MONT.

Acting Asst. Surg. J. B. Sullivan in charge. Post-office and telegraphic address, Sweetgrass, Mont.

Sweetgrass is located on a branch line of the Great Northern Railroad 40 miles north of Shelby, Mont., and about 25 miles east of the Glacier National Park. A border immigration station has been located at this port for many years, and since the opening of the oil fields around Sweetgrass the volume of transients crossing at this point between Canada and the United States has greatly increased. During the past year a total of 35,138 persons crossed the border at this point. They are of a good sanitary type generally, and during this period it was necessary to certify only four for disease or defect.

TAMPA, FLA.

Surg. J. T. Burkhalter in charge. Post-office address, Tampa, Fla.; telegraphic address, St. Petersburg, Fla.

Practically 95 per cent of the alien passengers entering the ports served by this station arrive from the Island of Grand Cayman, on the small British motor ship *Noca*. The majority of the passengers are natives of this island and are of the laboring class. During the year 162 alien passengers were medically examined at this port, and none were certified for disease or defect. A total of 3,757 alien seamen were also examined, 27 of whom were certified.

THAYER (MERCEDES), TEX.

Acting Asst. Surg. R. H. Gray in charge. Post-office and telegraphic address, P. O. Box 464, Mercedes, Tex.

The medical immigration examinations at this port are conducted in conjunction with the quarantine inspection. During the year 813 aliens were given a medical examination. Of this number, 52 were bona fide immigrants, 1 of whom was certified for disease and excluded. Of the 761 nonstatistical aliens examined, 29 were certified for disease, 16 of whom were refused admission into the United States.

VAN BUREN, ME.

Acting Asst. Surg. L. N. Albert in charge. Post-office and telegraphic address, Van Buren, Me.

The immigrants entering at this port are, for the most part, Canadians of French descent; a few Canadians of the English race also come in through this port but the number is very small. These aliens are of good sanitary type and comparatively few diseases or defects are encountered. During the year 132,399 aliens applied for admission to the United States through this port, 178 of whom were referred to the medical officer by the immigration authorities for examination.

VANCOUVER, BRITISH COLUMBIA

Acting Asst. Surg. H. R. Storrs in charge. Post-office and telegraphic address, 850 West Hastings Street, Vancouver, British Columbia.

The method of procedure with respect to the examination of aliens at this port was changed somewhat during the year 1929 under instructions from the Department of Labor. Prior to July, 1929, all aliens desirous of admission into the United States were examined, first, at the request of the immigration authorities, by the medical officer; secondly, by the immigration authorities; and then by the American consul, who issued their visas. Under the new instructions, all aliens apply first to the consulate, whence they are sent by the American consul to the medical officer for examination. If no defects or diseases are found and they are admissible otherwise, they are then issued their immigration visas, being examined by the immigration authorities lastly. These aliens enter the United States through the ports of Seattle, Blaine, Sumas, and others, where their immigration visas are taken up.

This change in procedure, while very marked, does not affect the work of the station. The number of aliens applying for permanent admission or temporary visit and medically examined is approximately 5,000 to 7,000 per year. The number of aliens refused admission for medical reasons is small, as they are of good sanitary type.

WINNIPEG, MANITOBA, CANADA

Acting Asst. Surg. George B. Story in charge. Post-office and telegraphic address, Winnipeg, Manitoba, Canada.

During the year 22,520 persons applied for admission to the United States through the port of Winnipeg, of whom 7,077 were referred for medical examination. The number of statistical aliens making application for permanent entry as bona fide immigrants seeking homes was 3,962. All of the applicants of this class were subjected to a medical examination, 194 of whom were refused admission into the United States. Of the total number certified as being afflicted with disease or defect, 626 were going to the United States for the purpose of obtaining medical or surgical treatment.

The type of immigrant applying for admission at this port has been about the same as during the preceding years. Since July 1, 1929, owing to an increase in the quota for some countries and a de-

crease in others, the proportion of the aliens applying for admission has noticeably changed—as, for example, the British quota, which formerly had a long waiting list, is now practically open, subjects of Great Britain now having only a few months to wait before receiving their quota numbers. A general economic depression, prevalent over the entire Dominion of Canada, has curtailed the movement of all classes of immigration, including tourists as well as immigrants intending to make their permanent homes in the United States.

DIVISION OF SANITARY REPORTS AND STATISTICS

In charge of Asst. Surg. Gen. R. C. WILLIAMS

The wave of influenza which swept over the country in the fall of 1928 and the winter of 1928-29 died down early in the spring of 1929, and during the fiscal year ended June 30, 1930, the United States was unusually free from epidemic influenza, and health conditions were generally favorable.

New low records were established during the calendar year 1929 for diphtheria, typhoid fever, and tuberculosis. The prevalence of these diseases has been decreasing for several decades, and the reduction in the case and death rates shows that many lives have been prolonged and incalculable suffering has been prevented by the efforts which have been made to control these diseases.

MORBIDITY AND MORTALITY REPORTS

The reports of cases of some of the diseases which are important from a public-health standpoint are very incomplete. Surveys conducted in limited areas by State and local health authorities in cooperation with the Public Health Service have shown that many cases of notifiable diseases are not reported. Very few cases which are not under the care of physicians are ever reported to the health authorities, and many of the cases which are treated by physicians are not recorded.

During the fiscal year ended June 30, 1930, surveys were conducted by certain State, county, and city health departments, at the suggestion of the Public Health Service, for the purpose of determining the completeness of the morbidity reports collected and to secure data which would assist in the preparation of plans for obtaining more nearly complete reports of the prevalence of diseases dangerous to the public health.

CURRENT PREVALENCE OF COMMUNICABLE DISEASES

The publication of monthly summaries of the prevalence of communicable diseases in the United States was continued throughout the fiscal year. Toward the end of the fiscal year the policy of publishing a summary every four weeks, or 13 summaries during the 52 weeks of the year, was adopted. The 4-week basis makes comparison with preceding periods easier and serves the same purpose as a monthly summary. The reports of the incidence of each of the principal communicable diseases as received from States and cities

in the United States are examined, analyzed, and a summary of the general health situation as it relates to each disease is prepared. Outbreaks or unusual incidence of any of the diseases are noted, and these summaries are of value as giving a general survey of conditions throughout the country, the localities where special control measures are needed, and the results of efforts to prevent the spread of disease.

CURRENT STATE MORTALITY STATISTICS

For the past two years the Public Health Service has been collecting and publishing current preliminary data on death rates from important causes in the various States. It was found that although many States made monthly tabulations of deaths from certain causes, in many instances the data were not published currently. The work of the service in this connection has been the computation of rates based on these preliminary reports from the States and publication in the Public Health Reports so that the data are made currently available to health officers in the various States.

For a considerable period monthly rates were published for a series of months with some comparative rates for corresponding months of preceding years. During the present fiscal year the form of publication was changed from monthly rates to cumulative rates for as many months of the current calendar year as are available for the particular State at the time of publication. During the first few months of the calendar year these rates for the "year to date" cover only a short period; but as the year progresses and a larger proportion of the year is included, the rates become a better index of the mortality situation for the year. Many organizations call upon the Public Health Service shortly after January 1 for information as to mortality during the calendar year that has just ended. These death rates in the various States for the "year to date" will provide these organizations with the desired information for as much of the calendar year as is available at the time of the request.

Early in May of 1930 a summary of death rates for the various States, based on these preliminary data, was published. This summary included rates for the years 1923 to 1929, inclusive, for each of a large number of States and for groups of States for which data were available throughout this period.

COLLABORATING AND ASSISTANT COLLABORATING EPIDEMIOLOGISTS

The appointment of officers of State and local health departments as officers of the Public Health Service was continued during the fiscal year. These appointments are made at the nominal salary of \$1 per annum. The purpose is to encourage the securing of reports of outbreaks and current prevalence of diseases dangerous to the public health.

The following table shows the States in which these officers were acting at the close of the fiscal year and the number of officers in each State:

Collaborating and assistant collaborating epidemiologists as of June 30, 1930

State or possession	Collaborating epidemiologists	Assistant collaborating epidemiologists	State or possession	Collaborating epidemiologists	Assistant collaborating epidemiologists
Alabama.....	1	56	Nebraska.....	1	96
Arizona.....	1	69	New Jersey.....	1	0
Arkansas.....	1	198	New Mexico.....	0	27
California.....	1	247	New York.....	0	1
Colorado.....	1	194	North Carolina.....	1	111
Connecticut.....	1	0	North Dakota.....	1	87
Delaware.....	1	2	Ohio.....	1	161
Florida.....	1	9	Oklahoma.....	1	75
Georgia.....	1	40	Oregon.....	1	102
Idaho.....	1	9	Porto Rico.....	1	3
Illinois.....	1	108	South Carolina.....	1	14
Indiana.....	1	556	South Dakota.....	1	64
Iowa.....	1	315	Tennessee.....	1	58
Kansas.....	1	118	Texas.....	1	323
Kentucky.....	1	131	Utah.....	1	36
Louisiana.....	1	44	Vermont.....	1	10
Maine.....	1	475	Virginia.....	1	33
Maryland.....	1	72	Washington.....	1	52
Massachusetts.....	1	0	West Virginia.....	1	76
Michigan.....	1	9	Wisconsin.....	1	238
Minnesota.....	1	1	Wyoming.....	1	33
Mississippi.....	1	77			
Missouri.....	1	122	Total.....	43	4,547
Montana.....	1	95			

TELEGRAPHIC REPORTS

It is important that the Public Health Service receive early notice of outbreaks of diseases dangerous to the public health and of the current prevalence of cases of these diseases. Prompt action before a disease has spread often prevents serious results.

Telegraphic reports of such outbreaks or cases occurring in the United States are received from officers of the Public Health Service, from collaborating and assistant collaborating epidemiologists, and from State and local health officers.

Since 1918 regular weekly telegraphic reports have been received from State health officers giving the current prevalence of the principal communicable diseases. In 1919 these telegrams were received from 24 States, in 1924 from 37 States, and in 1930 they were received from 47 States, Nevada being the only State which was unable to secure the required information in time.

MONTHLY STATE REPORTS

Monthly reports of the number of cases of notifiable diseases were received during the fiscal year from all of the States except Kentucky, Texas, and Utah. These monthly reports include more diseases than do the telegraphic reports and they include cases which were reported to the State health departments too late for inclusion in the weekly telegrams.

The following diseases are included in the reports from most of the States when cases are reported within the State:

Anthrax in man.	Poliomyelitis.
Chicken pox.	Rabies in animals.
Cholera.	Rabies in man (developed cases).
Dengue.	Rocky Mountain spotted or tick fever.
Diphtheria.	Scarlet fever.
Dysentery.	Septic sore throat.
Influenza.	Smallpox.
Leprosy.	Tuberculosis (pulmonary).
Lethargic encephalitis.	Tuberculosis (all forms).
Malaria.	Tularaemia.
Measles.	Typhoid fever.
Meningococcus meningitis.	Typhus fever.
Mumps.	Undulant fever.
Occupational diseases and disabilities.	Whooping cough.
Paratyphoid fever.	Yellow fever.
Pellagra.	Other diseases not notifiable in the
Plague.	State, but reported.
Pneumonia (all forms).	

Some of the States can not give information for all of the above-named diseases, and some States include reports of cases of diseases which are not in the list.

ANNUAL STATE MORBIDITY REPORTS

Since 1912 annual volumes giving the reported prevalence of the notifiable diseases in the United States have been issued. The volume for the calendar year 1929 was delayed in order to include case and death rates based on returns from the 1930 census, as accurate population figures are essential for calculating these rates. This volume includes data from all of the States, the District of Columbia, the Territory of Hawaii, the Philippine Islands, and Porto Rico.

CITY REPORTS

Weekly reports of the number of cases of the principal communicable diseases and deaths from these diseases were received from cities having 10,000 population or over. Reports from 117 cities were tabulated, case and death rates were computed, and comparisons were made with rates for the corresponding week of the preceding year. For some diseases the estimated expectancy, based on reports from each city for the preceding nine years, was computed. The data were published currently in the weekly Public Health Reports.

Two annual summaries, one for cities of over 100,000 population and one for cities having from 10,000 to 100,000 population, were prepared for publication.

INSANE, FEEBLE-MINDED, AND EPILEPTIC

During the fiscal year monthly reports of the new admissions to hospitals for the care and treatment of the insane were received and the information was compiled and published in the Public Health Reports. The tabulations show the admissions by sex and diagnosis, the number of patients in the hospitals at the end of each month, and the number of patients on parole.

Reports were also received monthly from hospitals for the care of the feeble-minded and epileptics. These reports show the number of patients on the rolls, the number in hospitals and on parole, and the number of new admissions, discharges, and deaths.

FOREIGN REPORTS

Reports of the presence of quarantinable diseases and of the prevalence of diseases dangerous to the public health were received during the fiscal year from officers of the Public Health Service stationed abroad, from American consular officers, from foreign governments, and from the International Office of Public Hygiene, the Pan American Sanitary Bureau, and the health section of the League of Nations. These reports are compiled, abstracted, or tabulated and published in the weekly Public Health Reports for the information of Federal, State, and local health officers and others who are interested.

INTERNATIONAL EXCHANGE OF SANITARY INFORMATION

In accordance with the International Sanitary Convention of June 21, 1926, telegraphic information of the first cases of quarantinable diseases in ports of the United States, including the insular possessions, has been given to the International Office of Public Hygiene at Paris. Through the State Department notice has also been given to the representatives of the countries signatory to the convention.

During the fiscal year there was a constant interchange of information relative to the prevalence of disease in the United States and throughout the world with the International Office of Public Hygiene, the Pan American Sanitary Bureau, and the health section of the secretariat of the League of Nations. Close relations have been maintained with the Pan American Sanitary Bureau, which enabled the Public Health Service to keep informed as to conditions in Latin America.

Regular weekly reports of the prevalence of certain communicable diseases in the Dominion of Canada have been received from the Department of Pensions and National Health of Canada, and that department has been kept currently informed as to conditions in the United States.

New sources of information as to the prevalence of diseases dangerous to the public health throughout the world, especially the quarantinable diseases, are being made available. The bulletins of the International Office of Public Hygiene, the Pan American Sanitary Bureau, and the health section of the League of Nations are more valuable each year. Not only are reports available from more of the ports and countries of the world than formerly but the information from many countries is more nearly complete and is more reliable than it was a few years ago.

However, difficulties of transportation, unsettled political conditions, and other conditions make it impracticable to secure dependable statistics from many parts of the world. It is in countries where these conditions exist that epidemics of many diseases take the heaviest toll of human life.

PREVALENCE OF DISEASE

No case of plague in man was reported in the United States or its possessions during the fiscal year 1930, but plague-infected ground squirrels were found in California and plague-infected rats were reported in the district of Hamakua, island of Hawaii.

Cholera did not appear in the Philippine Islands during the calendar year 1929, but in May, 1930, cases of cholera were reported in islands in the south-central part of the archipelago. At the close of the fiscal year the number of cases was increasing, but the epidemic was less severe than that of 1919 and did not approach in intensity the terrible epidemics of cholera which swept over the islands a few decades ago.

Yellow fever was not reported in the United States or its possessions during the year.

The accompanying table gives a comparison of the number of cases of the principal communicable diseases and deaths from these diseases for the calendar years 1927, 1928, and 1929:

CASES

Disease	Number of States ¹	Aggregate population (in thousands)			Cases			Cases per 100,000 population		
		1927	1928	1929	1927	1928	1929	1927	1928	1929
Chicken pox.....	42	108,816	110,405	111,987	205,252	192,984	199,880	188.6	174.8	178.5
Diphtheria.....	45	114,341	115,990	117,631	104,618	90,033	84,025	91.5	77.6	71.4
Influenza.....	45	114,341	115,990	117,631	-----	-----	-----	-----	-----	-----
Malaria.....	45	114,341	115,990	117,631	-----	-----	-----	-----	-----	-----
Measles.....	44	113,801	115,452	117,094	435,216	553,174	359,387	382.4	479.1	306.9
Meningococcus meningitis.....	35	97,083	98,578	100,066	2,929	5,102	9,249	3.0	5.2	9.2
Mumps.....	34	92,729	94,106	95,477	113,423	124,615	93,247	122.3	132.4	97.7
Pellagra.....	45	114,341	115,990	117,631	-----	-----	-----	-----	-----	-----
Pneumonia (all forms).....	43	106,632	108,221	109,802	-----	-----	-----	-----	-----	-----
Poliomyelitis.....	38	99,041	100,467	101,885	9,324	4,892	2,796	9.4	4.9	2.7
Scarlet fever.....	45	114,341	115,990	117,631	207,213	172,926	179,772	181.2	149.1	152.8
Smallpox.....	45	114,341	115,990	117,631	34,685	38,114	41,458	30.3	32.9	35.2
Tuberculosis (all forms).....	44	114,254	115,901	117,541	-----	-----	-----	-----	-----	-----
Tuberculosis (respiratory system).....	41	107,281	108,836	110,383	-----	-----	-----	-----	-----	-----
Typhoid fever.....	45	114,341	115,990	117,631	32,553	25,761	21,981	28.5	22.2	18.7
Whooping cough.....	45	114,341	115,990	117,631	176,715	157,591	191,720	154.6	135.9	163.0

¹ In addition to the number of States given, the District of Columbia is also included.

DEATHS

Disease	Deaths			Deaths per 100,000 population			Cases reported for each death registered		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Chicken pox.....	148	129	145	0.1	0.1	0.1	1,387	1,496	1,378
Diphtheria.....	8,683	8,234	7,718	7.6	7.1	6.6	12	11	11
Influenza.....	24,241	48,567	63,407	21.2	41.9	53.9	-----	-----	-----
Malaria.....	2,968	3,710	3,482	2.6	3.2	3.0	-----	-----	-----
Measles.....	4,096	5,444	2,752	3.6	4.7	2.4	106	102	131
Meningococcus meningitis.....	1,249	2,259	4,220	1.3	2.3	4.2	2	2	2
Mumps.....	85	75	85	.1	.1	.1	1,394	1,662	1,097
Pellagra.....	5,843	6,661	6,501	5.1	5.7	5.5	-----	-----	-----
Pneumonia (all forms).....	87,108	109,608	104,226	81.7	101.3	94.9	-----	-----	-----
Poliomyelitis.....	1,790	1,212	669	1.8	1.2	.7	5	4	4
Scarlet fever.....	2,374	2,157	2,429	2.1	1.9	2.1	87	80	74
Smallpox.....	165	135	142	.1	.1	.1	210	282	292
Tuberculosis (all forms).....	89,014	90,071	87,438	77.9	77.7	74.4	-----	-----	-----
Tuberculosis (respiratory system).....	73,933	75,394	73,515	68.9	69.3	66.6	-----	-----	-----
Typhoid fever.....	6,480	5,516	4,847	5.7	4.8	4.1	5	5	5
Whooping cough.....	7,220	5,834	6,601	6.3	5.0	5.6	24	27	29

Diphtheria.—Again diphtheria has recorded a new low mark for a year. For the calendar year 1929, 45 States reported 71.4 cases of diphtheria and 6.6 deaths per 100,000 population. Ten years ago 37

States reported to the Public Health Service a diphtheria case rate of 123 per 100,000 population and 32 States had a diphtheria death rate of 13 per 100,000.

Diphtheria increases and decreases in waves of several years' duration, but for more than half a century the general trend in the United States has been downward, and the death rate for 1929 is about 85 per cent lower than the diphtheria death rate of 1900 (43.3 per 100,000).

Influenza.—At the beginning of the calendar year 1929 the country-wide wave of influenza was at its height and it was sweeping eastward, having already dropped nearly to normal on the Pacific coast. The incidence of the disease dropped rapidly after the middle of January, 1929, and early in March the prevalence of influenza was about normal. In January, 1929, more than half a million cases of influenza were reported to the Public Health Service; but in March, 1929, less than 30,000 cases were reported. One year later, in January, 1930, only about 20,000 cases of influenza were included in the reports to the Public Health Service. All of the figures given are lower than the actual incidence of the disease. Some States do not collect reports of cases of influenza, and many cases are not reported even where reports are required by law.

Malaria.—The malaria rate has been falling in the United States for many years. Malaria has practically disappeared from extensive regions where it once caused thousands of deaths, unnumbered cases of illness, and great economic loss. The reports of cases of malaria are incomplete, but it is evident that there was a decided increase in the prevalence of the disease in 1928, especially in certain parts of the South. In 1929 the death rate from malaria decreased somewhat from the high figure for 1928 for the country as a whole, but in certain Southern States the incidence of the disease was higher in 1929 than it was in 1928.

Measles.—Three hundred and fifty-nine thousand cases of measles were reported to the Public Health Service in 1929, as compared with 553,000 cases in 1928. The deaths from measles in 44 States during 1929 were about half the number for the year 1928 and about two-thirds of the number for 1927.

Meningococcus meningitis.—The increase in the case and death rates for meningococcus meningitis from 1924 to 1928 is shown in the table on page 214 of the Annual Report of the Public Health Service for the year 1929. The number of cases and deaths continued to increase during the calendar year 1929 and the first few months of 1930, but during the early spring of 1930 the incidence of the disease dropped below that for the corresponding period of 1929. During the first six months of 1930 many States which had for several years reported comparatively high meningococcus meningitis rates showed very decided decreases in the prevalence of the disease, while other States which had had relatively few cases reported an increase in prevalence.

The Mountain and Pacific States reported 1,534 cases of meningococcus meningitis for the first 26 weeks of 1929 and only 841 cases for the corresponding period of 1930. For the 26 weeks the East South Central States (Tennessee, Kentucky, Alabama, and Mississippi) reported 128 cases of meningococcus meningitis in 1929 and 807 cases in

1930. Michigan reported 1,366 cases for the 26 weeks in 1929 and 715 cases in 1930, while Massachusetts reported 99 cases in 1929 (26 weeks) and 130 cases in 1930.

Poliomyelitis.—During the summer and fall of 1927 there was a widespread epidemic of poliomyelitis (infantile paralysis) in the United States, and the following year the disease was more than usually prevalent. During the calendar year 1929 the reported incidence of poliomyelitis was only a little more than half the incidence reported for the year 1928, but during the late spring of the year 1930 a marked increase in the number of cases of poliomyelitis was reported in California and Louisiana, and at the close of the fiscal year reports showing more than the usual prevalence of poliomyelitis were being received from widely separated parts of the country.

Scarlet fever.—In 1929 the prevalence of scarlet fever increased somewhat over the prevalence of 1928, but the number of cases was smaller than the number for 1927, although the 45 States, for which data appear in the table, reported 2,429 deaths from scarlet fever in 1929 as compared with 2,374 deaths in 1927.

Smallpox.—For several years smallpox has been more prevalent in the United States than it has been in any European country. In 1927, 45 States reported 30.3 cases of smallpox per 100,000 population; in 1928, 32.9 cases; and in 1929, 35.2 cases per 100,000. These figures are not flattering, as the means of controlling smallpox is readily available. The disease was of the mild type, however, and during the three years there were on the average 261 reported cases for each death from smallpox.

Tuberculosis.—The calendar year 1929 recorded another low death rate for tuberculosis—44 States reported 74.4 deaths from tuberculosis per 100,000 population. The decrease from about 200 tuberculosis deaths per 100,000 at the beginning of the present century is one of the important movements affecting the welfare of the people of the United States during the period.

Typhoid fever.—This is another disease for which a new low record was established during the calendar year 1929. Forty-five States reported 18.7 cases of typhoid fever and 4.1 deaths per 100,000 population for 1929. In the registration area the average annual typhoid fever death rates, by 5-year periods, are as follows:

	Typhoid deaths per 100,000 population
1900-1904.....	33.7
1905-1909.....	26.8
1910-1914.....	18.9
1915-1919.....	12.0
1920-1924.....	7.6
1925-1928 (4 years).....	6.2

INQUIRIES AS TO HEALTH CONDITIONS

Many inquiries have been received by the division of sanitary reports and statistics from persons who expect to travel in the United States or in foreign countries, or who have relatives traveling, requesting information as to the prevalence of disease in certain places. The information has been supplied whenever the necessary data could be secured.

DIRECTORIES OF HEALTH OFFICERS

During the fiscal year the annual directories of State health departments, whole-time county health officers, and city health officers were issued. The State directory gives the organization of each State department of health, the head of each bureau and division, the appropriations for the work of each department, and the publications issued. The city directory gives the names, official titles, and addresses of all city health officers in cities having over 10,000 population, and for a few of the larger cities the chiefs of bureaus and divisions are listed.

LEGISLATION AND COURT DECISIONS RELATING TO PUBLIC HEALTH

State and Federal laws and regulations.—During the fiscal year two publications containing State and Federal laws and regulations pertaining to public health were issued. These were Supplements 75 and 83. Supplement 75 contains laws and regulations adopted during the year 1927, while Supplement 83 contains those adopted during 1928. The collection and compilation of the 1929 legislation was started during the fiscal year. Compilations of State health legislation have been issued by the Public Health Service since 1911.

Work was continued on the bulletin which will contain the State laws and regulations on the reporting of communicable diseases, together with an analysis thereof, and a review of the judicial decisions of the State courts on this subject.

Municipal ordinances and regulations.—Ordinances and board of health regulations adopted during 1929 in cities in the United States having 10,000 population or over were secured during the fiscal year for use in a publication which will contain selected municipal ordinances and regulations pertaining to public health. This publication will cover a period of years. The Public Health Service has issued compilations of municipal sanitary ordinances and regulations since 1910.

Court decisions.—The decisions of State and Federal courts of last resort on matters relating to public health were abstracted and published currently in the Public Health Reports during the year. Also there was issued as Supplement 84 a digest of those decisions which had been currently published during the 4-year period 1926-1929.

Comptroller General's decisions.—The abstracting and indexing of such of the current decisions of the Comptroller General of the United States as related to the Public Health Service was continued. This work is done for possible use in a publication for the information of Public Health Service personnel.

Miscellaneous inquiries.—Many requests for information regarding sanitary legislation and court decisions on health subjects were received during the year and were complied with as fully as was possible with the limited personnel available.

PUBLICATIONS ISSUED BY THE DIVISION

The Public Health Reports (vol. 44, pt. 2, and vol. 45, pt. 1) was issued by the division each week during the fiscal year. This publication, which was established in 1878 and which has been issued regularly each week since 1887, contains current reports of communicable diseases reported in the United States and of the quar-

antinable diseases throughout the world, articles reporting the results of current research of Public Health Service investigators in the fields of public health, articles on public-health administration and research by workers outside the Public Health Service, and abstracts of current court decisions relating to public health. The Public Health Reports is the official medium for the publication of current morbidity and other public-health data for the collection and dissemination of which the Public Health Service is authorized by law.

The issues of Public Health Reports printed during the fiscal year contained 3,143 pages, exclusive of title pages and tables of contents, as compared with 3,362 pages for the preceding year, 3,189 pages in 1928, and 3,520 pages in 1927. Although the size of the publication has been kept close to the average of 60 pages per issue, the cost has increased during recent years, due to increased costs of printing and to an increase in the relative amount of tabular matter in connection with the table presenting the reports of quarantinable diseases in foreign countries.

Ninety-four of the most important articles appearing in the Public Health Reports during the year were reprinted in pamphlet form, as compared with 61 such reprints during the preceding fiscal year. This increase was due in part to the fact that many of the papers presented at the conference of State health officers with the Surgeon General were printed in the Public Health Reports, and the demand for these papers made it necessary to issue them as separates.

Eleven supplements to Public Health Reports were prepared for publication during the year, and some of them were delivered from the printer. Four of these were annual compilations of notifiable diseases reported by States and cities, 4 dealt with somewhat technical studies of the biochemistry of sulphur, 1 was a compilation of State public health laws and regulations, 1 was a digest of court decisions relating to public health, and 1 was a list of Public Health Service publications.

One miscellaneous publication (No. 29), a hospital manual for use in the marine hospitals, was prepared and sent to the printer during the fiscal year and is now in press. This will be a bound volume of about 300 pages and will be illustrated.

The division also issued the National Negro Health Week Bulletin and Poster—the bulletin containing the outline of a program for concerted and effective attack upon important community health problems, and the poster containing an attractive picture, in color, suggestive of achievement of the public-health goal, together with some fundamental public-health precepts.

New editions were issued of 11 previously issued reprints, of 4 supplements, and of 1 miscellaneous publication (No. 17).

HEALTH INFORMATION

The preparation and dissemination of articles and radio lectures on varied health subjects was continued for the ninth consecutive year. This service was inaugurated in 1921.

Two radio broadcasts a month were forwarded to over 200 broadcasting stations located throughout the country. Upon the invita-

tion of the Public Health Service leading specialists in the United States have prepared lectures for the last half of the fiscal year 1930. Some of the subjects treated were the common cold, influenza, diabetes, heart disease, skin diseases, and mental hygiene. Mimeographed copies of the broadcasts are utilized in making reply to miscellaneous inquiries.

Health information distributed in this manner by radio and by articles in newspapers and periodicals reaches a multitude of interested persons in the United States and, through translation by the foreign language information service, foreign countries. Three hundred and sixty-five lectures have been issued since the beginning of this radio service.

SECTION OF PUBLIC HEALTH EDUCATION

During the fiscal year ended June 30, 1930, 127 new service publications were distributed by the section of public health education, as compared with 61 during the preceding year. The total distribution of copies of new publications and of editions of previously published documents aggregated 366,690, as compared with 239,513 during the preceding fiscal year. Out of the 366,690 copies distributed, 214,727 were sent in response to individual requests for information. The other copies were distributed to the various mailing lists maintained by the bureau. The figures given do not include the publications printed and distributed by the division of venereal diseases, nor the service regulations and official service roster distributed by the chief clerk's office.

During this fiscal year there were 15 requests for the loan of stereopticon slides. Approximately 1,800 slides were lent to universities, health officers, and others in response to these requests. It was impossible to supply all of the slides requested, due to the fact that the work of the stereopticon library has been somewhat handicapped during the past 11 years on account of the shortage of slides and the lack of funds for making new slides and replacing those which have been broken from time to time in shipment.

As in previous years, a number of requests were received for the loan of exhibit material, posters, mats, and especially motion-picture films, but because of the lack of funds compliance with most of these requests has been impossible. During this fiscal year Congress made a small appropriation for the preparation of exhibits designed to demonstrate the cause, prevalence, and methods of spread of diseases dangerous to the public health, and measures for preventing them, which will become available in the fiscal year 1931.

PUBLICATIONS DISTRIBUTED BY THE DIVISION

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

REPRINTS FROM THE PUBLIC HEALTH REPORTS

- 1268. Some notes on the limitations of screens in the prevention of malaria. By M. A. Barber and C. H. King. March 8, 1929. 6 pages.
- 1269. The national leper home (United States Marine Hospital), Carville, La. Review of the more important activities during the fiscal year ended June 30, 1928. By O. E. Denney. March 8, 1929. 8 pages.

1270. Rat-flea survey of the port of Norfolk, Va. By H. E. Hasseltine. March 15, 1929. 11 pages.
1271. Endemic typhus fever of the southeastern United States: Reaction of the guinea pig. By Kenneth F. Maxcy. March 15, 1929. 12 pages.
1272. A trachoma survey of 29 public schools on or near Indian reservations in Montana. By J. H. Crouch. March 22, 1929. 9 pages.
1273. Sanitary engineering courses of engineering colleges of the United States. By Isador W. Mendelsohn. March 22, 1929. 11 pages.
1274. Leprosy in the United States. A statistical study of 700 cases in the national leprosarium. By Ralph Hopkins and Oswald E. Denney. March 29, 1929. 16 pages.
1275. Age incidence of the common communicable diseases of children. A study of case rates among all children and among children not previously attacked and of death rates and the estimated case fatality. By Selwyn D. Collins. April 5, 1929. 64 pages.
1276. Endemic goiter in Tennessee. By Robert Olesen. April 12, 1929. 33 pages.
1277. The health of the American Indian. By M. C. Guthrie. April 19, 1929. 13 pages.
1278. The milk feeding of children. By E. Blanche Sterling. April 19, 1929. 8 pages.
1279. Quail as a possible source of tularemia infection in man. By R. R. Parker. April 26, 1929. 2 pages.
1280. Development of a power-dusting device for applying Paris green as an anopheline larvicide. By J. A. LePrince and H. A. Johnson. April 26, 1929. 17 pages.
1281. Physical measurements of boys and girls of native white race stock (third generation native born) in the United States. Physical measurement studies No. 1. By Selwyn D. Collins and Taliaferro Clark. May 3, 1929. 25 pages.
1282. Morbidity in the influenza epidemic of 1928-29. Preliminary report on surveys in certain cities. By M. V. Veldee. May 10, 1929. 5 pages.
1283. The selection of a heat-resistant strain of vaccine virus (rabbit testicular). By Charles Armstrong. May 17, 1929. 9 pages.
1284. Extent of rural health service in the United States, 1925-1929. By L. L. Lumsden. May 17, 1929. 16 pages.
1285. The action of irradiated ergosterol in the rabbit. By Maurice I. Smith and E. Elvove. May 24, 1929. 12 pages.
1286. Act establishing narcotic farms and a narcotics division in the Public Health Service. May 24, 1929. 5 pages.
1287. The occurrence of bacterium tularensis in the wood tick (dermacentor occidentalis) in California. By R. R. Parker, C. S. Brooks, and Hadleigh Marsh. May 31, 1929. 2 pages.
1288. Malaria and the malaria danger in certain irrigated regions of south-western United States. By M. A. Barber, W. H. W. Komp, and C. H. King. May 31, 1929. 16 pages.
1289. The influenza epidemic at the University of Oregon in the fall of 1928. By Fred N. Miller. June 7, 1929. 9 pages.
1290. The effect of small doses of plasmochin on the viability of gametocytes of malaria as measured by mosquito infection experiments. By M. A. Barber, W. H. W. Komp, and B. M. Newman. June 14, 1929. 12 pages.
1291. Studies of the biochemistry of sulphur. II. Further studies on the distinctive reaction for cysteine and cystine. By M. X. Sullivan. June 14, 1929. 8 pages.
1292. Distribution of endemic goiter in the United States as shown by thyroid surveys. By Robert Olesen. June 21, 1929. 25 pages.
1293. Acute rheumatism in childhood and its sequelae. By E. Blanche Sterling. June 21, 1929. 5 pages.
1294. Completeness of reporting of measles, whooping cough, and chicken pox at different ages. Hagerstown morbidity studies; Supplement to Study No. II. By Edgar Sydenstricker and A. W. Hedrich. June 28, 1929. 7 pages.
1295. Some biochemical relationships in a polluted stream. By H. Heukelekian. June 28, 1929. 12 pages.
1296. Meningococcus meningitis and measures for its control. By G. W. McCoy. July 5, 1929. 5 pages.

1297. Studies on the biochemistry of sulphur. III. Chemical groups involved in the naphtho-quinone reaction for cysteine and cystine. By M. X. Sullivan and W. C. Hess. July 5, 1929. 9 pages.
1298. Current studies of undulant fever. By H. E. Hasseltine. July 12, 1929. 8 pages.
1299. A study of lead poisoning in a storage-battery plant. By Leonard Greenburg, A. A. Schaye and Herman Shlionsky. July 12, 1929. 33 pages.
1300. Typhus fever in the United States. By Kenneth F. Maxcy. July 19, 1929. 8 pages.
1301. A study of the relation between mental and physical status of children in two counties of Illinois. By Grover A. Kempf and Selwyn D. Collins. July 19, 1929. 42 pages.
1302. Points to be considered in case of a poliomyelitis epidemic. By J. P. Leake. July 26, 1929. 4 pages.
1303. Economic status and the incidence of illness. Gross and specific illness rates by age and cause among persons classified according to family economic status. Hagerstown morbidity studies No. X. By Edgar Sydenstricker. July 26, 1929. 13 pages.
1304. The rôle of the vaccination dressing in the production of postvaccinal tetanus. By Charles Armstrong. August 2, 1929. 15 pages.
1305. Endemic typhus of the southeastern United States. The reaction of the white rat. By Kenneth F. Maxcy. August 9, 1929. 9 pages.
1306. Outline of project for the study of negro health in Tennessee. By E. L. Bishop. August 9, 1929. 5 pages.
1307. Report of the departmental committee on morphine and heroin addiction to the British ministry of health. A review. By Walter L. Treadway. August 16, 1929. 6 pages.
1308. Current malaria studies with special reference to control measures. By L. L. Williams, jr. August 16, 1929. 4 pages.
1309. Postvaccinal encephalitis. By Charles Armstrong. August 23, 1929. 4 pages.
1310. The seasonal and regional incidence of types of malaria parasites. By M. A. Barber and W. H. W. Komp. August 23, 1929. 11 pages.
1311. Cancer as a public health problem. By James Ewing. August 30, 1929. 9 pages.
1312. Differential fertility according to economic status. Live birth and still-birth rates among married women of different ages classified according to economic condition. Hagerstown morbidity studies No. XI. By Edgar Sydenstricker. August 30, 1929. 6 pages.
1313. Chloro-phenol tastes and odors in water supplies of Ohio River cities. By H. W. Streeter. September 6, 1929. 8 pages.
1314. The malaria-parasite index of school children in Leflore County, Miss. By M. A. Barber and W. H. W. Komp. September 6, 1929. 6 pages.
1315. A proposed plan for the establishment of a morbidity registration area. By R. C. Williams. September 13, 1929. 4 pages.
1316. Sickness among industrial employees during the first three months of 1929. By Dean K. Brundage. September 13, 1929. 4 pages.
1317. Experimental studies of natural purification in polluted waters. I. Apparatus and technique for the study of biochemical and other oxidations in liquids. By Emery J. Theriault and C. T. Butterfield. September 20, 1929. 16 pages.
1318. A county-wide sanitary and health survey. By Milford E. Barnes. September 27, 1929. 16 pages.
1319. Method of preparing and examining thick films for the diagnosis of malaria. By M. A. Barber and W. H. W. Komp. September 27, 1929. 12 pages.
1320. A study of rural school ventilation. The school ventilation study in Cattaraugus county, N. Y., 1926-27. By Thomas J. Duffield. October 4, 1929. 28 pages.
1321. Public health service publications. A list of publications issued during the period July, 1928-June, 1929. October 4, 1929. 6 pages.
1322. Breeding places of anopheles in the Yazoo-Mississippi delta. By M. A. Barber and W. H. W. Komp. October 11, 1929. 6 pages.
1323. Heart disease. A public health problem. By Taliaferro Clark. October 11, 1929. 5 pages.
1324. A study of the efficiency of dust-removal systems in granite-cutting plants. By J. J. Bloomfield. October 18, 1929. 18 pages.

1325. The history of malaria in the United States. By M. A. Barber. October 25, 1929. 13 pages.
1326. The use of stearates (calcium and aluminum) as diluents for Paris green in anopheles control. A preliminary report. By A. F. Dolloff. October 25, 1929. 8 pages.
1327. Vaccine virus pneumonia in rabbits. By Charles Armstrong and R. D. Lillie. November 1, 1929. 13 pages.
1328. Experimental studies of natural purification in polluted waters. II. Development of a suitable dilute medium. By C. T. Butterfield. November 1, 1929. 12 pages.
1329. Fatty degeneration of the liver and kidneys in the dog apparently associated with diet. A preliminary note. By W. H. Sebrell. November 8, 1929. 5 pages.
1330. Further observations on the epidemiology of narcotic drug addiction. By W. L. Treadway. November 8, 1929. 4 pages.
1331. A study of negro infant mortality. By Amanda L. Stoughton and Mary Gover. November 8, 1929. 27 pages.
1332. A study of the pellagra-preventive action of canned salmon. By Joseph Goldberger and G. A. Wheeler. November 15, 1929. 4 pages.
1333. City health officers, 1929. Directory of those in cities of 10,000 or more population. November 15, 1929. 16 pages.
1334. State and insular health authorities, 1929 directory, with data as to appropriations and publications. November 15, 1929. 23 pages.
1335. Public-health organization and administration in Hamburg, Germany. By J. G. Townsend. November 22, 1929. 20 pages.
1336. Experimental studies of natural purification in polluted waters. III. A note on the relation between food concentration in liquid media and bacterial growth. By C. T. Butterfield. November 22, 1929. 8 pages.
1337. Notes on the results of trachoma work by the Indian Service in Arizona and New Mexico. By H. J. Warner. November 29, 1929. 8 pages.
1338. Leprosy with evidences of abnormalities in carbohydrate metabolism. By N. E. Wayson, L. F. Badger, and Margaret M. Dewar. December 6, 1929. 13 pages.
1339. Cooperative rural health work of the Public Health Service in the fiscal year 1929. By L. L. Lumsden. December 6, 1929. 21 pages.
1340. Health and scholastic attainment. By H. S. Diehl. December 13, 1929. 10 pages.
1341. Whole-time county health officers, 1929. December 13, 1929. 8 pages.
1342. Observations on the treatment of leprosy in Hawaii. By N. E. Wayson. December 20, 1929. 16 pages.
1343. The legal phases of milk control. By James A. Tobey. December 20, 1929. 8 pages.
1344. The national leper home (United States Marine Hospital), Carville, La. Review of the more important activities during the fiscal year ended June 30, 1929. By O. E. Denney. December 27, 1929. 8 pages.
1345. Report on the international conference for the promotion of infant welfare held at Stockholm, Sweden, September 19-24, 1929. By E. A. Sweet. December 27, 1929. 8 pages.
1346. Apportionment of financial aid for county health work. By Elbridge Sibley and Joseph W. Mountin. January 3, 1930. 10 pages.
1347. Sickness among industrial employees. Frequency of disability lasting longer than one week from important causes among 163,000 persons in industry in 1928 and a summary of the morbidity experience from 1920 to 1928. By Dean K. Brundage. January 17, 1930. 10 pages.
1348. A new method of evaluating the potency of antineuritic concentrates. By Maurice I. Smith. January 17, 1930. 14 pages.
1349. Acute response of guinea pigs to vapors of some new commercial organic compounds. I. Ethylene Dichloride. By R. R. Sayers, W. P. Yant, C. P. Waite, and F. A. Patty. January 31, 1930. 16 pages.
1350. A study of the blacktongue preventive value of leached commercial casein, together with a test of the blacktongue preventive action of a high protein diet. By Joseph Goldberger, G. A. Wheeler, L. M. Rogers, and W. H. Sebrell. February 7, 1930. 10 pages.
1351. Will the inhalation of siliceous dusts activate a partially healed focus of tuberculous infection? An experimental study. By Leroy U. Gardner. February 7, 1930. 8 pages.

1352. Sickness among industrial employees in the second and third quarters of 1929. By Dean K. Brundage. February 14, 1930. 4 pages.
1353. History taking in the early diagnosis of pulmonary tuberculosis. By G. H. Faget. February 14, 1930. 4 pages.
1354. Corrected fatality rates in public-health practice. By Howard W. Green and George W. Moorehouse. January 24, 1930. 9 pages.
1355. Influenza-pneumonia mortality in a group of about 95 cities in the United States, 1920-1929. By Selwyn D. Collins. February 21, 1930. 46 pages.
1356. Report of a case of tularæmia contracted from a coyote (*canis lestes*) in New Mexico. By G. M. Kunkel. February 28, 1930. 2 pages.
1357. The Weil-Felix reaction in endemic typhus fever and in Rocky Mountain spotted fever. By R. R. Spencer and K. F. Maxcy. February 28, 1930. 8 pages.
1358. Resistance of paramesium to heat as affected by changes in hydrogen-ion concentration and in inorganic salt balance in surrounding medium. By H. W. Chalkley. March 7, 1930. 9 pages.
1359. Further observations on the epidemiology of narcotic-drug addiction. By W. L. Treadway. March 14, 1930. 12 pages.
1360. Public health survey of Pine Bluff, Ark. By Allen J. McLaughlin. March 14, 1930. 12 pages.
1361. Public health survey of Fort Smith, Ark. By Allen J. McLaughlin. March 21, 1930. 16 pages.
1362. Recoveries from leprosy. An analysis of the records of 65 cases. By Oswald E. Denney, Ralph Hopkins, and Frederick A. Johansen. March 28, 1930. 21 pages.
1363. Filterability of the infective agent of psittacosis in birds. By Charles Armstrong, G. W. McCoy, and Sara E. Branham. April 4, 1930. 2 pages.
1364. Mental disorders and the public health. By Hugh S. Cumming. April 4, 1930. 8 pages.
1367. Accidental psittacosis among the personnel of the Hygienic Laboratory. By G. W. McCoy. April 18, 1930. 2 pages.
1368. An new meningococcus-like organism (*neisseria flavescens* n. sp.) from epidemic meningitis. By Sara E. Branham. April 18, 1930. 5 pages.
1369. Act coordinating Federal Public Health activities. (Public, No. 106, 71st Cong.) (H. R. 8807.) April 25, 1930. 4 pages.

SUPPLEMENTS TO THE PUBLIC HEALTH REPORTS

74. Studies on oxidation reduction. XV. Potentiometric studies of the amino-indophenols; phenol blue, m-toluyline diamine indophenol, and o-toluidine indophenol. By Barnett Cohen and Max Phillips. 1929. 33 pages.
75. Public health laws and regulations adopted during 1927. Compiled by William Fowler. 1930. 866 pages.
76. The notifiable diseases. Prevalence during 1928 in cities of over 100,000. 1929. 37 pages.
77. The notifiable diseases. Prevalence during 1928 in cities of 10,000 to 100,000 population. 1929. 97 pages.
78. Studies on the biochemistry of sulphur. IV. The colorimetric estimation of cystine in casein by means of the beta-naphtho-quinone reaction. By M. X. Sullivan. 1929. 13 pages.
79. The notifiable diseases. Prevalence in States, 1928. 1930. 72 pages.
80. Studies in the biochemistry of sulphur. V. The cystine content of phaseolin. By M. X. Sullivan. 1929. 7 pages.
81. Some Public Health Service publications suitable for general distribution. 1929. 17 pages.
82. Studies on the biochemistry of sulphur. VI. The cystine content of conphaseolin and phaseolin, the alpha and beta globulins of the navy bean (*phaseolus vulgaris*). By M. X. Sullivan and D. Breese Jones. 1930. 9 pages.
83. Public health laws and regulations adopted during 1928. Compiled by William Fowler. 1930. 192 pages.
84. Court decisions relating to public health. Digest of decisions abstracted and published currently in Public Health Reports during period 1926-1929. Compiled by William Fowler. 1930. 134 pages.

PUBLIC HEALTH BULLETINS

187. The health of workers in dusty trades. II. Exposure to siliceous dust (granite industry). By A. E. Russell, R. H. Britten, L. R. Thompson, and J. J. Bloomfield. July, 1929. 206 pages.
188. Studies in natural illumination in schoolrooms. III. Effect of clouds on daylight illumination and on daylight ratios. By A. F. Beal. November, 1929. 128 pages.
189. Studies upon leprosy. XLIX. Clinical observations of "early" or moderately advanced cases. By N. E. Wayson and L. F. Badger. September, 1929. 16 pages.
190. Rules to be observed by patients at the marine hospital for tuberculosis, Fort Stanton, N. Mex. July, 1929. 19 pages.
191. Transactions of the Twenty-sixth Annual Conference of State and Territorial Health Officers with the United States Public Health Service held at St. Paul, Minn., June 8 and 9, 1928. October, 1929. 75 pages.
192. Endemic goiter. By Robert Olesen. December, 1929. 68 pages.
193. Studies of the efficiency of water purification processes. IV. Report on a collective survey of the efficiency of a selected group of municipal water purification plants located along the Great Lakes. By H. W. Streeter. November, 1929. 100 pages.
194. Transactions of the Twenty-seventh Annual Conference of State and Territorial Health Officers with the United States Public Health Service held at Washington, D. C., June 3 and 4, 1929. January, 1930. 117 pages.
195. Review of carbon monoxide poisoning. By R. R. Sayers and Sara J. Davenport. March, 1930. 97 pages.
196. Transactions of the Ninth Annual Conference of State Sanitary Engineers, held at Chicago, Ill., October 13 and 15, 1928. March, 1930. 68 pages.

HYGIENIC LABORATORY BULLETINS

152. Key catalogue of parasites reported for primates (monkeys and lemurs) with their possible public-health importance. By C. W. Stiles and Albert Hassall and key catalogue of primates for which parasites are reported. By C. W. Stiles and Mabelle Orleman Nolan. November, 1929. 192 pages.
154. Studies on Rocky Mountain spotted fever. By R. R. Spencer and R. R. Parker. January, 1930. 116 pages.

ANNUAL REPORT

- Annual report of the Surgeon General of the United States Public Health Service for the fiscal year 1929. 332 pages.

MISCELLANEOUS PUBLICATIONS

11. Official list of commissioned and other officers of the United States Public Health Service; also list of United States marine hospitals, quarantine, immigration, and relief stations, and quarantine vessels. July 1, 1929. 76 pages.

UNNUMBERED PUBLICATIONS

- 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. Sixteenth annual observance. 1930. 8 pages. (Out of print.)
- National negro health week poster. Sixteenth annual observance. 1930. (Out of print.)

DIVISION OF MARINE HOSPITALS AND RELIEF

In charge of Asst. Surg. Gen. F. C. SMITH

The growth of the merchant marine is reflected in an increasing demand for hospital treatment and other medical services by seamen from American merchant vessels. The medical facilities have been enlarged at several ports, annual appropriations have been slightly increased, and the Government, by contributing in this important and practical way to the development and maintenance of its merchant fleet, is fulfilling the ancient obligations first imposed by the act of July 16, 1798, and carrying out the policy of Congress as expressed in the merchant marine acts of 1920 and 1928. The liberalization of treatment which recent legislation has given discharged veterans has also increased the work in ports where hospitals of the Veterans' Bureau are lacking and where, as a matter of major economy, the marine hospitals carry a part of the load.

Classes of beneficiaries and amount and character of services rendered, fiscal year 1930

Class of beneficiary	Hospital days		Out-patient treatments		Physical examinations (not related to treatment)		Remarks
	Number	Per cent of total	Number	Per cent of total	Number	Per cent of total	
American merchant seamen.	958,693	62.0	427,924	49.0	23,525	20.36	Communicable diseases are reported to local health officers.
Veterans.....	208,232	13.04	2,666	.30	37	-----	Patients of the U. S. Veterans' Bureau.
Lepers.....	113,028	7.3	9	-----	-----	-----	National Leper Home, Carville, La.
U. S. Coast Guard personnel.	90,179	5.83	196,334	22.50	14,382	12.43	All medical services and supplies, ashore and afloat.
Injured Federal employees.	61,140	4.0	184,264	21.30	23,264	20.0	Patients of the Employees' Compensation Commission.
Immigrants.....	49,105	3.29	1,409	.16	797	.70	Patients of the Bureau of Immigration.
Seamen, U. S. Engineer Corps and Army transport service.	31,423	2.13	8,839	1.0	74	-----	Civilian employees on U. S. Army vessels.
Seamen from foreign vessels.	9,867	.66	763	.08	57	-----	Pay patients.
Seamen and keepers, U. S. Lighthouse Service.	11,312	.76	5,401	.60	238	.22	Medical supplies also furnished to lighthouse vessels.
Alaska cannery workers leaving United States.	-----	-----	695	.07	9,361	8.10	Vaccinations and other preventive measures.
Pilots and other licensees.	-----	-----	-----	-----	6,949	6.0	For the Steamboat Inspection Service.
United States civil service applicants and employees.	-----	-----	-----	-----	22,682	19.61	For the Civil Service Commission.
U. S. Shipping Board.	-----	-----	-----	-----	5,184	4.50	To determine fitness for sea duty.
All others entitled to treatment.	14,027	.99	43,476	4.99	9,342	8.08	From Bureau of Fisheries, Army, Navy, Mississippi River Commission, Coast and Geodetic Survey, etc.
Total.....	1,547,006	100.00	871,780	100.00	115,892	100.00	

EXPENSES












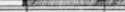




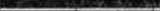













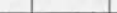









































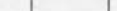






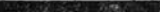
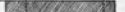

The cost of medical care, now a matter of national interest, continues to be of vital concern. The average per diem cost in marine hospitals, \$4.15, is considerably lower than that in most other public hospitals for similar classes of patients and much lower than that of private hospitals, even those not conducted for profit. The regular appropriation of \$5,516,600 for the fiscal year 1930 was increased \$117,753 by the act of March 26, 1930 (urgent deficiency), on account of the opening of the new Detroit Marine Hospital and for the purchase of new equipment for the Ellis Island Marine Hospital, making the total amount appropriated \$5,634,353. Reimbursements from the Veterans' Bureau for care of beneficiaries of that bureau amounted to \$785,748, making the total amount available for the year \$6,420,101. Funds to equip the new Cleveland Marine Hospital, approximately \$200,000, were derived from the sale of the old property.

According to the classification used by the General Accounting Office, the several items of expense were as follows:

01—Personal services	\$3, 386, 462
0200—Stationery (janitor and laundry supplies; X-ray films)	54, 716
0210—Medical and hospital supplies	192, 529
0220—Scientific and educational supplies	4, 977
0230—Fuel (coal, wood, and gas)	146, 790
0250—Forage	40, 776
0260—Provisions	1, 185, 326
0280—Sundry supplies	81, 844
03—Subsistence and support of persons (contract care of patients)	552, 203
04—Care of animals	70
0500—Telegraph	708
0510—Telephone	20, 262
06—Travel expense	87, 242
07—Transportation of things	73, 001
09—Advertising	3
10—Furnishing heat, light, power, and water (contract)	181, 987
1100—Rent of buildings and offices	27, 839
1110—Other rents	5, 261
1280—Repairs and parts, motor vehicles	8, 769
1290—Alterations and repairs, building equipment	16, 411
1373—Laundry service	40, 061
1375—Ash and garbage removal	1, 791
1380—Miscellaneous services	4, 120
2250—Burials	26, 762
3000—Motor vehicles	21, 309
3010—Furniture, furnishings, and fixtures	140, 227
3020—Scientific and recreational equipment	72, 591
3040—Livestock	1, 994
3050—Other equipment	26, 077
	6, 402, 108
Reserved for unknown encumbrances	17, 993
	6, 420, 101

01—The item of personal services covers salaries and wages of 518 physicians and dentists, 491 nurses, aides, and dietitians, and 1,817 other employees. Of this amount \$3,020,675 was expended for salaries and wages at marine hospitals.

0200—For soap, lye, starch, brooms, toilet paper, and other janitor and laundry supplies, \$32,144; X-ray films, \$27,068; postage stamps, \$132; etc.

GROUP OF HOSPITALS	HOSPITAL	COST PER PATIENT DAY					Salaries  Food  Other  Station Station Production 							
	LOCATION	RELIEF DAYS	TOTAL	SALARIES	FOOD	OTHER	1	2	3	4	5	6	7	8
GENERAL	Baltimore, Md.	76,535	\$1.56	\$2.04	\$0.55	\$0.37								
	Boston, Mass.	53,972	1.82	2.21	.52	1.05								
	Buffalo, N. Y.	29,762	5.11	2.42	.94	2.37								
	Chicago, Ill.	64,601	4.62	2.09	.62	1.91								
	Cleveland, Ohio	30,744	5.28	2.75	.58	1.95								
	Detroit, Mich.	31,206	5.75	2.68	.58	2.49								
	Ellis Island, N. Y.	144,227	4.80	2.43	.61	1.75								
	Kranaville, Ind.	23,198	3.00	1.54	.57	.89								
	Key West, Fla.	30,440	3.76	1.52	.67	1.57								
	Louisville, Ky.	27,335	3.38	1.87	.52	.99								
	Memphis, Tenn.	20,945	3.61	2.06	.58	.97								
	Mobile, Ala.	32,876	3.58	2.20	.59	1.19								
	New Orleans, La.	134,512	3.30	1.96	.51	.83								
	Norfolk, Va.	81,782	3.78	2.01	.81	1.14								
	Pittsburgh, Penna.	28,523	4.36	2.30	.66	1.30								
	Portland, Me.	24,127	4.48	2.43	.67	1.38								
	Port Townsend, Wash.	35,421	3.23	1.63	.61	.99								
	St. Louis, Mo.	26,689	5.76	2.24	.52	3.00								
	San Francisco, Calif.	105,758	4.11	2.26	.60	1.17								
	Savannah, Ga.	58,186	3.44	1.85	.58	1.01								
	Stapleton, N. Y.	104,102	4.42	2.44	.54	1.44								
	Vineyard Haven, Mass.	9,600	4.21	2.15	.66	1.40								
	New York, N. Y. (a)													
	Per diem cost for General hospitals		4.14	2.17	.59	1.38								
	Total Relief Days	1,174,103		Cost	\$4,863,706.16									
TUBERCULOSIS SANATORIUM	Fort Stanton, N. M.	86,450	4.08	1.44	.82	1.82								
				Cost	\$ 353,097.70									
LEPROSARIUM	Carville, La.	112,923	4.33	2.17	.58	1.58								
				Cost	\$ 488,976.32									
ALL	Per diem cost for all hospitals		4.15	2.13	.60	1.42								
	Relief days for all hospitals 1,373,476			Cost	\$5,705,782.18									

(a) In-Patient department of station closed

AVERAGE PER DIEM COST OF IN-PATIENT RELIEF, UNITED STATES MARINE HOSPITALS, FISCAL YEAR 1930

0210—Gauze and cotton, \$28,059; clothing for lepers at Carville, \$12,509; anesthetics and adhesive plaster, \$5,062; catgut and other sutures, \$2,099; artificial arms, legs, braces, and other prosthetic appliances, \$4,807; etc.

0220—The principal item was \$2,110 for subscriptions to medical journals.

0230—Coal, \$83,381; wood, \$10,200; fuel oil and gas, \$53,482.

0260—This is the cost of food at 60 cents per day for patients and personnel in marine hospitals.

0280—Ice, \$16,345; electric-light bulbs, \$2,191; gasoline, oil, and grease, \$9,737; packing boxes and packing material, \$791; etc.

3000—Six passenger cars were purchased at \$3,000; six ambulances at a cost of \$15,644; one truck, \$1,466; etc.

3010—Pajamas, bath robes, sheets, pillow slips and counterpanes, \$18,531; beds and mattresses, \$12,345; china and glassware, \$5,513; window shades, \$3,310; filing cases and desks, \$5,439; and \$95,139 for other hospital furniture and furnishings, etc.

3020—X-ray machines and tubes, \$25,012; electrocardiographs, \$4,680; cystourological tables, \$2,051; clinical thermometers, \$3,319; medical books, \$1,005; typewriting machines, \$2,966; and \$33,558 for other scientific equipment, etc.

3040—Dairy cows for Carville, \$1,800.

3050—Dishwashing machines, \$3,517; food conveyors, \$2,160; refrigerators, \$4,384; ranges, \$583; cafeteria equipment, \$3,188; other equipment, \$12,245.

ECONOMIES

From habit, as from necessity, old measures of economy are practiced and new ones devised. Certain needs have been supplied by the transfer of serviceable equipment from one station where it is no longer necessary or satisfactory to another where it can be used. Articles valued at \$30,434.68 were transferred in this way during the year. Surplus property has been obtained from other departments, including furniture from the demolished Government Hotels in Washington, which was sent to the supply station to be refinished for issue to the hospitals, and considerable quantities of seized morphine, cocaine, alcohol, and whisky. Detachable scalpel blades, when dulled, are sent from hospitals to the supply station to be sharpened, sterilized, and reissued.

Garbage, grease, and bones are sold at the marine hospitals wherever a purchaser can be found. Soap was made from waste grease and gauze was reclaimed in some hospitals.

Clinical thermometers are all subjected to a rigid test before purchase and 723 were rejected for defects.

SUPPLIES

Requisitions numbering 4,366 were received from the following sources:

Marine hospitals	3,332
Second-class relief stations	206
Third-class relief stations	107
Supply station, Public Health Service	80
Foreign quarantine division	76
Scientific research division	11
Foreign stations, Public Health Service	99
Coast Guard	335
Lighthouse Service	37
Miscellaneous	83
	<hr/> 4,366

Of these, 1,918 were filled in whole or in part by the supply station at Perry Point, for which, however, purchases have been limited to articles that are not very bulky, principally drugs, chemicals, and small articles used by the hospitals and commonly issued to Coast Guard units, vessels of the Lighthouse Service, second-class stations, and certain third-class stations. In the interest of economy janitor and laundry supplies, commonly used medicines, gauze, absorbent cotton, and other bulky articles are purchased twice a year for shipment by the contractors direct to the hospitals. For certain other articles that soon deteriorate, contracts are made that enable the hospitals to purchase direct from the contractors. Biological products, such as serums and vaccines and arsphenamine, nitrous oxide, insulin, suture material, X-ray films, adhesive plaster, ether, soft-rubber goods, and similar articles, are purchased in this way. Other supplies, when purchased, are procured through the division of supply on requisitions made by the individual stations.

CONSTRUCTION AND REPAIR

The new marine hospitals at Detroit and Cleveland were opened for the reception of patients on May 2 and July 9, 1930, respectively. The bed capacity of the former is 132 and of the latter 250. The act of July 3, 1930, increased the limit of cost for the Detroit Marine Hospital from \$600,000 to \$1,200,000 for the purpose of acquiring additional land, extending the main building, and providing additional buildings and facilities. This will increase its capacity to 250 beds. Under Public Act No. 519, approved July 3, 1930, the transfer of the old marine hospital at Detroit to the Department of Commerce and the Department of Labor was authorized. Three of the four parcels comprising the old marine hospital reservation at Cleveland have been sold by the Supervising Architect.

Contracts for the new marine hospitals at San Francisco, Galveston, and New Orleans were awarded March 30, May 20, and June 28, 1930, respectively. The bed capacity at San Francisco will be 460, at Galveston 100, and at New Orleans 580. The hospitals at San Francisco and Galveston will probably be ready for the reception of patients in October, 1931, and the New Orleans hospital in January, 1932.

Plans for the new marine hospitals at Baltimore, Md., and Stapleton, N. Y., appropriations for which were made in the act of March 4, 1929, are in course of preparation. The Secretary of the Treasury, through the Office of the Supervising Architect, is now negotiating for the acquisition of additional land adjoining the present marine hospital reservations at Baltimore and Stapleton, which is required to provide adequate sites for the hospital buildings and quarters at these stations.

A new marine hospital at Seattle is provided for in the act of July 3, 1930, as follows:

Seattle (Wash.) Marine Hospital: For construction of a marine hospital, together with necessary auxiliary structures and facilities, outside service lines, and approach work, under a total estimated cost of \$1,725,000.

A site which was donated to the Government by the city of Seattle is now available for the construction of this hospital, which will have

a bed capacity of 250. The preparation of plans for this project will shortly be undertaken by the Supervising Architect.

The following items of new construction have been recommended and are now up for consideration under the public buildings bill:

Portland (Me.) Marine Hospital: Quarters for medical officer in charge, junior medical officers (double set), 15 nurses, and 15 attendants; garage, new power house and plant, and remodeling of present power house for laundry.

Boston (Mass.) Marine Hospital: Quarters for two medical officers (double set) and garage.

Norfolk (Va.) Marine Hospital: Construction of a connecting building between east and west wings, and a third story added to the east wing; 1 double set quarters for medical officers, 1 apartment house with 4 sets of quarters—2 for junior medical officers, 1 for pharmacist, and 1 comprising 6 or 7 single rooms with 3 baths and living room for internes. Extension and remodeling of present nurses' quarters to provide for a total of 60 nurses, aides, and dietitians. Extension of present attendants' quarters to provide for 30 additional attendants. Construction of additional storehouse.

Evansville (Ind.) Marine Hospital: Fireproof, 2-story building to contain surgical ward of 30 beds, operating room, sterilizing, dressing, and examination rooms.

Chicago (Ill.) Marine Hospital: Construction of a 4-story wing to accommodate 100 patients. Addition to home for nurses. New laundry building with accommodations on second floor for 20 attendants. Two brick double houses for 4 medical officers.

Mobile (Ala.) Marine Hospital: Construction of hospital wing for 100 patients. Quarters for 4 medical officers. Nurses' home for 30 persons. Quarters for 30 attendants. Buildings for storage, garage, and mortuary, replacing frame structures.

Memphis (Tenn.) Marine Hospital: Fireproof 2-story building to contain surgical ward of 30 beds, operating room, sterilizing, dressing, and examination rooms.

Pittsburgh (Pa.) Marine Hospital: One house for medical officer in charge; quarters for junior medical officers (double set), nurses' home for 15 persons, and attendants' quarters for 25 persons.

Buffalo (N. Y.) Marine Hospital: 3-story extension to provide for 100 beds, and purchase of additional land if necessary; increased personnel accommodations for the following: 6 medical officers, 30 nurses, aides, and dietitians, and 25 attendants.

Louisville (Ky.) Marine Hospital: Additional buildings and alterations of present one to provide a surgical ward of 30 beds, operating room suite, and quarters for 2 medical officers, 20 nurses, and 25 attendants.

Carville (La.) Marine Hospital: Infirmary and service building to provide facilities for hospitalization and diversional instruction, etc.; quarters for 2 medical officers and 4 administrative assistants.

Fort Stanton (N. Mex.) Marine Hospital: Additional hospital and auxiliary facilities for 50 beds; power plant and laundry building, remodeling kitchen and mess hall, quarters (2 double sets) for medical officers, and 1 nurses' home.

San Diego, Calif.: Tuberculosis ward building, quarters for 4 medical officers, 10 nurses, 30 attendants, and 60 patients.

From an appropriation of \$75,000 provided for under the act approved March 5, 1928, a new building for out-patient facilities at Philadelphia, located at 225 Chestnut Street, was acquired. The remodeling of this building is now nearing completion and the service activities will be transferred thereto at an early date. Under the act approved July 3, 1930, an appropriation of \$28,000 was made for certain new construction and remodeling at the Key West Hospital, which will increase the capacity by 24 beds. The Supervising Architect will undertake the preparation of plans for these improvements shortly.

At the marine hospital in Pittsburgh work in connection with the construction of new porches at the east end of the hospital building, extension of driveways, new curbs, and walks is nearing completion. An amount of \$12,000 was appropriated for this work and added to the regular appropriation for "Repairs and preservation of public buildings" under control of the Supervising Architect for the fiscal year 1930.

At Fort Stanton the station laundry building is being enlarged and new equipment furnished to provide more adequate laundry facilities. At this hospital, by the remodeling and construction of an addition to ward 10, the capacity of the hospital was increased by 20 beds. A complete new fire-protection system was also installed. At Key West a frame structure was converted into a ward for tuberculous patients, and additional bathing and toilet facilities were provided in the hospital building. At Louisville a new roof was placed on the hospital building and new lighting fixtures installed. At New Orleans 27 buildings were moved to new locations to provide a site for the new hospital building, and extensive repairs were made thereto. At Pittsburgh a new dining room was obtained by combining two small rooms, and a complete cafeteria system was installed in the hospital building. At St. Louis the capacity of the hospital was increased to 100 beds by remodeling a building formerly used for recreational purposes, and a passage way connecting this new ward unit with other ward units was constructed. At Norfolk a new concrete breakwater was constructed, alterations made in ward A to provide facilities for female beneficiaries, and new brass piping was installed in the hospital building. At Baltimore, Chicago, Evansville, Fort Stanton, Louisville, Memphis, Mobile, Portland, Me., Savannah, Stapleton, and Norfolk considerable exterior and interior painting was accomplished by the station force with materials furnished by the Supervising Architect.

MEDICINAL LIQUOR AND NARCOTICS FOR VESSELS

Medical officers in charge of relief stations continue to issue to vessels certificates of medicinal need of liquor and orders authorizing the purchase of narcotics. Of the former 8,760 and of the latter 283 were issued during the year.

INSTRUCTION IN FIRST AID

Ship's officers and candidates for licenses were instructed in first aid and ship sanitation at 40 of the 45 stations designated upon the request of the Steamboat Inspection Service, by whom proficiency in first aid has been required to all licensees since July 1, 1922. The following table shows the extent of first-aid instruction given and the results of examinations held during the fiscal year:

Instruction and examination in first aid, fiscal year 1930

Station	Number instructed	Number examined	Number passed			Number rejected			Time consumed		
			Instructed	Uninstructed	Total	Instructed	Uninstructed	Total	Instruction (hours)	Examination (hours)	Total (hours)
Albany, N. Y.	0	0	0	0	0	0	0	0	0	0	0
Astoria, Ore.	0	0	0	0	0	0	0	0	0	0	0
Baltimore, Md.	83	127	51	46	97	20	10	30	182	335	517
Bangor, Me.	0	7	0	7	7	0	0	0	0	10	10
Boston, Mass.	0	130	0	124	124	0	6	6	0	68	68
Buffalo, N. Y.	0	22	0	20	20	0	2	2	0	22	22
Charleston, S. C.	0	8	0	8	8	0	0	0	0	4	4
Chicago, Ill.	16	16	11	5	16	0	0	0	16	17	33
Cincinnati, Ohio.	0	0	0	0	0	0	0	0	0	0	0
Cleveland, Ohio.	53	67	45	12	57	8	2	10	16	34	50
Detroit, Mich.	2	23	2	21	23	0	0	0	4	17	21
Duluth, Minn.	0	14	0	11	11	0	3	3	0	8	8
Evansville, Ind.	0	4	0	4	4	0	0	0	0	4	4
Galveston, Tex.	40	79	40	32	72	0	7	7	238	82	320
Grand Haven, Mich.	1	12	0	11	11	0	1	1	0	13	13
Honolulu, Hawaii	0	0	0	0	0	0	0	0	0	0	0
Jacksonville, Fla.	0	44	0	43	43	0	1	1	0	44	44
Juneau, Alaska.	14	14	14	0	14	0	0	0	27	22	49
Louisville, Ky.	0	4	0	3	3	0	1	1	0	4	4
Marine City, Mich.	22	22	22	0	22	0	0	0	40	9	49
Marquette, Mich.	0	4	0	4	4	0	0	0	0	8	8
Memphis, Tenn.	4	4	4	0	4	0	0	0	48	8	56
Milwaukee, Wis.	0	83	0	83	83	0	0	0	0	82	82
Mobile, Ala.	0	25	0	25	25	0	0	0	0	27	27
Nashville, Tenn.	0	2	0	2	2	0	0	0	0	2	2
New Haven, Conn.	0	9	0	9	9	0	0	0	0	9	9
New London, Conn.	12	64	12	52	64	0	0	0	45	64	109
New Orleans, La.	126	137	109	28	137	0	0	0	54	39	93
New York, N. Y.	524	734	482	170	652	41	41	82	254	562	816
Norfolk, Va.	4	73	0	43	43	0	30	30	2	106	108
Oswego, N. Y.	2	4	2	2	4	0	0	0	2	4	6
Philadelphia, Pa.	28	131	19	109	128	2	1	3	28	127	155
Pittsburgh, Pa.	0	13	0	13	13	0	0	0	0	13	13
Port Huron, Mich.	7	5	4	1	5	0	0	0	25	6	31
Portland, Me.	9	9	9	0	9	0	0	0	19	32	51
Portland, Oreg.	30	31	30	1	31	0	0	0	90	31	121
Providence, R. I.	0	12	0	9	9	0	3	3	0	13	13
St. Louis, Mo.	0	0	0	0	0	0	0	0	0	0	0
San Francisco, Calif.	257	265	221	38	259	2	4	6	165	54	219
San Juan, P. R.	0	2	0	2	2	0	0	0	0	2	2
San Pedro, Calif.	0	65	0	58	58	0	7	7	0	28	28
Savannah, Ga.	7	14	5	8	13	0	1	1	11	25	36
Seattle, Wash.	0	89	0	87	87	0	2	2	0	46	46
Tampa, Fla.	0	13	0	13	13	0	0	0	0	13	13
Toledo, Ohio.	6	6	6	0	6	0	0	0	12	12	24
Total.....	1,247	2,387	1,088	1,104	2,192	73	122	195	1,278	2,006	3,284

DENTAL TREATMENT

With very little increase in dental personnel during the fiscal year 1930, 10,000 more patients were treated than in any previous year. The demand for dental treatment is constantly increasing and the present dental facilities in most of the marine hospitals are inadequate properly to care for the patients in hospital.

One new clinic was installed at the Coast Guard depot, Curtis Bay, Md. One dental officer was assigned to the Coast Guard cutter *Northland*, one to the Coast Guard Academy, and one to Unalaska for the summer months. All other dental officers, 28 in number, served at marine hospitals and out-patient offices.

The total cost of all dental service, including the salaries of officers, assistants, supplies, and overhead, amounted to \$185,040. Had the same amount of dental treatment been furnished by contract dentists the cost would have been \$503,629.58 (according to the authorized fee table by which contract dentists are paid). The major items of treatment rendered by service dental officers for the last two years are as follows:

	1929	1930
Number of patients treated.....	41,799	52,763
Number of complete dental examinations.....	27,771	34,140
X-ray exposures.....	17,927	17,878
Prophylactic treatment (hours).....	6,429	6,326
Vincent's stomatitis treatment (hours).....	2,426	2,318
Pyorrhea treatment (hours).....	1,789	2,273
Extractions.....	32,102	37,537
Alloy fillings.....	18,205	22,596
Gold inlays.....	744	1,780
Silicate cement fillings.....	5,767	6,259
Dentures (full or partial).....	2,069	2,527
Bridges.....	335	488
Fracture cases and splints.....	129	87
Fracture treatment (hours).....	370	312
Total number of treatments rendered.....	193,824	280,722

In addition to the above, 4,353 patients were given emergency treatment at small relief stations by local civilian dentists (contract dentists), whose aggregate fees amounted to \$30,641, an increase over last year of \$6,220.

Senior Dental Surg. C. T. Messner is in charge of all dental operations in the field and the bureau.

COAST GUARD

The average number of Coast Guard beneficiaries has increased to 12,963 persons on active duty and retired. The character and comparative amounts of medical service furnished in recent years are shown by the following table:

Year	Numerical strength of Coast Guard and medical services given				Average amount of medical service per person		
	Number of Coast Guard personnel	Hospital days	Out-patient treatments	Physical examinations	Hospital days	Out-patient treatments	Physical examinations
1923.....	4,684	41,681	32,530	4,207	8.9	6.7	0.9
1924.....	4,896	36,504	45,857	7,008	7.6	9.4	1.5
1925.....	7,077	60,336	90,494	13,394	8.5	12.8	1.9
1926.....	9,839	71,799	125,226	19,061	7.3	12.7	1.9
1927.....	10,984	76,564	155,977	18,787	6.9	14.2	1.7
1928.....	12,462	85,691	137,971	17,220	6.9	11.0	1.4
1929.....	12,833	88,870	169,697	17,748	6.9	13.2	1.4
1930.....	12,963	90,179	196,334	14,382	6.9	15.1	1.1

Twenty-four medical and dental officers are assigned exclusively to Coast Guard duty, and 109 local physicians under appointment as acting assistant surgeon furnish medical and surgical relief and make physical examinations of Coast Guard and Lighthouse Service personnel at small isolated units remote from any relief station. The

number of medical and dental officers assigned to the Coast Guard has not been sufficient to meet the needs of that service at all times.

Medical officers have been assigned as usual to the cutters on the International Ice Patrol, the Bering Sea Patrol, and the Arctic cruise. A dental officer was stationed at Unalaska during the cruising season of 1930 and another dental officer was assigned to the *Northland* for the Arctic cruise. Two medical officers attached to the Coast Guard Academy are temporarily assigned to the two cutters on the cadet practice cruise in European waters.

With the growth of the Coast Guard, particularly since 1924, there has been a corresponding increase in the total amount of medical service required of the Public Health Service for this group, notwithstanding the fact that the average amount per person has shown little change from year to year. More medical and dental officers, additional hospital and dispensary facilities, and greater quantities of medical and surgical supplies are required to care for the increased personnel. The supply has never been quite adequate to the demand. During the coming year there will be additional requirements for medical and surgical supplies and equipment as original outfits for the new and larger cutters which are nearing completion.

The physical examinations performed at marine hospitals and elsewhere in the field have been improved. The physical standard and the instructions for these examinations were revised and a review of the reports of all physical examinations was instituted by the medical officer assigned to Coast Guard headquarters. The attention of the examiner is called, by letter, to any errors or omissions of importance. A marked improvement has followed and the enlistment of men physically undesirable has been greatly reduced, as has also the number of men discharged for disabilities existing prior to enlistment. A decrease in retirements for physical disability after comparatively short service and a reduction in the average amount of medical service per person are anticipated. Recent legislation making the pension laws applicable to Coast Guard personnel also adds importance to careful physical examination of recruits.

Beginning with the fiscal year 1927, a special study of venereal disease in the Coast Guard has been carried on and certain control measures have been applied. The results show a progressive decrease in the total number of venereal cases and in the case rate. The total number of cases decreased from 1,030 in 1927 to 878 in 1929, in spite of the increase in personnel, and the case rate fell from 105.64 per 1,000 in 1927 to 82.12 in 1929.¹ This decrease represents a very material saving in money and efficiency.

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

EMPLOYEES' COMPENSATION COMMISSION

When civil employees of the United States are injured while in performance of their duties they are entitled to reasonable medical and hospital services and supplies needed as a result of the injury.

¹ Among the enlisted personnel.

The law further provides that where practicable such services shall be furnished by United States medical officers and hospitals. For this purpose 25 hospitals and 130 dispensaries of the Public Health Service are used and constitute the principal medical resources of the commission. In places where the Public Health Service has no medical facilities available, treatment is furnished through private physicians designated by the commission.

Approximately one-fifth of all patients treated in marine hospitals and the other relief stations of the Public Health Service are beneficiaries of the commission, and during the year there were furnished 51,770 hospital days, 185,763 out-patient treatments, and 11,854 complete medical surveys.

Surg. E. C. Ernst is assigned as medical director of the United States Employees' Compensation Commission.

OUT-PATIENT TREATMENT FOR FOREIGN SEAMEN

In 1925, at the request of the National Council for Combating Venereal Diseases (London, England), the Public Health Service regulations were modified to permit foreign seamen to receive out-patient treatment for venereal disease at their own expense at all relief stations, in the expectation that, publicity being thus avoided, foreign seamen would apply for treatment in greater numbers than when the request of the master of the vessel or the foreign consul was necessary. The results have been disappointing. In 1928 only 105 foreign seamen applied for out-patient treatment under these conditions, in 1929 there were 154 such applicants, and in 1930, 124. These numbers are, of course, negligible, as over 220,000 patients apply annually to the relief stations for out-patient treatment.

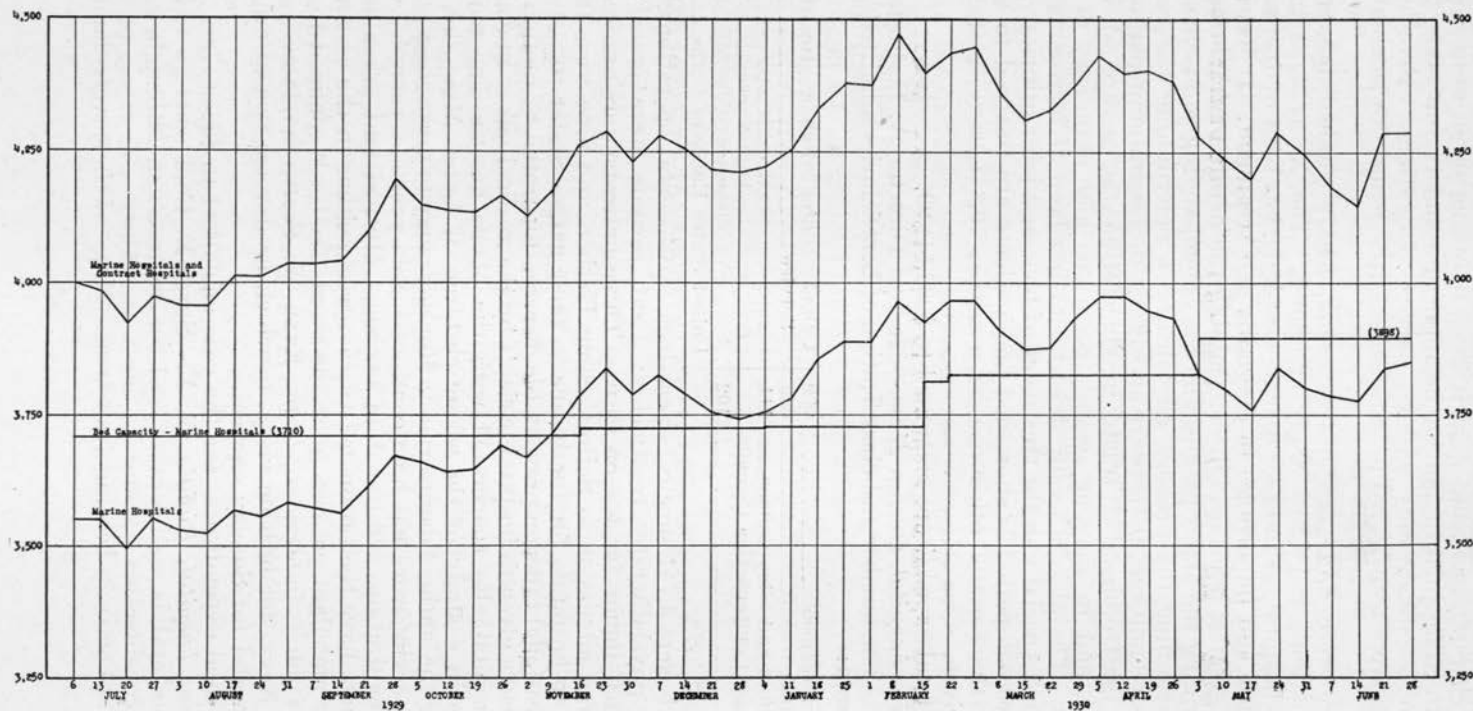
ABSTRACTS OF REPORTS FROM MARINE HOSPITALS AND SELECTED RELIEF STATIONS

A tabulation of the transactions at marine hospitals will be found on page 268.

Marine hospital, Baltimore, Md.—Medical Director J. W. Trask in charge. The needs of service beneficiaries for medical and surgical relief have continued to tax hospital facilities to the limit. Although the rated capacity is only 160 beds, the daily average number of patients was 209.7 and the greatest number in hospital at one time was 232. Seventy per cent of the hospital patients are seamen from the American merchant marine.

The work of the full-time staff has been amply supplemented by 20 attending specialists, all of whom are connected with the University of Maryland Medical School and Hospital, Johns Hopkins Medical School and Hospital, or other institutions in the city. The number of patients treated during the past five years is shown in the following table:

	1926	1927	1928	1929	1930
Number of days hospital treatment furnished.....	54, 884	57, 315	64, 641	73, 306	76, 552
Number of hospital patients treated.....	1, 389	1, 633	1, 859	2, 042	2, 080
Number of out-patient treatments furnished.....	19, 793	23, 521	28, 163	28, 751	37, 592
Number of out-patients treated.....	4, 924	5, 767	6, 549	7, 108	8, 957



Patients remaining in hospitals at the end of each week, fiscal year 1930

Eleven insane patients were treated, of whom seven were surrendered to State jurisdiction for hospital care and two to other Government establishments without service obligations. Five other patients were transferred to national soldiers' homes for domiciliary care.

There were 8,121 dental treatments, 33,472 clinical laboratory examinations, and 7,273 X-ray exposures. The X-ray department in this hospital, as in other marine hospitals, has been of increasing assistance and importance in diagnosis and treatment. It has been of the greatest assistance in determining the nature of fractures; in determining the arthropathies and the accompanying joint changes; in ascertaining the presence of calculi; in determining the nature of chest conditions, both heart and lung; in ascertaining pathology of the gastrointestinal tract; in elucidating the nature of back injuries, and in showing dental conditions and pathology of the sinuses. The physiotherapy department has been of increasing importance, especially in the treatment of bone and joint injuries. The convalescent period is shortened and patients are restored to work earlier than would otherwise be possible; 19,341 such treatments were given.

The total expenditure amounted to \$292,141.99.

Marine hospital, Boston Mass.—Medical Director A. D. Foster in charge. The number and classification of beneficiaries admitted were as follows:

Merchant seamen.....	999	United States Public Health	
Coast Guard men.....	662	Service.....	35
Immigrants and alien seamen.....	111	Lighthouse Service.....	26
Employees' Compensation Commis-		Coast and Geodetic Survey.....	4
sion.....	102	Bureau of Fisheries.....	3
Foreign seamen.....	66	United States Engineer Corps.....	2

There were 4,741 surgical operations, 2,164 dental operations, and 14,587 physiotherapy treatments; 1,891 permits were issued for medicinal liquor for use on ships. Three patients were assisted in obtaining admission to Sailors' Snug Harbor, and nine were transferred to hospitals for the insane in their native States.

Educational talks on preventable disease, illustrated by motion pictures, were given to hospital patients by the medical officer in charge. The hospital also cooperated with the Massachusetts Tuberculosis League in a study of the school children of Lynn, Mass., by furnishing the station laboratorian in Röntgenology to make chest plates. Social-service work has been continued as in previous years by various organizations interested in seamen. Musical and other entertainments have been provided twice a week, either in the recreation hut for ambulant patients or in the wards for those confined to bed. The station is indebted to Capt. Evan W. Scott, chaplain, United States Navy, for bedside visits, to which he devotes two afternoons a week, and for Sunday services.

The total expenditures for the year amounted to \$225,617.06.

Marine hospital, Buffalo, N. Y.—Surg. F. C. Turner in charge. This hospital is well located and the reservation, although small, has a considerable amount of lawn and about 100 trees, part of which are actively bearing fruit trees. Many of these were damaged

by ice during a freezing rainstorm. The hospital grounds are located back of the hospital, and the seclusion affords a pleasant place for ambulatory patients. Two insane patients were referred to State institutions for care, and several psychopathic patients were sent to the City Hospital by virtue of their rights as citizens of the community. Three old patients were placed in the Erie County Home without service obligation.

The hospital has eight attending specialists, whose opinions are routinely sought in all difficult cases. The city health department has extended medical courtesies, and all suspected cancer patients are sent to the State Institute for the Study of Malignant Diseases for diagnosis, at no expense to the Government. Both the physiotherapy aide and the dietitian prepared and read at staff meetings papers relating to their professional duties. Members of the medical staff gave a total of 43 talks, about a week apart, to an aggregate of 1,086 patients on syphilis, gonorrhea, and other communicable diseases and first aid. The leaflet, *Recommendations for the Prevention of Venereal Disease*, was distributed not only to patients but also to the Lake Carriers Association and local Coast Guard headquarters. Patients of the Veterans' Bureau constitute 38.1 per cent of the hospital patients.

The total expenditure for the year amounted to \$171,826.85.

Marine hospital, Carville, La.—Surg. (R.) O. E. Denney in charge. Because of its unusual public interest the annual report of this station will be published in full in the Public Health Reports.

The total expenditure amounted to \$491,078.32.

Marine hospital, Chicago, Ill.—Medical Director M. H. Foster in charge. The greatest problem was to provide accommodations for beneficiaries, as the hospital usually ran much over capacity. The wards normally contain 150 beds, but 70 additional were installed and as many as 219 patients housed at one time. One-sixth of the patients admitted to hospital required physiotherapy treatment and one-fourth required the services of the dentist. There were 5,257 surgical operations, 5,817 dental treatments, 3,705 X-ray exposures, 12,186 physiotherapy treatments, and 8,827 laboratory examinations. Five insane merchant seamen were placed in the Cook County Home. Approximately 79 per cent of the hospital patients were merchant seamen, 15 per cent were sent by the Employees Compensation Commission, and 3.78 per cent were members of the Coast Guard.

Three out-patient offices were maintained, in the Federal Building, the Van Buren Post Office, and the regular out-patient office near the municipal pier, respectively. Lectures to ambulatory patients on venereal disease and health conservation were continued throughout the year.

The total expenditure amounted to \$322,956.12.

Marine hospital, Cleveland, Ohio.—Surg. W. H. Slaughter in charge. The last of its 78 years of usefulness was rounded out and the old marine hospital was abandoned on July 9, 1930, on which date the new marine hospital at East One hundred and twenty-fourth Street and Fairmount Road was occupied. The old hospital was filled to capacity during the year; 3,353 surgical operations were

performed, 5,235 clinical laboratory tests made, and the following physiotherapy treatments were given:

	Number of patients treated	Number of treatments given
Massage.....	130	2,933
Electrotherapy.....	11	115
Hydrotherapy.....	3	105
Thermotherapy.....	312	7,904
Exercise.....	33	915
Total.....	489	11,972

All tissue removed at operations is submitted, as a routine procedure, to the National Institute of Health for histopathological examination. The Wassermann test is performed on all patients admitted to hospital. Five tuberculous patients were transferred to the marine hospital at Fort Stanton, two insane seamen were diverted to a public institution in a State of which they were citizens, and one beneficiary, who was also a World War veteran, was assisted in gaining admission to the National Military Home, Dayton, Ohio. The duties of dietitian were performed by the chief nurse in addition to her other functions.

The new marine hospital has a capacity of 250 beds. It is provided with all modern equipment and appliances, including adequate clinical laboratory, physiotherapy, X-ray, and dental services. Quarters are available for a majority of the personnel employed.

The total expenditure amounted to \$171,915.16.

Marine hospital, Detroit, Mich.—Surg. H. E. Trimble in charge. The old marine hospital was filled to capacity up to the date of its abandonment for the new marine hospital, which was opened on May 2, 1930. Hospital and out-patient clientele aggregated 2,285 American seamen, 333 patients of the Veterans' Bureau, 70 Coast Guard men, 320 patients of the Employees' Compensation Commission, 37 employees of the Lighthouse Service, and 263 other beneficiaries. Because of lack of bed facilities, 41 patients were placed in contract hospitals. Five insane patients were placed in city or State institutions during the year without service obligations, and several chronic patients were transferred to the Wayne County Home for the Poor and to the National Soldiers' Home.

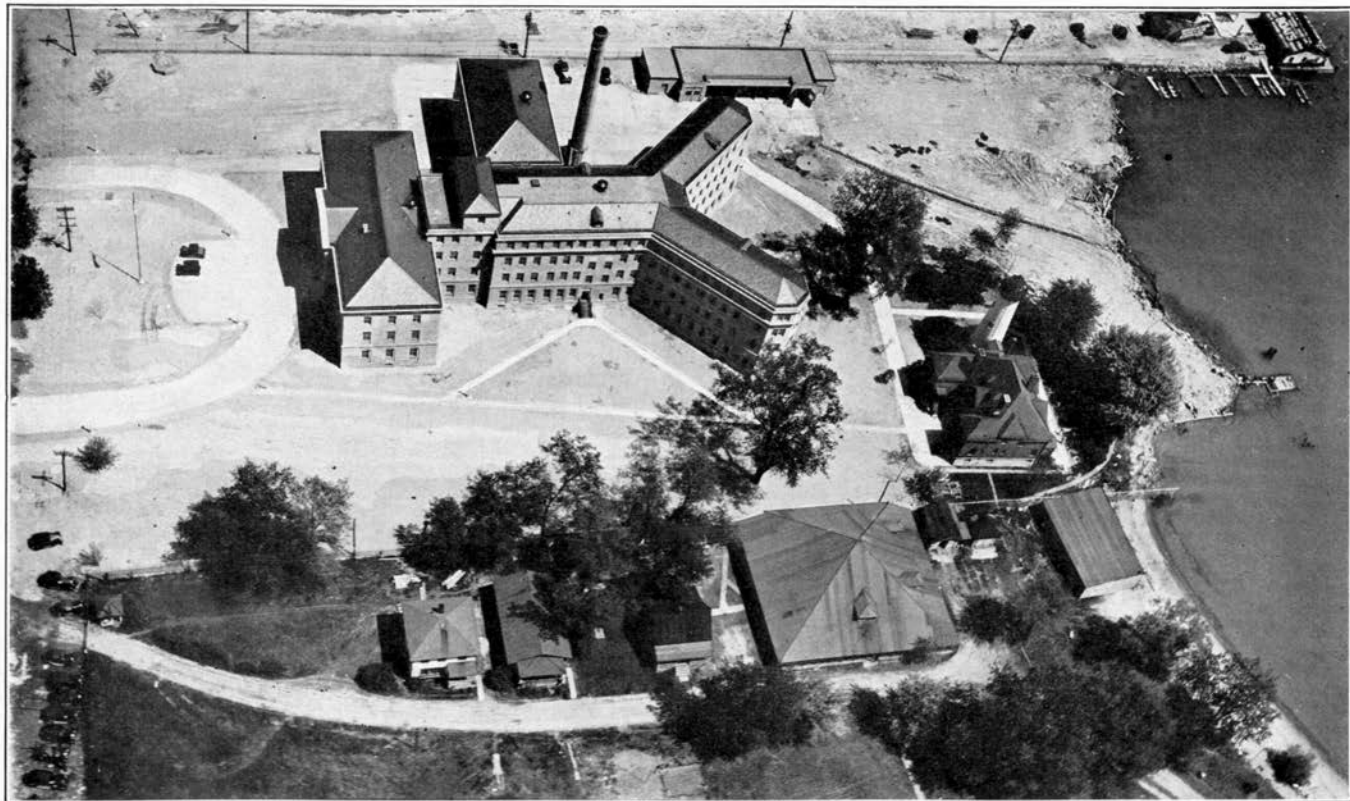
The new hospital, beautifully situated on Lake St. Clair, at Windmill Pointe, was dedicated with appropriate ceremonies on March 29, 1930. The bed capacity is temporarily reduced to 132 by quartering nurses and attendants in the main building. The laundry and quarters for one pharmacist and four attendants are temporarily retained in the old hospital. An additional appropriation of \$600,000 (act of July 3, 1930) has been obtained for the purchase of adjacent land, the filling in of the submerged portion of the reservation at the water front, and the erection of an additional wing for 100 patients, a nurses' home, attendants' quarters, laundry, and quarters for medical officers.

The total expenditure for the year amounted to \$186,634.09.

Marine hospital, Ellis Island, N. Y.—Medical Director C. H. Lavinder in charge. This hospital continued to assume more and more the aspects of a true marine hospital. The decrease in alien



UNITED STATES MARINE HOSPITAL, CLEVELAND, OHIO



UNITED STATES MARINE HOSPITAL, DETROIT, MICH.

patients made more beds available for old-line beneficiaries. Less than half the patients admitted were immigrants, and only 26 per cent of the hospital days were devoted to aliens.

The capacity was increased 40 beds by converting the upper corridor on Island No. 3 into wards. All tuberculous beneficiaries requiring hospital treatment in Greater New York are now sent to Ellis Island; 254 such patients were admitted, and there were frequently more than 80 tuberculous patients under treatment. Induced pneumothorax has been introduced as a form of treatment.

A full-time ear, nose, and throat clinic has been established. Three attending specialists in communicable diseases, general surgery, and cardiology, respectively, have been added to the force, which now includes 15 recognized specialists practicing in the city of New York. The surgical service has been placed under a competent surgeon and the number of operations (5,783) has been governed by the number of surgical beds that could be made available. The urological service was the largest in point of numbers of patients in the hospital. The neuropsychiatric service has operated under severe handicap because of large numbers of insane patients and the difficult character of warrant cases detained temporarily before deportation. Tubs equipped for continuous baths have been installed, and some other improvements made in the general facilities of these wards. The clinical laboratory operates under a competent pathologist and does the histopathological tissue work, including freezing microtome sections. A total of 33,134 laboratory examinations were made. There were 95 deaths and 58 autopsies. The dental officer gave 17,804 treatments; there is need for an assistant dental officer and a dental mechanic. There were 10,124 physiotherapy treatments. An educational program for beneficiaries was carried out and a program held every Friday night before the regular motion picture was exhibited. The average attendance was about 300.

A professionally trained employee is in charge of the social service, and coordinates the work at Ellis Island with that at the marine hospital on Hudson Street and with the marine hospital social service auxiliary, composed of local citizens, which serves both hospitals. Fifty-four patients were transferred to other institutions and to foreign countries, thus relieving the Government of the expense of their hospitalization. Convalescent care was secured for 70 other patients, adjusted employment for 80, temporary outside care for 129, and 48 were transferred to other institutions without service obligation. Aid was given to 1,004 patients by means of letters, telegrams, recovery of baggage, wages, etc. Twelve insane patients were transferred to State institutions, 1 was sent to the Veterans' Bureau, 3 were deported, and 7 were sent to St. Elizabeths Hospital.

The act of March 26, 1930, contained a deficiency appropriation of \$47,915 for equipment, all of which was expended for beds, mattresses, window shades, linoleum, and other ward furniture and equipment, including an electrocardiograph, electric instrument sterilizers, etc. The expenditure of this money actually changed the character of the hospital from a physical standpoint and aided in raising the morale of the personnel and patients. A hospital manual of procedure for the examination of aliens at Ellis Island was

written and published, serving as a basis for the care, examination, and certification of aliens.

The total expenditure for the year amounted to \$694,364.11.

Marine hospital, Evansville, Ind.—Surg. K. E. Miller in charge. This hospital, which consists of seven brick and frame buildings, with a rated capacity of 54 patients, maintained a daily average of 65, and on several occasions 74 patients were under treatment. At no time during the year was the hospital without a waiting list, which sometimes reached as high as 60 patients. One insane patient was transferred to a State institution without service obligation. The acting chief nurse performed the duties of dietitian at this station in addition to her other functions. An additional building is needed to increase the bed capacity and improve the facilities for operating room, X ray, chemical laboratory, and examining room.

The total expenditure amounted to \$69,853.51.

Marine hospital, Fort Stanton, N. Mex.—Passed Asst. Surg. G. H. Faget in charge. The accompanying table shows the condition of all patients discharged during the fiscal year, with the classification of their tuberculosis upon admission and the duration of their treatment:

Condition on discharge	Number	Classification on admission			Average stay in hospital in days
		Far advanced	Moderately advanced	Minimal	
Died.....	28	26	2	0	990
Not improved.....	28	13	13	2	201
Improved.....	35	21	13	1	648
Arrested or apparently arrested.....	17	3	8	6	981
Total.....	108	63	36	9	.....
Nontuberculous.....	¹ 18	.....	.....	.....	566
Grand total.....	126	.....	.....	.....	.....

¹ 1 died, 17 recovered.

Tuberculous patients admitted to this sanatorium are of two classes, those transferred by bureau approval at Government expense and those presenting themselves voluntarily for admission, paying their own transportation and frequently coming against medical advice. Patients from these two sources differ markedly as to their suitability for treatment at Fort Stanton, as can be seen from the following table:

Source of admission	Classification (National Tuberculosis Association)			Total
	Minimal or under observation for tuberculosis	Moderately advanced	Far advanced	
Voluntary admissions.....	4	12	¹ 24	40
Government transfer admissions.....	2	40	² 31	73
Total.....	6	52	³ 55	113

¹ 60 per cent.

² 42 per cent.

³ 49 per cent.

For treatment, reliance is placed chiefly upon the routine sanatorium regimen of bed rest, fresh air, a well-balanced diet, and mental diversion to prevent introspection; but the greatest emphasis is placed upon rest. Calcium chloride was used intravenously in 32 patients for intestinal tuberculosis, pleural effusion, and hemoptysis. The Gerson-Sauerbruch salt-free, high-vitamin diet has been introduced for a selected group of patients. Direct sunlight and lamps are extensively used and air baths are employed in cases where direct sunlight is contraindicated. Graduated exercises are used when sufficient progress toward recovery has been made and employment for several months with pay is routinely provided to test ability for discharge. The occupational therapy department, with three aides on duty, handled 120 patients for a total of 15,083 hours. Artificial pneumothorax, employed at this station since 1911, was continued, and 1,080 such treatments were given to a total of 39 patients. Phrenic avulsion is performed on selected cases, 20 such patients remaining under treatment. A dentist and a dental assistant were kept fully employed in routine dental treatment.

Improvements were made in the method of keeping clinical histories and in the physical equipment in the X-ray laboratory, and additional infirmary facilities were provided. There were 28 deaths and 26 necropsies. In the clinical laboratory there were 923 erythrocyte sedimentation tests made within the annual period, which brought the total to 1,868 tests on 458 patients in this hospital. After this extensive experience it is strongly felt that the sedimentation time is a reliable index of tissue destruction, especially in the tuberculous. It has frequently been the herald of relapses or of improvements before definite clinical changes manifest themselves and is of great prognostic significance.

Through the aid of the Federal and State departments of vocational training, correspondence courses were furnished a number of convalescent patients. Moving pictures, radio, musical programs, and baseball games were provided. The radio ear phones are increasing in popularity with bed patients; a short-wave set has been installed. The library is well patronized, and 19,570 books and 47,362 magazines were in circulation. A community house donated by the Seamen's Church Institute provides a place for various social functions. Catholic and Protestant chaplains have been maintained by private organizations to conduct religious services and minister to the spiritual needs of patients. The station farm and dairy were continued with the resultant economies; 86,000 gallons of milk, 3,507 dozen eggs, 1,200 pounds of poultry, and all the beef and pork consumed were produced.

Total expenditure for the year amounted to \$355,723.70.

Marine hospital, Key West, Fla.—Surg. M. S. Lombard in charge. The past year was the most active since this hospital was established in 1844. The rated capacity was increased by minor alterations from 60 to 75 beds. The greatest number of patients in hospital, 102, was on April 22, 1930. To meet this unusual demand it was necessary to convert into ward space all galleries and certain rooms usually used for other purposes. The majority of patients are those of the Veterans' Bureau. Through the courtesy of the United States navy yard at Key West, the marine hospital communicated

with 39 ships at sea, exchanging 107 messages relating to treatment of sick members of the crews and arranged for admitting 21 patients who were transferred from passing ships. Surgical operations numbered 1,513, of which 312 were major cases. Spinal anaesthesia was introduced, with encouraging results. The acting chief nurse performed the duties of dietitian at this station in addition to her other functions. The Navy Department has given a revocable permit to occupy certain adjacent areas of land for recreational purposes.

The total expenditure for the year amounted to \$117,401.46.

Marine hospital, Louisville, Ky.—Surg. Joseph Bolton in charge. Although the rated bed capacity of the hospital, which was built in 1849, is only 71, the maximum number of patients reached 94 because, other Government facilities lacking, efforts were made to accommodate patients of the Veterans' Bureau. The attending specialists in surgery and orthopedic surgery operated on 141 and 39 patients, respectively. The eye, ear, nose, and throat specialist operated on 23, and the specialists in laboratory procedures, urology, pathology, dentistry, internal medicine, and neuropsychiatry rendered frequent and valuable services. Complicated X-ray procedures were performed by contract; a part-time laboratory technician was employed. The chief nurse performed the duties of dietitian in addition to her other functions.

With shrubbery and trees supplied by the park commission of the city of Louisville, and from other donations, the grounds were further beautified. The Louisville chapter of the American Red Cross performs valuable social-service work and assists in operating the recreation hut, which is open daily from 10 a. m. to 4 p. m. It contains a pool table, victrola, piano, books, and games, and is used for musicals, plays, lectures, etc.

The total expenditure amounted to \$94,452.21.

Marine hospital, Memphis, Tenn.—Surg. R. L. Allen in charge. This hospital has a large turnover, and almost half of the patients are beneficiaries of the Employees' Compensation Commission. In a large percentage of these cases attending specialists are called in an effort to arrive at a satisfactory estimation of the degree of resulting disability. The out-patient service has increased 25 per cent in the past year and over 200 per cent in the past three years.

The total expenditure for the year amounted to \$78,251.10.

Marine hospital, Mobile, Ala.—Surg. W. S. Bean in charge. The normal bed capacity of 90 was temporarily increased to 108 occupied beds, porches and some of the corridors being equipped as wards. The average daily number of patients was 90.

This hospital has competent consultants in all branches and frequent use is made of their services. The consultant in surgery does the greater part of the major surgery; 1,348 operations were performed. The dental officer rendered 7,903 treatments and, although this service has improved greatly, one officer is not able to do all the work that should be done. In the physiotherapy rooms 14,337 treatments were given, as follows: Massage, 3,921; electrotherapy, 3,865; thermotherapy, 5,982; and exercise, 569. This treatment is most frequently employed for arthritis and to shorten the period of convalescence after recovery from dislocations, fractures, and sprains. The clinical laboratory made 6,785 examinations. The duties of dietitian were performed by the acting chief nurse in addition to her

other functions. The out-patient office was removed from the first floor to the basement and provided with a separate outside entrance. The examination of crews before signing on Shipping Board vessels was continued and 2,000 such examinations were made.

The total expenditure for the year amounted to \$136,763.24.

Marine hospital, New Orleans, La.—Surg. William Y. Hollingsworth in temporary charge. This station and the Public Health Service sustained a great loss in the death, May 22, 1930, of Surg. W. C. Rucker, medical officer in charge.

The professional work continued to increase; there were 980 more hospital patients than in the preceding year. The increase in hospital days was even larger, due to a number of seamen treated for Jamaica-ginger poisoning, requiring long hospitalization. The weekly lectures to ambulatory patients on personal hygiene, initiated in 1927, have been continued. The social service carried on its excellent work, arranging divine services and entertainments and managing the library. Weekly staff meetings were held; the Orleans Parish Medical Society and the First and Second District Dental Societies again held joint meetings with the marine hospital staff. The work of clearing the grounds by station labor for the erection of the new hospital was completed, 27 buildings in all having been moved. The old hospital buildings will be in operation until the completion of the new and then demolished.

Considerable new equipment was installed, including new microscopes, dental unit, electrocardiograph, film dryer, kitchen fixtures, ambulance, and touring car. Sixteen medical internes and three dental internes were given courses of training, of whom 10 have received commissions. The following is a summary of the station's operations:

Inpatients treated.....	4, 516
Hospital days.....	134, 512
Deaths.....	119
Autopsies (62 per cent).....	74
Operations, surgical operating room.....	402
Operative procedures (urological service).....	4, 541
Operations (eye, ear, nose, and throat clinic).....	343
Doses of salvarsan.....	3, 881
Spinal punctures.....	342
Treatments (eye, ear, nose, and throat clinic).....	11, 014
Refractions (eye, ear, nose, and throat clinic).....	174
Treatments (dental clinic).....	35, 222
Examinations (dental clinic).....	5, 475
Treatments (physiotherapy department).....	13, 448
Examinations (clinical laboratory).....	37, 660
Exposures (roentgenology department).....	7, 105
Consultations with consultants.....	2, 688
Out-patient treatments (customhouse): Medical, 12,331; dental, 9,297.....	21, 628
Out-patient examinations.....	6, 502
Men instructed in first aid.....	126
Men given first-aid examinations.....	137
Number of liquor permits issued to vessels.....	295
Number of narcotic permits issued to vessels.....	2

The total expenditure for the year amounted to \$456,838.76.

Marine hospital, New York, N. Y.—Surg. P. M. Stewart in charge. In addition to the hospital building at 67 Hudson Street this station operates out-patient offices at the barge office and main post-office building. Medicinal liquor permits for ships and port sanitary statements are issued at the customhouse. There was a tremendous in-

crease in work in every department. A rearrangement of clinical and office space improved the handling of Employees' Compensation Commission cases.

During the year a coordinated hospital social service was established for this station and the marine hospital at Ellis Island. An employee is on duty at each station under the supervision of a chief hospital service worker. A social-service auxiliary composed of a group of local citizens assists in this work and provides funds. During the past year 2 seamen were assisted in obtaining admission to Sailors' Snug Harbor and 30 others in securing convalescent care from private agencies.

The number of patients treated during the year, as well as the treatments, showed a marked increase over preceding years. The following is a summary and comparative schedule of the work during the past two years:

	1929	1930
New cases admitted.....	18,104	20,318
Medical clinic admissions.....	4,177	4,732
Skin and genito-urinary clinic admissions.....	6,522	7,740
Surgical clinic admissions.....	5,266	5,543
Dental clinic admissions.....	7,313	7,940
Physiotherapy clinic admissions.....	3,611	5,293
Eye, ear, nose, and throat clinic admissions.....	3,311	3,365
Clinical laboratory examinations.....	14,210	14,069
X-ray exposures.....	24,079	26,846
X-ray treatments.....	334	530
Total number of treatments.....	120,119	170,062
Average daily treatments.....	420	566
Maximum treatments in one day.....	658	771
Physical examinations.....	16,516	20,186
Operations—minor surgical.....	2,074	4,256
Antisyphilitic injections.....	11,155	12,997
Medicinal liquor permits to ships.....	1,362	1,400
Port sanitary statements to outbound ships.....	16,391	15,760

Marine hospital, Norfolk, Va.—Surg. S. L. Christian in charge. Work again reached a new high level by exceeding that of all preceding years. Patients in the hospital continuously outnumbered the rated hospital capacity of 217 beds. A contract hospital was utilized for overflow patients. Merchant seamen constituted the principal class of beneficiaries, receiving 46,317 hospital days; Coast Guard men received 6,928 hospital days; patients of the Employees' Compensation Commission, 3,268 days; and detained immigrants, 1,240 days. Three female wards with an aggregate of seven beds have been kept filled to capacity.

The disposition of patients with chronic diseases received careful study, and patients not requiring further hospital treatment but in need of custodial care were discharged as follows:

To relatives.....	2
To the Immigration Service.....	2
To National Soldiers' Home, Hampton, Va.....	3
To eleemosynary institutions in the State.....	3
To other Federal hospitals.....	6

There were 75 deaths and 32 autopsies; attendance upon autopsies is obligatory for the entire medical staff. Satisfactory arrangements were made for internes to receive instruction in obstetrical work at three Norfolk hospitals. The marine hospital staff furnished the program for the annual Public Health Service night at the medical society.

The use of oxygen therapy in pneumonia has resulted in its introduction at local civilian hospitals. The electrocardiograph and metabolism apparatus have been used with success, and the study of blood chemistry continued. Several interesting cases of industrial poisoning among patients of the Employees' Compensation Commission were admitted from the United States navy yard and the United States ammunition depot. Surgical operations numbered 5,790, and 2,437 intravenous treatments were given for syphilis. There were 11,664 clinical laboratory examinations, 5,899 X-ray exposures, 27,969 physiotherapy treatments, and 4,324 dental treatments. Four sitz baths were added to the equipment of the genito-urinary department, chiefly for the treatment of venereal disease. Radium therapy is procured through satisfactory contract arrangements. Plans have been made to install a 1-chair dental clinic in the out-patient office at the customhouse to relieve pressure from out-patients at the hospital. The station reclaimed 7,560 yards of used gauze, valued at \$234.36. Outgoing bills of health to departing ships numbered 3,032.

The chaplain held 41 devotional services and provided 40 entertainments. He continued to provide proper religious service and supervise all interments. Books, magazines, flowers, fruit, etc., were provided for the patients through his department.

The expenditures amounted to \$338,834.82.

Marine hospital, Pittsburgh, Pa.—Surg. T. B. H. Anderson in charge. Many important improvements were made in the physical condition of this hospital. Complete and modern X-ray equipment was installed and a new dining room was put in operation with cafeteria service by a rearrangement of facilities, which also permitted an increase in bed capacity from 77 to 80. The operating room was remodeled and a private room provided for female beneficiaries; construction of verandas on two floors is in progress, the lower floor for ward purposes and the upper floor for smoking and recreation room. A survey of electric current used, upon which a new contract is based, has resulted in a saving of \$1,500 in electric-light bills. The acting chief nurse performed the duties of dietitian in addition to her other functions. There were 3,265 dental treatments, 4,988 physiotherapy treatments, 2,450 surgical operations, 5,072 laboratory examinations, and 1,161 X-ray exposures. Sixty-nine per cent of the hospital patients are those of the United States Veterans' Bureau.

The total expenditure amounted to \$130,786.35.

Marine hospital, Portland, Me.—Surg. G. Parcher in charge. The hospital was filled to its capacity of 72 beds, except at rare intervals. Frequently, the number of patients exceeded the rated capacity. Sixty-two per cent of the hospital patients are of the Veterans' Bureau. As in the preceding year, a full-time dental officer was on duty who rendered as much dental work to both in-patients and out-patients as was possible. The duties of dietitian were performed by the acting chief nurse in addition to her other functions. A severe freezing rainstorm did very great damage to trees on the reservation and a cyclone carried away a portion of the hospital roof which was, however, repaired without interfering with the work of the institution.

The total expenditure for the year amounted to \$109,674.34.

Marine hospital, Port Townsend, Wash.—Surg. O. H. Cox in charge. Efforts were made to render the greatest service to the greatest number of beneficiaries. The hospital was kept constantly filled and overflow patients were sent to a contract hospital. Practically all patients continued to be admitted from or through the Seattle relief station. The chief nurse has continued to act as dietitian in addition to her other functions. A half-time dental officer has been on duty. A complete new X-ray outfit was installed and these facilities are now modern, reliable and complete. All tissue specimens removed by surgery are sent to the National Institute of Health for histopathological examination. There were 29 deaths and 17 autopsies.

The total expenditure for the year amounted to \$123,631.37.

Marine hospital, St. Louis, Mo.—Medical Director F. H. McKeon in charge. The capacity of this hospital was increased to 100 beds by utilizing space heretofore unoccupied and by remodeling a building formerly used as a Red Cross hut. The additional bed space was needed for patients of the Veterans' Bureau, for whose use the number of beds set aside has been gradually increased to a daily average of 40. The personnel has been increased by a dietitian, an additional nurse, orderly, laundry worker, and ward maid. The services of the consulting staff have continued to be used whenever necessary and, as heretofore, all major surgery has been done by the consultant in that branch.

Relief was divided among various classes of beneficiaries in hospital as follows:

Class of beneficiary:	Hospital days
Merchant seamen.....	11,301
United States Engineer Corps.....	6,096
United States Veterans' Bureau.....	5,175
Employees Compensation Commission.....	3,302
Mississippi River Commission.....	537
United States Lighthouse Service.....	141
United States Public Health Service.....	62
United States Immigration Service.....	49
United States Coast Guard.....	35
United States Navy.....	9
Total.....	26,707

The total expenditure for the year amounted to \$159,515.34.

Marine hospital, San Francisco, Calif.—Medical Director R. H. Creel in charge. The present hospital buildings will be utilized until the new 460-bed hospital building, for which ground was broken April 9, 1930, has been completed.

Both hospital and out-patient work increased in volume over the preceding year in all departments, but most markedly in the eye, ear, nose, and throat sections. In various departments, such as the X ray, physiotherapy, dental section, and laboratory, the amount of work would have been greater if additional workers had been provided.

There were performed 7,871 surgical operations, major and minor, the most important including 192 repairs of herniæ, 62 appendectomies, 10 gastro-enterostomies, 31 amputations, 181 fractures, 11 cataract extractions, 553 tonsillectomies, and 73 submucous resections.

In the dental section 6,597 sittings were given and 20,213 treatments, including 15 fractured mandibles. Some 260 full vulcanite dentures and 38 partial dentures were made in the station laboratory, and there were 4,742 extractions. The demands for dental treatment by beneficiaries greatly exceeded the facilities.

In the urological section, Wassermann blood tests, performed routinely on all in-patients, numbered 4,585, of which $7\frac{1}{2}$ per cent were positive. Of 184 patients admitted to hospital with syphilis, 41 were in the primary stage, 83 in the secondary, and 60 had tertiary lesions. In a number of cases of cerebrospinal type very marked improvement was noted through the injection of tryparsamide, combined with drainage of the spinal fluid. In several cases of paresis the production of proteid shock in connection with spinal drainage and injection of tryparsamide afforded good results. One hundred and thirty-two patients with pulmonary tuberculosis were admitted, of whom 27 were transferred to Fort Stanton.

Physiotherapy treatments by hydrotherapy, thermotherapy, massage, and passive exercise numbered 36,962. Clinical laboratory tests, 24,584, included 559 analyses of gastric contents, 159 blood-sugar determinations, 385 tests of spinal fluid; 11,679 X-ray exposures were made, and 31 complete autopsies, amounting to 31 per cent of the total number of deaths, were performed.

The social-welfare work continued to be carried out by a representative of the Seamen's Church Institute, which maintains and operates the recreation building and a library of about 1,200 volumes. Welfare workers canvass bed patients twice a week to provide books for those who can not go to the library. This organization likewise provides a part-time occupational therapy aide who furnishes materials to selected patients and instructs them in the making of various articles, chiefly knitted bags. This service distributed 9,611 books and magazines, performed 383 errands for patients, assisted 58 men financially, distributed 270 articles of clothing, provided entertainments with total attendance of 1,705, cashed checks to the value of \$4,931, and served usefully in many other ways. The social welfare as carried out by the Seamen's Church Institute is indispensable to station administration, and very greatly assists in the maintenance of the morale of patients. The representative of the Seamen's Church Institute also distributes stationery to those who are unable to pay for it, provides the service of a barber to those who are unable to pay, distributes cigarettes and tobacco from time to time, and in many other ways is helpful to the patients and an aid to hospital administration. The Seamen's Church Institute is deserving of the highest commendation for the character of work performed and the manner in which their agents function.

The total expenditure amounted to \$479,216.33.

Marine hospital, Savannah, Ga.—Senior Surg. William M. Bryan in charge. This hospital operated above capacity for the entire year except for a short time during major repairs to wards; 33 per cent of hospital patients are from the Veterans' Bureau. Two insane patients were turned over to the custody of their families. There were 6,645 dental treatments, 3,152 X-ray exposures, 14,911 laboratory examinations, 10,701 physiotherapy treatments, 2,072 injections of arsphenamine and neoarsphenamine, and 4,034 surgical operations.

For anesthesia, ethylene gas continued to be most frequently used, but spinal and local anesthetics were used where indicated.

The total expenditure for the year amounted to \$237,249.64.

Marine hospital, Stapleton, N. Y.—Medical Director M. J. White in charge. An increase in the number of hospital patients has been prevented by lack of facilities. The average daily number of hospital patients was 285, the wards being frequently overcrowded.

Among the 3,994 hospital patients, 3,170, or 79.4 per cent, were merchant seamen; 26, or 0.6 per cent, were foreign seamen; 40, or 1.1 per cent, were from the United States Lighthouse Service; 519, or 12.9 per cent, belonged to the Coast Guard; 57, or 1.4 per cent, were from the Public Health Service; 21, or 0.5 per cent, were beneficiaries of the Veterans' Bureau; 202, or 5.1 per cent, were cases treated for the Employees' Compensation Commission; and 53, or 1.3 per cent, were admitted from the Army Engineer Corps.

There were 19,854 dental treatments, a large number of which were for patients of the Coast Guard, 3,461 surgical operations, 33,193 physiotherapy treatments, 11,803 X-ray exposures, and 19,924 laboratory examinations. The X ray was used for therapeutic as well as diagnostic purposes. This hospital is the only one equipped with deep X-ray therapy apparatus.

Clinical and laboratory studies on syphilis are being made in conjunction with the division of venereal disease. These include studies on the efficacy of certain neoarsphenamine products, prophylaxis, dissemination among latent cases, and serology. Several publications were prepared.

This hospital is fortunate in having at small cost a well-organized social service with some privately subscribed funds available, but, still more important, private services of great value. Sunday religious services were held weekly for both Catholics and Protestants, with an aggregate attendance of 4,276. There were special services and entertainments on Memorial Day, Thanksgiving, Christmas, Easter, and National Hospital Day. Tobacco, clothing, and luxuries not supplied by the Government were generously contributed in large amounts by individuals and organizations, a complete list of which can not be supplied because of lack of space, but including the following:

Seamen's Church Institute.
American Red Cross (various chapters).
American Legion (several posts).
American War Mothers.

Salvation Army.
Young Men's Christian Association.
Various churches and seamen's missions, schools, and societies.

Those contributing to hospital entertainments for patients, etc., included the following:

Camp Fire Girls.
Cheer Givers Club.
German Seamen's Mission.
Long Island Social Club.
Junior Red Cross, Tottenville high School.
Glee Club of the Immaculate Conception Church.
Bible and Fruit Mission.

Salvation Army.
British Society.
Standard Oil Co. of New Jersey.
Sixteenth Infantry Band from Governor's Island.
Coast Guard.
National League of Women's Service.
German Seamen's Home.

The total expenditure for the year amounted to \$484,226.12.

Marine hospital, Vineyard Haven, Mass.—Medical Director C. W. Vogel in charge. The normal capacity of 24 beds was exceeded most

of the time by from 4 to 6 patients, requiring the use of space not strictly intended for ward purposes. The majority of patients were merchant seamen, but there were a few patients of the Employees' Compensation Commission and beneficiaries of the Veterans' Bureau. One medical officer furnishes all hospital and out-patient treatment, and patients requiring treatment by specialists are usually transferred to the marine hospital at Boston. The acting chief nurse performed the duties of dietitian in addition to her other functions.

The total expenditure amounted to \$40,796.53.

Relief station, Balboa Heights, Canal Zone.—Surg. M. F. Haralson in charge. This station is administered by the service officer on duty with the Panama Canal as chief quarantine officer. Out-patient and hospital relief to service beneficiaries is furnished by the health department of the Panama Canal at 5 out-patient dispensaries and 3 hospitals, 1 of which is the hospital for the insane. Every effort was made to lessen the period of hospitalization for individual patients. During the fiscal year 12 patients—5 insane, 5 tuberculous, and 2 with arthritis—demanding prolonged hospitalization were returned to the United States for further treatment at service stations. In every instance these patients were transported on Army transports at no expense to the service.

Relief station, El Paso, Tex.—Surg. J. R. Hurley in charge. As in preceding years, the major share of the time and effort devoted to relief work was for beneficiaries of the Employees' Compensation Commission, the number of which is increasing. Merchant seamen suffering from tuberculosis only occasionally appear, as wanderers or en route to Fort Stanton.

Relief station, Galveston, Tex.—Acting Asst. Surg. E. M. F. Stephen in charge. The relief activities are conducted from the customhouse, in which five rooms are set apart for the Public Health Service. In addition to the usual relief work, this station also issues port sanitary statements, liquor and narcotic permits to ships, makes examinations in first aid and ship sanitation, and furnishes medical relief by radio to vessels at sea. Twenty-nine patients were transferred to the marine hospital at New Orleans, two to Fort Stanton, and one to Carville. Excavation and foundation work has been started on the new marine hospital in Galveston, which it is anticipated will be ready for occupancy in October, 1931.

Relief station, Juneau, Alaska.—Acting Asst. Surg. L. P. Dawes in charge. The small number of out-patients is due to the fact that passenger and freight boats plying between Seattle and Juneau, as well as fishing boats, are seldom in port more than a few hours. The work of attending to the beneficiaries of the Veterans' Bureau has been added to the regular work, which has increased considerably over that of previous years and will probably increase further, as more boats are being placed on the Alaska run and the fishing fleet is constantly increasing.

Relief station, Los Angeles, Calif.—Surg. R. H. Heterick in charge. Although the number of merchant seamen patients is increasing, the major portion of medical service is devoted to the treatment of patients of the Employees' Compensation Commission and the examination of civil-service personnel. There are 5,000 permanent Government employees in the vicinity. Post-office employees

and those of the Forest Service engaged in fighting fires are the most frequently injured. An unusual number of dog-bite victims were received, and these were furnished antirabies treatment wherever indicated. At the request of the Immigration Service aliens have been visited in both the city and county jails, private homes, and sanatoriums, to determine whether they were suffering from certifiable diseases. Other Government agencies served are the Prohibition Service, Coast Guard, Coast and Geodetic Survey, Internal Revenue, Bureau of Animal Industry, Weather Bureau, Radio Commission, Land Office, Census Bureau, Lighthouse Service, and the Army and Navy. The office is kept open two and one-half hours beyond official closing time, twice a week, to accommodate Government beneficiaries who would otherwise be compelled to take time out of their sick and annual leave, when they have reached sufficient improvement to return to work but require further treatment for the effects of injury.

Relief station, Manila, P. I.—Surg. R. W. Hart in charge. Hospital relief was furnished only at the port of Manila. Hospital beds in the city are extremely limited. Out-patient relief was furnished in Manila, Iloilo, and Cebu, the work being done by the service medical officers detailed as quarantine officers. This work was performed without friction and it is believed that creditable service was rendered the American seamen at these far-distant ports; 1,688 beneficiaries were given a total of 2,815 treatments.

Relief station, Philadelphia, Pa.—Medical Director G. L. Collins in charge. The new out-patient office at 225 Chestnut Street, purchased and renovated at an aggregate cost of approximately \$75,000, has been prepared for occupancy, with the exception of minor details. Arrangements have been made for the installation of equipment for X-ray, physiotherapy, laboratory, and dental departments. With the initiation of the more diversified work in the new dispensary it is anticipated that the work of the station will materially increase.

Relief station, Honolulu, T. H.—Medical Director S. B. Grubbs in charge. Honolulu was the only port in the Hawaiian Islands at which hospital and out-patient relief were furnished service beneficiaries, who were for the most part American merchant seamen. Only emergency cases were hospitalized, hospital care being furnished by contract institutions and medical treatment by service officers of the regular corps assigned to duty as quarantine officers. Two hundred and three beneficiaries received 2,830 days' hospital treatment, and 51 surgical operations were performed. At the out-patient office in the Federal building 805 beneficiaries were given a total of 1,818 treatments. A total of 1,050 physical examinations were made, of which 861 were of civil-service applicants. This is an increase in total examinations of 15 per cent over last year and an increase in civil-service examinations of 36 per cent over last year and 50 per cent over the average of the last two years.

Relief station, Port Arthur, Tex.—Surg. W. A. Korn in charge. In May, 1930, five cases of typhoid fever were received from the U. S. dredge *Raymond*. Investigation showed the presence of *B. coli* in the drinking water, which was supplied from a leaky water barge with probable sewage contamination. The tanks were emptied and steamed, the entire crew inoculated with antityphoid vaccine, and no further cases occurred. Nineteen patients were

transferred to the marine hospital at New Orleans, medical advice by radio was given to eight ships at sea, and 59 medicinal liquor certificates were issued to ships.

Relief station, Rock Island Arsenal, Ill.—Acting Asst. Surg. H. W. Keatley in charge. This relief station occupies four large rooms in the chief manufacturing building of the Rock Island Arsenal. It is located advantageously for the crews of river vessels and injured Government employees; patients are received from points as far distant as 80 miles. Because of an epidemic of smallpox in adjacent cities during the month of October, 1929, all employees of the arsenal and of a vessel of the United States Engineer Corps in the vicinity were vaccinated against smallpox. No cases appeared among this personnel.

Relief station, Seattle, Wash.—Medical Director L. D. Fricks in charge. Relief activities continued to increase; 6,223 beneficiaries were treated, of whom 215 were admitted to hospital for an average period of 13 $\frac{1}{3}$ days. The volume of hospital relief is large because the Port Townsend Marine Hospital, 50 miles distant, is kept filled and it is impracticable to transfer grave cases thereto. Outpatients numbering 6,012 were given a total of 17,167 treatments. Physical examinations numbering 1,552 were made and in addition 8,356 cannery employees were medically examined prior to their departure for Alaska. Four hundred and sixty-six persons were vaccinated against smallpox and typhoid.

The act of July 3, 1930, contained an appropriation of \$1,725,000 for the new marine hospital upon the 12-acre site donated by the city of Seattle. The Secretary of the Interior has requested that in due time the marine hospital at Port Townsend be transferred for the use of the Bureau of Indian Affairs.

Relief station, Washington, D. C.—Senior Surg. J. P. Leake in charge. This office remains in the old post-office building pending the provision for a more suitable and permanent location. The medical staff, consisting of three commissioned medical officers and three acting assistant surgeons, was unable to meet all the demands for medical services, and because of lack of funds to engage additional personnel it was necessary to modify the examination of a large number of temporary employees for the Bureau of the Census by instituting a line-inspection examination by officers of the Public Health Service skilled in the rapid inspection of immigrants. Mouth, throat, and exposed extremities were examined, hearing was tested, and after a short exercise test—two flights of stairs—the pulse was taken. In men, examination for hernia and varicose veins was made without removing the clothing. In doubtful cases the applicants were detained for more detailed examination. Persons so examined were certified as having been inspected and passed as not having obvious disqualifying defects.

The majority of out-patient treatments, which aggregated 28,886, were for the Employees' Compensation Commission in behalf of injured Federal employees. Under the direction of a part-time Röntgenologist 2,858 X-ray exposures were made, of which 2,421 were of bones and joints. Of 11,290 physical examinations the majority were for applicants and employees of the Civil Service Commission and those coming under the retirement act of May 22, 1920, and the liberalization retirement act of April 23, 1930. This work

is increasing rapidly. The work authorized under the act of May 17, 1928 (District of Columbia workmen's compensation act), increased about 100 per cent. The act of February 23, 1929, to provide for the vocational rehabilitation of disabled residents of the District of Columbia, and other purposes, imposed some additional functions.

Supply station, Perry Point, Md.—Chief Pharmacist R. D. Kinsey in charge. The supply station serves as a depot for the receipt, storage, and shipment of supplies for the marine hospitals and other stations of the service. The stock consists of some medical supplies purchased by the Public Health Service and equipment and supplies procured from the surplus of other branches of Government service. There were shipped 2,539 lots of supplies, consisting of 7,417 packages of 486,609 pounds total weight and valued at \$322,179.68. Considerable quantities of standard medicinal preparations were manufactured for issue.

Thanks are due the officials of the local Veterans' Bureau supply depot and hospital for many favors received.

CONSOLIDATED AND DETAILED REPORTS

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

Consolidated X-ray report, marine hospitals and second-class relief stations

Number of patients examined.....	45, 091
Number of exposures:	
Chest.....	10, 245
Bone and joint.....	42, 322
Dental.....	18, 675
Gastrointestinal and urogenital tracts.....	12, 718
Miscellaneous.....	3, 645
Total.....	87, 605

Consolidated marine hospital laboratory report

BLOOD		URINE	
Complement fixation—		Urinalyses.....	89, 811
Syphilis.....	51, 852	Renal function tests.....	1, 002
Erythrocyte counts.....	5, 731	Quantitative sugar.....	4, 241
Leucocyte counts.....	8, 284		
Differential leucocyte counts.....	5, 825	FECES	
Malaria.....	2, 477	Parasites and ova.....	8, 268
Typing.....	577	Dysentery.....	219
Blood cultures.....	364	Metabolic examination.....	93
Chemical determinations—		Occult blood.....	1, 759
Carbon dioxide (Van Slyke or similar).....	13		
Creatinine.....	174	SPUTUM	
Hydrogen-ion concentration.....	21	Tubercle bacillus.....	24, 573
Incoagulable nitrogen.....	259	Pneumococcus.....	177
Sugar.....	1, 785	Other organisms.....	44
Urea nitrogen.....	268		
Uric-acid nitrogen.....	90	STOMACH OR DUODENAL CONTENTS	
Total nitrogen.....	233	Routine.....	1, 791
Hemoglobin.....	5, 748	Special.....	87
Chlorides.....	27		
Unclassified.....	869	SPINAL FLUID	
Coagulation time.....	3, 771	Wassermann.....	985
		Colloidal gold reaction.....	546
		Globulin test.....	1, 038

Consolidated marine hospital laboratory report—Continued

SPINAL FLUID—continued		WATER ANALYSIS	
Cell count.....	1, 026	Chemical.....	41
Bacteriological examination.....	136	Bacteriological.....	144
Other examinations.....	31		
BACTERIOLOGICAL EXAMINATIONS		MILK ANALYSIS	
Pus.....	1, 360	Chemical.....	94
Exudates.....	128	Bacteriological.....	80
Transudates.....	185		
Discharges—		ANIMAL INOCULATIONS	
Urethral.....	20, 292	For diagnosis.....	220
Other.....	1, 523	Preparation of immune sera..	2
T. pallidum—		PATHOLOGICAL EXAMINATIONS	
Dark field.....	1, 994	Autopsies.....	286
Smear.....	65	Tissue examinations.....	1, 165
Throat smears.....	1, 831		
Cultures—		VACCINES	
Throat.....	693	Autogenous.....	60
Other.....	857		
TYPHOID AND PARATYPHOID EXAMINATIONS		MISCELLANEOUS EXAMINATIONS	
Agglutination tests.....	342	Otherwise unclassified.....	2, 985
Feces.....	181		
Urine.....	135	Total examinations.....	258, 860

Consolidated report of surgical procedures at marine hospitals and other relief stations

Amputation, all or in part....	322	Kidney and bladder, operations on.....	106
Appendectomy.....	1, 057	Lymphadenectomy.....	60
Arthrectomy.....	4	Mastoid operations.....	53
Arthroplasty.....	16	Nerves, operations on.....	35
Arthrotomy.....	20	Osteotomy.....	65
Aspiration.....	486	Plastic repair.....	122
Blood vessels, operations on.....	122	Puncture of, unclassified.....	2, 322
Bone graft.....	19	Repair of, unclassified.....	97
Cauterization.....	326	Resection of, unclassified.....	129
Cholecystectomy.....	52	Sequestrotomy.....	22
Cholecystotomy.....	9	Sinusotomy.....	85
Circumcision.....	780	Skin grafting.....	60
Cystoscopy.....	1, 101	Spinal puncture.....	899
Dilatation of, unclassified.....	613	Stomach, operations on.....	80
Excision of, unclassified.....	1, 543	Submucous resection.....	410
Exploratory incision.....	177	Suture of minor wounds.....	7, 547
Extraction of teeth.....	28, 759	Testicle, operations on.....	350
Eye, operations on.....	240	Thyroidectomy.....	44
Foreign body, removal of.....	4, 033	Tonsillectomy.....	2, 796
Fracture, closed.....	1, 078	Turbinectomy.....	197
Fracture, open.....	225	Urethrotomy.....	63
Hemorrhoids.....	669		
Hernia.....	1, 940	Total.....	66, 147
Hydrocele.....	187	Miscellaneous.....	1, 521
Incision and drainage.....	6, 185		
Intestines, operations on.....	547	Grand total.....	67, 668
Joint dislocation.....	95		

(The above does not include 39,756 injections of salvarsan, arsphenamine, and kindred preparations.)

TABLE 1.—*Number of patients treated annually, 1868 to 1930*¹

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

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, 279,056; 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; and 1930, 6,817.

² In this year the practice of recounting out-patients applying for treatment in more than one calendar month was discontinued.

TABLE 2.—*Transactions at United States marine hospitals and other relief stations, fiscal year 1930*

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospital June 30, 1930	Number of days relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
Grand total.....	286, 167	46, 741	1, 120	4, 272	1, 547, 006	239, 426	871, 780	115, 892
FIRST-CLASS STATIONS								
MARINE HOSPITALS								
Baltimore, Md.....	11, 036	2, 079	54	219	76, 535	8, 957	37, 592	3, 068
Boston, Mass.....	8, 162	2, 135	37	143	53, 972	6, 027	26, 340	3, 970
Buffalo, N. Y.....	4, 283	936	29	80	29, 762	3, 347	12, 696	1, 922
Carville, La.....	1, 157	361	22	308	112, 923	796	1, 008	—
Chicago, Ill.....	42, 755	1, 423	38	150	64, 601	41, 332	83, 416	1, 853
Cleveland, Ohio.....	3, 976	1, 037	29	82	30, 744	2, 939	8, 253	1, 229
Detroit, Mich.....	3, 266	863	20	121	31, 206	2, 403	9, 902	1, 984
Ellis Island, N. Y.....	6, 733	6, 050	95	403	144, 227	683	1, 072	481
Evansville, Ind.....	472	383	10	69	23, 158	89	229	61
Fort Stanton, N. Mex.....	928	366	29	239	86, 450	562	2, 991	103
Key West, Fla.....	1, 106	579	14	84	30, 440	527	1, 940	117
Louisville, Ky.....	1, 176	859	26	77	27, 335	317	1, 239	417
Memphis, Tenn.....	1, 815	530	7	59	20, 545	1, 285	4, 941	1, 394
Mobile, Ala.....	3, 757	996	19	96	32, 876	2, 761	7, 626	2, 857
New Orleans, La.....	13, 121	4, 516	118	410	134, 512	8, 605	32, 877	6, 742
New York, N. Y.....	27, 130	—	—	—	—	27, 130	170, 062	20, 186
Norfolk, Va.....	8, 383	2, 596	74	235	81, 782	5, 787	19, 575	3, 516
Pittsburgh, Pa.....	2, 181	735	37	83	28, 523	1, 446	4, 453	818
Portland, Me.....	1, 652	847	25	66	24, 127	805	3, 304	335
Port Townsend, Wash.....	1, 208	907	29	100	35, 421	301	1, 215	72
St. Louis, Mo.....	1, 722	655	31	97	26, 689	1, 067	4, 648	1, 296
San Francisco, Calif.....	15, 125	3, 491	99	269	105, 758	11, 634	56, 144	3, 379
Savannah, Ga.....	4, 098	1, 813	45	161	58, 188	2, 285	6, 965	1, 803

TABLE 2.—Transactions at United States marine hospitals, etc.—Continued

	Total number of patients treated	Number of patients treated in hos- pitals	Died	Patients remain- ing in hospital June 30, 1930	Number of days relief in hospital	Number of patients furn- ished office relief	Number of times office relief was fur- nished	Number of phys- ical ex- amina- tions
FIRST-CLASS STATIONS—CON.								
MARINE HOSPITAL—contd.								
Stapleton, N. Y.	7,414	3,987	78	248	104,102	3,427	13,750	276
Vineyard Haven, Mass.	348	211	4	22	9,600	137	298	52
Contract overflow hospitals.	236	236	2	49	20,757			
Total.	173,240	38,591	971	3,870	1,394,233	134,649	512,536	57,931
SECOND, THIRD, AND FOURTH CLASS STATIONS, ETC.								
Aberdeen, Wash.	392	50			583	342	565	126
Albany, N. Y.	101	12	1	1	112	89	355	219
Anacortes, Wash.	170					170	307	27
Apalachicola, Fla.	77	11	1	1	119	66	177	
Ashland, Wis.	140	33	1		598	107	236	59
Ashtabula, Ohio	332	46	2		518	286	613	47
Astoria, Oreg.	474	85		2	977	389	1,316	172
Balboa Heights, Canal Zone.	921	359	7	16	5,312	562	624	
Bangor, Me.	35	3	1		155	32	72	68
Bath, Me.	7	2			51	5	80	1
Bay City, Mich.	33	2			2	31	121	
Beaufort, N. C.	565	106	1	1	956	459	2,266	68
Beaufort, S. C.	4					4	24	
Bellingham, Wash.	227	10		1	121	217	513	240
Biloxi, Miss.	161	15			97	146	187	159
Boothbay Harbor, Me.	48	8			94	40	110	21
Bridgeport, Conn.	25	15			206	10	13	
Brunswick, Ga.	56	4			43	52	74	17
Burlington, Iowa.	32	18	1	2	339	14	40	
Cairo, Ill.	606	140	4	6	2,144	466	1,262	73
Calais, Me.	5	1			7	4	4	
Cambridge, Md.	97	21	3		302	76	240	3
Cape May, N. J.	1,099	72			459	1,027	2,800	162
Charleston, S. C.	965	133	3	3	1,261	832	1,750	437
Chincoteague, Va.	148					148	310	7
Cincinnati, Ohio	93	28	1		473	65	125	199
Cordova, Alaska	156	42	1	1	528	114	241	6
Crisfield, Md.	1,141	14			73	1,127	2,668	11
Duluth, Minn.	743	84	3	2	1,182	659	928	181
Eastport, Me.	22				22	54	17	
Edenton, N. C.	38					38	48	2
Elizabeth City, N. C.	113	1			11	112	492	27
El Paso, Tex.	148	14	1	1	299	134	908	123
Erie, Pa.	449	55	2	3	560	385	1,728	620
Escanaba, Mich.	42	14		1	149	28	34	10
Eureka, Calif.	139	33	2	2	362	106	201	24
Everett, Wash.	243	32	1		361	211	419	41
Fall River, Mass.	123	6			28	117	320	43
Gallipolis, Ohio	114	47		4	988	67	206	
Galveston, Tex.	5,315	763	11	21	11,261	4,552	12,552	3,904
Gary, Ind.	62	1			2	61	128	12
Georgetown, S. C.	93					93	186	5
Gloucester, Mass.	520	23		1	218	497	1,506	160
Grand Haven, Mich.	136	15		1	185	121	180	50
Green Bay, Wis.	101	22			298	79	165	10
Gulport, Miss.	39	1			2	38	51	12
Hancock, Mich.	56	3			41	53	66	16
Hartford, Conn.	7	7			114			
Honolulu, T. H.	1,026	210	5	15	2,830	816	1,818	1,050
Houston, Tex.	1,503	263		8	4,312	1,240	3,195	2,012
Indiana Harbor, Ind.	90	3			17	87	155	
Jacksonville, Fla.	868	109	4	5	1,247	759	2,082	478
Juneau, Alaska	297	83		9	1,589	214	229	48
Ketchikan, Alaska	1,218	180		10	2,301	1,038	1,857	57
La Crosse, Wis.	57	8			69	49	128	44
Lee Hall, Va.	1,543					1,543	2,148	353
Lewes, Del.	317	27			341	290	817	10
Los Angeles, Calif.	1,528	514		23	9,984	1,014	9,835	1,117
Ludington, Mich.	208	17	1		165	191	622	40
Machias, Me.	29					29	58	19
Manila, P. I.	1,918	240	1	11	4,782	1,678	3,089	594
Manistee, Mich.	86	22	4		278	64	461	15
Manitowoc, Wis.	224	42	1	1	449	182	311	5
Marquette, Mich.	290	23		1	709	267	817	77
Marshfield, Oreg.	100	25		1	219	75	124	25
Menominee, Mich.	51	5			12	46	168	32
Miami, Fla.	364	39	4	2	439	325	599	467

TABLE 2.—Transactions at United States marine hospitals, etc.—Continued

	Total number of pa- tients treated	Num- ber of patients treated in hos- pital	Died	Patients remain- ing in hospital June 30, 1930	Number of days relief in hospital	Number of patients fur- nished office relief	Number of times office relief was fur- nished	Num- ber of phys- ical ex- amina- tions
FIRST-CLASS STATIONS—Con.								
MARINE HOSPITAL—contd.								
Milwaukee, Wis.	1,121	200	6	1	2,168	921	2,386	687
Morehead City, N. C.	185	55		1	715	130	535	5
Nantucket, Mass.	111	7			66	104	201	10
Nashville, Tenn.	53	3		1	57	50	189	82
Natchez, Miss.	326	74			979	252	799	20
Newark, N. J.	16	10			74	6	25	1
New Bedford, Mass.	305	14	1		116	291	567	172
New Bern, N. C.	223	71		1	732	152	231	37
New Haven, Conn.	145	23		2	238	122	202	107
New London, Conn.	533	45		2	591	488	872	117
Newport, Ark.	21	2				21	28	17
Newport, Oreg.	79	2			15	77	208	36
Newport, R. I.	275	32	2	2	296	243	466	55
Newport News, Va.	245					245	374	33
Nome, Alaska	25	3			98	22	33	91
Ogdensburg, N. Y.	31	2			54	79	167	10
Olympia, Wash.	33	2			14	31	87	55
Oswego, N. Y.	124	12			67	112	323	25
Paducah, Ky.	354	33	2	2	211	321	1,049	6
Panama City, Fla.	90	21	2	1	204	69	155	131
Pensacola, Fla.	457	88	3	3	946	369	1,099	11
Perth Amboy, N. J.	60	7	1		75	53	95	2
Petersburg, Alaska	265	20	1	1	129	245	1,020	387
Philadelphia, Pa.	5,970	572	9	15	6,324	5,398	19,834	6,130
Ponce, P. R.	102	39	1	4	1,292	63	188	23
Port Angeles, Wash.	229	30			109	199	464	93
Port Arthur, Tex.	1,576	112	1	5	1,161	1,464	3,205	173
Port Huron, Mich.	226	22	1		186	204	596	199
Portland, Oreg.	1,613	256	6	13	3,931	1,357	4,074	2,106
Portsmouth, N. H.	1					1	1	
Providence, R. I.	449	42	3	1	387	407	749	387
Provincetown, Mass.	118					118	288	49
Reedville, Va.	451					451	881	
Richmond, Va.	139	21			249	118	272	49
Rock Island, Ill.	2,556	18			209	2,538	7,918	2,261
Saginaw, Mich.	9	7				7	27	2
St. Thomas, Virgin Islands	75	9			248	86	253	1,133
San Diego, Calif.	361	41	2	4	1,183	320	1,045	9
Sandusky, Ohio	55	9	1		108	46	93	182
San Juan, P. R.	763	163	3	8	3,717	600	1,672	904
San Pedro, Calif.	5,819	435	14	14	5,303	5,184	11,371	165
Sault Ste. Marie, Mich.	1,358	209		2	2,114	1,149	2,071	9,908
Seattle, Wash.	5,309	212	9	7	2,939	5,097	17,633	12
Sheboygan, Wis.	73	3			18	70	179	3
Sitka, Alaska	107	6	1		176	101	156	10
Solomons, Md.	95	2			24	93	127	28
South Bend, Wash.	66	20		1	165	46	125	38
Southport, N. C.	490	9			41	481	621	27
Superior, Wis.	370	66	1	2	688	304	545	171
Tacoma, Wash.	407	41	1	1	586	366	726	246
Tampa, Fla.	945	83	3	1	912	562	867	268
Toledo, Ohio	657	87	2	3	968	570	1,328	60
Vicksburg, Miss.	310	33			193	277	1,154	11,290
Washington, D. C.	3,380	173	2	5	2,084	3,207	28,886	
Washington, D. C. (dental clinic)	1,316					1,316	16,450	9
Washington, N. C.	167	13			124	154	358	10
White Stone, Va.	526					526	2,410	21
Wilmington, Del.	14	4			48	10		115
Wilmington, N. C.	465	24		2	128	441	1,423	5
Wrangell, Alaska	52	13			282	39	96	
MISCELLANEOUS								
Curtis Bay, Md.	1,976					1,976	11,924	335
St. Elizabeths Hospital, Wash- ington, D. C.	139	139	1	132	44,620			
Special acting assistant surgeons for U. S. Coast Guard and Lighthouse Service	5,325	178	2	5	1,203	5,147	14,057	1,896
U. S. Coast Guard vessels and bases	35,678	157	1	3	1,717	35,521	127,705	4,161
Emergency	224	24			157	200	562	
Total	112,927	8,150	149	402	152,773	104,777	359,244	57,961
Grand total	286,167	46,741	1,120	4,272	1,547,006	239,426	871,780	115,892

TABLE 3.—Relief furnished at United States marine hospitals and other relief stations, fiscal year 1930, classified by beneficiary

Beneficiary	Class of station	Total number of patients treated	Number of patients treated in hospital	Died	Patients remaining in hospital June 30, 1930	Number of days relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
American seamen.....	First-class stations.....	93,424	21,428	617	2,249	844,719	71,996	324,569	13,875
	Other relief stations.....	46,844	5,703	119	291	113,974	41,141	103,355	9,650
	Total.....	140,268	27,131	736	2,540	958,693	113,137	427,924	23,525
Foreign seamen.....	First-class stations.....	607	388	10	11	8,986	219	643	12
	Other relief stations.....	115	58	1	1	881	57	120	45
	Total.....	722	446	11	12	9,867	276	763	57
U. S. Coast Guard.....	First-class stations.....	9,242	3,243	21	188	79,343	5,999	27,488	5,338
	Other relief stations.....	7,670	571	6	22	7,798	7,099	27,055	3,005
	Special acting assistant surgeons.....	5,189	175	1	5	1,181	5,014	13,630	1,878
	Coast Guard vessels and bases.....	35,678	157	1	3	1,717	35,521	127,705	4,161
	Emergency.....	175	22			140	153	456	
	Total.....	57,954	4,168	29	218	90,179	53,785	196,334	14,382
U. S. Bureau of Fisheries.....	First-class stations.....	20	8	1	1	216	12	71	
	Other relief stations.....	29	2			48	27	45	
	Total.....	49	10	1	1	264	39	116	
U. S. Army.....	First-class stations.....	246	60	1	3	689	186	572	123
	Other relief stations.....	72	9			66	63	149	179
	Total.....	318	69	1	3	755	249	721	302
U. S. Navy and Marine Corps.....	First-class stations.....	165	57		1	689	108	473	26
	Other relief stations.....	39	18		2	214	21	48	14
	Total.....	204	75		3	903	129	521	40
Mississippi River Commission.....	First-class stations.....	30	17	1	1	956	13	48	8
	Other relief stations.....	31	6			57	25	41	8
	Total.....	61	23	1	1	1,013	38	89	16

Seamen, U. S. Engineer Corps and Army Transport Service.	First-class stations.....	2,072	701	22	62	27,584	1,371	4,414	35
	Other relief stations.....	1,859	264	8	18	3,839	1,595	4,425	39
	Total.....	3,931	965	30	80	31,423	2,966	8,839	74
U. S. Lighthouse Service.....	First-class stations.....	1,014	288	12	26	9,630	726	2,499	106
	Other relief stations.....	1,033	115	1	5	1,660	918	2,472	114
	Special acting assistant surgeons.....	136	3	1		22	133	427	18
	Emergency.....	3					3	3	
	Total.....	2,186	406	14	31	11,312	1,780	5,401	238
U. S. Coast and Geodetic Survey.....	First-class stations.....	480	136		9	3,374	344	908	408
	Other relief stations.....	495	60	1	2	850	435	2,007	253
	Emergency.....	46	2			17	44	103	
	Total.....	1,021	198	1	11	4,241	823	3,018	661
U. S. Employees' Compensation Commission.....	First-class stations.....	49,913	1,733	11	139	45,195	48,180	123,643	17,018
	Other relief stations.....	10,034	857	7	40	15,945	9,177	60,621	6,246
	Total.....	59,947	2,590	18	179	61,140	57,357	184,264	23,264
U. S. Veterans' Bureau.....	First-class stations.....	6,767	6,560	234	740	207,786	207	2,550	8
	Other relief stations.....	50	16		1	446	34	116	29
	Total.....	6,817	6,576	234	741	208,232	241	2,666	37
U. S. Immigration Service.....	First-class stations.....	3,419	3,083	11	115	45,314	336	505	92
	Other relief stations.....	270	104	3	11	3,791	166	904	705
	Total.....	3,689	3,187	14	126	49,105	502	1,409	797
U. S. Public Health Service officers and employees.	First-class stations.....	5,141	516	7	16	6,691	4,625	23,398	936
	Other relief stations.....	1,226	6			103	1,220	12,202	119
	Total.....	6,367	522	7	16	6,794	5,845	35,600	1,055
Lepers.....	First-class stations.....	365	362	22	308	113,028	3	3	
	Other relief stations.....	4					4	6	
	Total.....	369	362	22	308	113,028	7	9	
Masters, mates, and pilots.....	First-class stations.....								4,773
	Other relief stations.....								2,176
	Total.....								6,949
Citizens' military training camps.....	First-class stations.....	149					149	355	201
	Other relief stations.....	212					212	565	309
	Total.....	361					361	920	510

TABLE 3.—Relief furnished at United States marine hospitals and other relief stations, fiscal year 1930, classified by beneficiary—Continued

Beneficiary	Class of station	Total number of patients treated	Number of patients treated in hospital	Died	Patients remaining in hospital June 30, 1930	Number of days relief in hospital	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
United States civil-service applicants and employees.	First-class stations.....								9,755
	Other relief stations.....								12,927
	Total.....								22,682
Postal employees.....	First-class stations.....								662
	Other relief stations.....								262
	Total.....								924
Alaska cannery workers.....	First-class stations.....								
	Other relief stations.....	695					695	695	9,361
	Total.....	695					695	695	9,361
U. S. Shipping Board, for crews.....	First-class stations.....								2,806
	Other relief stations.....								2,378
	Total.....								5,184
Applicants, U. S. Bureau of the Census.....	First-class stations.....								
	Other relief stations.....								2,738
	Total.....								2,738
Miscellaneous.....	First-class stations.....	186	11	1	1	33	175	397	1,749
	Other relief stations.....	1,022	2		1	24	1,020	2,094	1,347
	Total.....	1,208	13	1	2	57	1,195	2,491	3,096
Total.....	First-class stations.....	173,240	38,591	971	3,870	1,394,233	134,649	512,536	57,931
	Other relief stations.....	71,700	7,791	146	394	149,696	63,909	216,920	51,904
	Special acting assistant surgeons.....	5,325	178	2	5	1,203	5,147	14,057	1,896
	Coast Guard vessels and bases.....	35,678	157	1	3	1,717	35,521	127,705	4,161
	Emergency.....	224	24			157	200	562	
	Grand total.....	286,167	46,741	1,120	4,272	1,547,006	239,426	871,780	115,892

TABLE 4.—*Causes of admission for discharged patients and condition on discharge, United States marine hospitals and other relief stations, fiscal year 1930*

Diseases or condition	Number having specified diseases or injury ¹					Condition on discharge of patients for specified diseases or injury				
	Major condition for which admitted ²	Condition second in importance	Condition third in importance	Sequelae to major condition	Total number of persons having each specified disease or injury	Cured	Improved	Not improved	Died	Other conditions
Abnormalities and congenital malformations.....	53	-----	-----	-----	-----	11	24	1	-----	17
Blood and blood-forming organs, diseases and injuries of.....	61	-----	-----	-----	-----	5	31	-----	10	15
Bones and cartilages, diseases and injuries of.....	2,458	-----	-----	-----	-----	447	1,115	4	24	868
Circulatory system, diseases and injuries of:										
Heart diseases, valvular.....	338	227	74	5	644	2	171	1	80	84
Varicose veins.....	309	167	77	-----	553	76	169	-----	1	63
All others.....	1,264	-----	-----	-----	-----	124	729	4	160	247
Communicable and infectious diseases, not including tuberculosis and venereal:										
Conjunctivitis, granular trachomatous.....	17	1	-----	1	19	5	8	-----	-----	4
Dengue.....	3	1	-----	-----	4	3	-----	-----	-----	-----
Influenza.....	476	28	5	-----	509	228	185	-----	3	60
Malaria.....	462	47	16	-----	525	92	318	-----	3	49
Rheumatic fever, acute.....	94	13	2	3	112	22	49	-----	-----	23
Typhoid fever.....	61	3	-----	-----	64	31	16	-----	9	5
All others.....	609	-----	-----	-----	-----	322	213	-----	12	62
Dental.....	229	3,018	1,734	8	4,989	51	127	-----	1	50
Digestive system, diseases and injuries of:										
Appendicitis.....	1,024	195	57	-----	1,276	521	368	1	20	114
Gastritis.....	415	64	17	8	504	118	232	-----	1	64
Hemorrhoids.....	644	267	131	3	1,045	316	252	-----	1	75
All others.....	1,878	-----	-----	-----	-----	420	1,127	4	57	270
Ear, nose, and throat, diseases and injuries of:										
Deviation of nasal septum.....	347	216	87	-----	650	168	143	-----	-----	36
Otitis media.....	196	155	55	1	407	30	124	-----	1	41
Tonsillitis.....	2,843	906	262	1	4,012	1,338	1,190	-----	-----	315
All others.....	878	-----	-----	-----	-----	275	429	4	8	162
Endocrines, diseases and injuries of.....	232	-----	-----	-----	-----	23	127	1	10	71
Eye and adnexa, diseases and injuries of.....	569	-----	-----	-----	-----	133	282	5	1	148
Genito-urinary system, diseases and injuries of (exclusive of venereal):										
Nephritis.....	216	159	61	4	440	7	115	-----	49	45
All others.....	1,427	-----	-----	-----	-----	365	794	2	18	248
Hernia.....	1,741	347	111	-----	2,199	987	424	2	11	317
Joints and bursae, diseases and injuries of:										
Arthritis.....	865	229	69	341	1,504	92	613	3	3	154
All others.....	464	-----	-----	-----	-----	102	229	3	1	129
Leprosy.....	56	-----	-----	-----	-----	-----	23	-----	21	12
Lymphatic system, diseases and injuries of:										
Lymphadenitis.....	392	54	20	224	690	116	215	-----	-----	61
All others.....	33	-----	-----	-----	-----	11	15	-----	1	6
Muscles, fasciae, tendons and tendon sheaths, diseases and injuries of.....	1,300	-----	-----	-----	-----	290	697	-----	-----	313

¹ Except in the case of specific diseases, statistics are given only for the major condition for which admitted.² Represents number of discharges for each condition.³ Where sequelae were given, no third diagnosis was recorded.

TABLE 4.—*Causes of admission for discharged patients, etc.—Continued*

Diseases or condition	Number having specified diseases or injury					Condition on discharge of patients for specified diseases or injury				
	Major condition for which admitted	Condition second in importance	Condition third in importance	Sequelae to major condition	Total number of persons having each specified disease or injury	Cured	Improved	Not improved	Died	Other conditions
Nervous system, diseases and injuries of:										
Epilepsy without psychosis	70	12	6		88	1	38	3	2	26
Neuritis	266	84	20	8	378	33	183		1	49
All others	654					80	350	7	29	188
Obstetric and gynecological conditions	33					9	19			5
Parasitic diseases:										
Uncinariasis	27	72	22		121	7	17			3
All others	128					28	72			28
Poisonings and intoxications:										
Alcohol (ethyl) poisoning, acute	308	30	4		342	104	156		7	41
Alcoholism, chronic (without psychosis)	71	22	6		99	9	50		1	11
All others	143					49	48		3	43
Psychiatric diseases:										
Drug addiction without psychosis	23	14	6		43	1	11			11
All others	364					25	155	8	5	171
Respiratory system, diseases and injuries of (exclusive of tuberculosis):										
Asthma	219	74	18	1	312	5	163		2	49
Bronchitis	692	365	79		1,136	183	410	2	2	95
Pleurisy	265	100	31	28	424	42	164		8	51
Pneumonia	333	56	35	31	455	110	95		95	33
All others	47					5	27		4	11
Skin and its appendages, diseases and injuries of	933					273	457		12	161
Tuberculosis:										
Tuberculosis, pulmonary	1,140	100	41	4	1,285	2	285	9	242	602
Tuberculosis (otherwise unclassified)	59	41	11	26	137	5	25		7	22
Tumors:										
Carcinoma	231	34	9	2	276	16	47	4	90	74
All others	340					111	145	2	14	68
Venereal diseases:										
Chancroidal infections	946	123	20	450	1,539	268	480		1	197
Gonococcus infections	3,519	311	56	92	3,978	494	2,246		2	777
Syphilis	2,418	1,019	274		3,711	16	1,613		43	746
All others	42					10	21			11
Inoculations	7									7
Under observation	640									640
Miscellaneous:										
Cellulitis	317	58	14	56	445	113	138		2	64
All others	3,363					928	1,562	1	32	840
Total	39,552					9,658	19,561	71	1,110	9,152

NOTE.—This table does not include immigration patients discharged from United States marine hospital, Ellis Island, N. Y.

TABLE 5.—*Causes of death in United States marine hospitals and other relief stations during fiscal year 1930*

International List No.	Cause of death	Number of deaths
PART I		
<i>I. Epidemic, endemic, and infectious diseases</i>		
1	Typhoid and paratyphoid fever.....	10
5	Malaria.....	4
8	Scarlet fever.....	1
11	Influenza.....	3
20	Leprosy.....	20
24	Meningococcus meningitis.....	4
31	Tuberculosis of the respiratory system.....	228
32	Tuberculosis of the meninges and central nervous system.....	5
34	Tuberculosis of the vertebral column.....	1
35	Tuberculosis of the joints.....	1
36	Tuberculosis of other organs.....	2
37	Disseminated tuberculosis.....	12
38	Syphilis.....	44
40	Gonococcus infection.....	2
41	Purulent infection, septicemia.....	3
<i>II. General diseases not included in Class I</i>		
43	Cancer and other malignant tumors of the buccal cavity.....	4
44	Cancer and other malignant tumors of the stomach and liver.....	40
45	Cancer and other malignant tumors of the peritoneum, intestines, and rectum.....	18
46	Cancer and other malignant tumors of the female genital organs.....	1
49	Cancer and other malignant tumors of other or unspecified organs.....	38
50	Benign tumors and tumors not returned as malignant.....	3
51	Rheumatic fever, acute.....	1
54	Pellagra.....	2
55	Beriberi.....	1
57	Diabetes mellitus.....	8
58	Anemia or chlorosis.....	7
60	Diseases of the thyroid gland.....	2
65	Leukemia and Hodgkins disease.....	4
66	Alcoholism, acute and chronic.....	12
<i>III. Diseases of the nervous system and of the organs of special sense</i>		
70	Encephalitis.....	5
71	Meningitis.....	7
72	Tabes dorsalis (locomotor ataxia).....	1
73	Other diseases of the spinal cord.....	2
74	Cerebral hemorrhage, apoplexy.....	23
75	Paralysis without specified cause.....	9
76	General paralysis of the insane.....	1
78	Epilepsy.....	3
82	Neuralgia and neuritis.....	1
84	Other diseases of the nervous system.....	3
86	Diseases of the ear and of the mastoid process.....	4
<i>IV. Diseases of the circulatory system</i>		
88	Endocarditis and myocarditis (acute).....	4
89	Angina pectoris.....	1
90	Other diseases of the heart.....	173
91	Diseases of the arteries.....	31
92	Embolism and thrombosis (not cerebral).....	6
93	Diseases of the veins.....	1
95	Hemorrhage without specified cause.....	3
<i>V. Diseases of the respiratory system</i>		
97	Diseases of the nasal fossæ and their adnexa.....	1
99	Bronchitis.....	2
100	Broncho-pneumonia.....	25
101	Pneumonia.....	75
102	Pleurisy.....	7
105	Asthma.....	2
107	Other diseases of the respiratory system.....	10

TABLE 5.—*Causes of death in United States marine hospitals, etc.*—Continued

International List No.	Cause of death	Number of deaths
<i>VI. Diseases of the digestive system</i>		
111	Ulcer of the stomach and duodenum.....	23
112	Other diseases of the stomach.....	3
114	Diarrhea and enteritis.....	1
117	Appendicitis and typhlitis.....	20
118	Hernia.....	21
119	Other diseases of the intestines.....	1
120	Yellow atrophy of the liver (acute).....	2
122	Cirrhosis of the liver.....	6
124	Other diseases of the liver.....	9
126	Peritonitis without specified cause.....	4
127	Other diseases of the digestive system (cancer and tuberculosis excepted).....	8
<i>VII. Nonvenereal diseases of the genito-urinary system and adnexa</i>		
128	Nephritis, acute.....	5
129	Nephritis, chronic.....	45
131	Other diseases of the kidneys and adnexa.....	2
133	Diseases of the bladder.....	8
134	Diseases of the urethra, urinary abscess, etc.....	1
135	Diseases of the prostate.....	7
<i>IX. Diseases of the skin and of the cellular tissue</i>		
151	Gangrene.....	2
154	Other diseases of the skin and adnexa.....	4
<i>X. Diseases of the bone and of the organs of locomotion</i>		
155	Diseases of the bone (tuberculosis excepted).....	2
156	Diseases of the joints (tuberculosis and rheumatism excepted).....	3
<i>XIV. External causes</i>		
165	Suicide by solid and liquid poisons (corrosive substances excepted).....	1
172	Suicide by jumping from high places.....	1
177	Other acute accidental poisonings (gas excepted).....	2
179	Accidental burns (conflagration excepted).....	9
181	Accidental absorption of irrespirable irritating, or poisonous gas.....	1
183	Accidental traumatism by firearms.....	2
184	Accidental traumatism by cutting and piercing instruments.....	1
185	Accidental traumatism by fall.....	4
187	Accidental traumatism by machines.....	1
188	Accidental traumatism by other crushing (vehicles, railways, landslides, etc.).....	2
194	Excessive heat.....	1
201	Fracture (cause not specified).....	14
202	Other external violence.....	1
203	Violent deaths of unknown causation.....	2
<i>XV. Ill-defined diseases</i>		
205	Causes of death not specified or ill-defined.....	10
Total.....		1,110
Causes of death of immigrants at United States Marine Hospital, Ellis Island, N. Y., not included above.....		10
Grand total.....		1,120

TABLE 6.—Number of each class of beneficiary discharged from United States Marine hospitals and other relief stations during the fiscal year 1930

Group	Class of beneficiary															
	Total	Ameri- can seamen	For- eign seamen	U. S. Coast Guard	U. S. Army	U. S. Navy and Marine Corps	Missis- sippi River Com- mission	Seamen, U. S. Engineer Corps and Army transport service	U. S. Light- house Service	U. S. Coast and Geo- detic Survey	U. S. Em- ployees' Compen- sation Com- mission	U. S. Veter- ans' Bureau	U. S. Immi- gration Service	U. S. Public Health Service officers and em- ployees	Lepers	Miscel- laneous
Abnormalities and congenital malformations.	53	32		7				1	1		4	4		4		
Blood and blood-forming organs, diseases and injuries of.	61	29		4				5	1		1	20		1		
Bones and cartilages, diseases and injuries of.	2,458	1,517	24	137	7	10		26	11	5	518	185		16		2
Circulatory system, diseases and injuries of.	1,911	1,142	13	93	1	1	2	46	33	8	52	498	1	20		1
Communicable and infectious diseases, not including tuberculosis and venereal.	1,722	1,106	49	249	4	5		93	26	14	12	76	26	62		
Dental.	229	99	1	36				2	3	1	4	78	3	2		
Digestive system, diseases and injuries of.	3,961	2,251	44	483	23	22	6	106	52	20	22	853	8	69		2
Ear, nose, and throat, diseases and injuries of.	4,264	2,377	20	687	13	3		101	33	48	37	806	6	130		3
Endocrines, diseases and injuries of.	232	133		22				5	1	3	2	60		5	1	
Eye and adnexa, diseases and injuries of.	569	323	3	65	1	1		18	8		77	60	5	8		
Genito-urinary system, diseases and injuries of (exclusive of venereal).	1,643	1,067	25	129	1	6		41	20	9	18	290	19	17		
Hernia.	1,741	998	8	48		2	1	24	25	5	373	243	1	12		1
Joints and bursæ, diseases and injuries of.	1,329	733	9	97				26	15	6	119	312		12		
Leprosy.	56														56	
Lymphatic system, diseases and injuries of.	425	316	12	30		1		7	4	4	10	28	11	2		
Muscles, facie, tendons, and tendon sheaths, diseases and injuries of.	1,300	733	12	132	1	1	1	19	14	5	279	83	1	19		
Nervous system, diseases and injuries of.	990	538	13	71	1			19	14	2	49	268	6	9		
Obstetrics and gynecological conditions.	33	22	1									1	3	6		
Parasitic diseases.	155	82	2	20	1		1	5	1	1	1	41				
Poisonings and intoxications.	522	390	3	19		1		13	6	2	52	32		4		
Psychiatric diseases.	387	190	1	54				4	2		23	110	2			1
Respiratory system, diseases and injuries of (exclusive of tuberculosis).	1,556	960	17	126	3		2	46	12	3	10	349	2	25		

Skin and its appendages, diseases and injuries																	
■ of.....	933	582	18	138	-----	2	1	27	6	3	28	114	3	11	-----	-----	-----
Tuberculosis.....	1,199	846	11	38	-----	1	-----	22	6	-----	8	252	8	6	-----	-----	1
Tumors.....	571	347	-----	41	-----	-----	-----	9	7	3	13	145	-----	6	-----	-----	-----
Veneral diseases.....	6,925	5,071	89	684	1	3	4	156	47	30	25	526	275	11	-----	-----	3
Inoculations.....	7	3	-----	3	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----
Under observation.....	640	286	10	89	2	-----	-----	6	2	4	20	200	13	8	-----	-----	-----
Miscellaneous.....	3,680	2,286	45	344	6	12	1	65	33	12	647	180	5	41	-----	-----	3
Total.....	39,552	24,459	430	3,846	65	71	19	892	383	188	2,404	5,814	398	507	57	-----	19

TABLE 7.—Number of days in hospital for patients discharged during fiscal year 1930 from United States marine hospitals and other relief stations, by broad groups of conditions and class of beneficiary

Group	Class of beneficiary															
	Total	Ameri- can sea- men	Foreign sea- men	U. S. Coast Guard	U. S. Army	U. S. Navy and Marine Corps	Missis- sippi River Com- mis- sion	Seamen, U. S. Engineer Corps and Army transport service	U. S. Light- house Service	U. S. Coast and Geo- detic Survey	U. S. Em- ployees' Com- pensa- tion Com- mission	U. S. Vet- erans' Bureau	U. S. Immigra- tion Service	U. S. Public Health Service officers and em- ployees	Lepers	Miscel- laneous
Abnormalities and congenital malforma- tions	1,170	891	-----	72	-----	-----	-----	5	4	-----	107	65	-----	26	-----	-----
Blood and blood-forming organs, diseases and injuries of	2,666	1,304	-----	53	-----	-----	-----	208	38	-----	74	979	-----	10	-----	-----
Bones and cartilages, diseases and in- juries of	104,534	64,550	1,385	4,981	97	72	-----	1,365	273	120	19,223	12,071	-----	352	-----	45
Circulatory system, diseases and injuries of	91,839	65,249	195	1,940	5	8	299	1,994	911	152	1,283	19,409	3	372	-----	19
Communicable and infectious diseases, not including tuberculosis and venereal	27,133	17,953	908	2,756	41	37	-----	1,524	363	233	294	2,082	306	636	-----	-----
Dental	3,006	1,305	5	292	-----	-----	-----	8	178	1	42	1,060	110	5	-----	-----
Digestive system, diseases and injuries of	88,167	51,420	612	8,310	257	293	109	1,967	835	268	357	23,195	152	374	-----	18
Ear, nose, and throat, diseases and in- juries of	56,442	30,380	203	8,626	92	10	-----	1,205	310	553	522	13,856	33	646	-----	6
Endocrines, diseases and injuries of	11,736	7,084	-----	642	-----	-----	-----	367	48	48	14	3,198	-----	290	45	-----
Eye and adnexa, diseases and injuries of	12,593	7,713	70	1,164	8	12	-----	412	59	-----	1,244	1,796	40	75	-----	-----
Genito-urinary system, diseases and injuries of (exclusive of venereal)	46,930	30,355	664	2,566	14	169	-----	1,204	696	86	204	10,384	315	266	-----	7
Hernia	47,946	28,388	115	1,426	-----	37	32	810	556	136	8,601	7,575	3	244	-----	23
Joints and bursæ, diseases and injuries of	52,624	28,872	317	2,190	-----	-----	-----	1,424	259	121	4,632	14,571	-----	238	-----	-----
Leprosy	91,583	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	91,583	-----
Lymphatic system, diseases and injuries of	12,478	9,807	317	756	-----	15	-----	107	41	130	190	786	281	48	-----	-----
Muscles, facie, tendons and tendon sheaths, diseases and injuries of	24,579	14,436	162	1,817	6	6	12	360	147	71	4,890	2,501	26	145	-----	-----
Nervous system, diseases and injuries of	52,033	35,819	370	2,003	5	-----	-----	598	1,192	8	1,073	10,665	157	143	-----	-----
Obstetrics and gynecological conditions	732	647	4	-----	-----	-----	-----	-----	-----	-----	-----	18	28	35	-----	-----
Parasitic diseases	3,208	1,974	32	254	6	-----	9	84	2	39	6	802	-----	-----	-----	-----
Poisonings and intoxications	8,017	5,594	4	109	-----	1	-----	220	47	10	1,183	534	-----	15	-----	-----
Psychiatric diseases	14,133	7,550	4	2,262	-----	-----	-----	163	37	-----	531	3,305	272	-----	-----	9

Respiratory system, diseases and injuries of (exclusive of tuberculosis).....	39,348	23,333	940	2,914	60	-----	351	594	368	103	178	10,062	17	422	-----	6
Skin and its appendages, diseases and injuries of.....	23,353	15,851	379	2,238	-----	7	6	467	54	77	623	3,566	27	58	-----	-----
Tuberculosis.....	172,668	148,186	312	4,859	-----	27	-----	3,373	1,478	-----	2,857	10,699	525	247	-----	105
Tumors.....	22,288	15,587	-----	820	-----	-----	-----	345	657	31	203	4,473	-----	172	-----	-----
Venereal diseases.....	254,290	185,553	2,180	24,135	30	81	75	5,937	1,576	1,027	518	24,392	8,469	159	-----	158
Inoculations.....	56	44	-----	10	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	-----	-----
Under observation.....	4,570	1,901	68	736	9	-----	-----	48	8	18	144	1,496	97	45	-----	-----
Miscellaneous.....	55,860	34,343	764	3,632	65	153	5	709	456	187	9,984	5,160	31	365	-----	6
Total.....	1,325,982	836,089	10,010	81,563	695	928	898	25,498	10,593	3,419	58,977	189,000	10,892	5,390	91,628	402

NOTE.—Immigration patients at United States marine hospital, Ellis Island, N. Y., are not included in this table.

TABLE 8.—Classification of out-patient treatments furnished at United States marine hospitals and other relief stations, fiscal year 1930

Stations	General medical	Dental	Eye, ear, nose, and throat	Neuro-psychiatric	Tuberculosis	Surgical	Venereal diseases	Inoculations and vaccinations	Arsenicals	Physiotherapy and X ray	Total
Marine hospitals.....	46,266	131,954	32,780	110	156	120,909	71,114	3,560	17,798	87,889	512,536
Other relief stations.....	55,435	29,265	12,864	135	503	58,356	23,183	7,073	5,696	24,410	216,920
Special acting assistant surgeons.....	6,337	536	1,170	56	114	2,838	312	2,612	45	37	14,057
Coast Guard vessels and bases.....	52,126	21,281	11,771	109	87	22,805	9,536	8,792	201	997	127,705
Emergency.....	342	220	-----	-----	-----	-----	-----	-----	-----	-----	562
Grand total.....	160,506	183,256	58,585	410	860	204,908	104,145	22,037	23,740	113,333	871,780

TABLE 9.—Nativity by beneficiary of patients discharged from United States marine hospitals and other relief stations during the fiscal year 1930

Nativity	Class of beneficiary															
	Total	American sea- men	For- eign sea- men	U. S. Coast Guard	U. S. Army	U. S. Navy and Marine Corps	Missis- sippi River Com- mission	Seamen, U. S. Engineer Corps and Army trans- port serv- ice	U. S. Light- house Service	U. S. Coast and Geo- detic Survey	U. S. Em- ploy- ees' Com- pen- sa- tion Com- mission	U. S. Veter- ans' Bureau	U. S. Immi- gration Service	U. S. Public Health Service officers and em- ployees	Lepers	Miscel- laneous
United States.....	28,356	15,797	14	3,486	58	69	18	723	234	120	2,034	5,353	3	394	39	14
Hawaii, Panama, Philippine Islands, and Porto Rico.....	1,083	862	3	100	-----	1	-----	29	13	39	25	3	2	3	2	1
Armenia.....	11	6	-----	-----	-----	-----	-----	-----	-----	-----	2	3	-----	-----	-----	-----
Austria.....	199	160	-----	5	1	-----	-----	3	1	-----	13	10	4	2	-----	-----
Belgium.....	50	40	3	-----	-----	-----	-----	1	-----	-----	1	2	3	-----	-----	-----
Bohemia.....	6	5	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
Bulgaria.....	4	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	-----	-----	-----	-----
Canada.....	853	672	8	32	-----	-----	-----	1	7	6	18	78	21	9	-----	1
Central America.....	56	43	6	-----	-----	-----	-----	-----	-----	-----	-----	2	4	1	-----	-----
China.....	59	29	10	1	-----	-----	-----	-----	-----	-----	1	-----	15	1	2	-----
Cuba.....	19	16	1	1	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----
Denmark.....	393	321	12	18	-----	-----	-----	9	3	-----	2	1	27	-----	-----	-----
Egypt.....	15	11	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	-----	-----	-----
England.....	674	454	78	16	-----	-----	-----	7	7	1	22	25	48	14	-----	2
Finland.....	297	262	3	10	-----	1	-----	6	5	1	1	-----	2	4	2	-----
France.....	64	38	4	2	-----	-----	-----	2	2	-----	-----	7	8	3	-----	-----
Germany.....	835	647	53	32	-----	-----	1	15	2	3	24	23	31	3	1	-----
Greece.....	183	152	2	2	-----	-----	-----	9	-----	-----	3	7	6	1	1	-----
Holland.....	184	146	12	5	-----	-----	-----	2	5	1	1	2	10	-----	-----	-----
Hungary.....	26	19	-----	-----	-----	-----	-----	-----	-----	-----	3	4	-----	-----	-----	-----
Indies, East.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Indies, West.....	355	284	16	9	-----	-----	-----	8	4	9	2	11	11	-----	1	-----
Ireland.....	602	452	10	12	1	-----	-----	8	7	1	41	33	11	25	-----	-----
Italy.....	276	132	13	3	1	-----	-----	-----	3	-----	40	72	7	4	1	-----
Japan.....	21	8	3	-----	-----	-----	-----	-----	-----	1	1	-----	8	-----	-----	-----
Mexico.....	115	92	3	5	-----	-----	-----	-----	1	-----	4	2	4	1	3	-----
Norway.....	1,280	1,082	61	14	-----	-----	-----	15	32	3	11	4	54	4	-----	-----
Poland.....	185	111	2	4	-----	-----	-----	2	-----	-----	5	56	-----	5	-----	-----

Rumania.....	25	22									1	2			
Russia.....	270	193	1	4				5	6		7	43	6	4	1
Scotland.....	330	258	22	3				2	5		8	10	10	12	
Serbia.....															
South Africa.....	35	24	3	1				2			1		4		
South America.....	295	277	6	1							1	3	6		1
Spain.....	417	378	6	2				9	1		4		16		1
Sweden.....	716	607	23	12				12	11		16	7	20	8	
Switzerland.....	49	38		1				8			1	1			
Turkey.....	18	13	1									3	1		
All others.....	1,196	806	49	65	4			15	34	3	110	45	54	9	2
Total.....	39,552	24,459	430	3,846	65	71	19	892	383	188	2,404	5,814	398	507	57
															19

TABLE 10.—*Nativity by beneficiary of patients who died in United States marine hospitals and other relief stations during the fiscal year 1930*

Nativity	Class of beneficiary															
	Total	Amer- ican seamen	For- eign seamen	U. S. Coast Guard	U. S. Army	U. S. Navy and Marine Corps	Missis- sippi River Com- mission	Seamen, U. S. En- gineer Corps and Army transport service	U. S. Light- house Service	U. S. Coast and Geo- detic Survey	U. S. Em- ployees' Com- pen- sation Com- mission	U. S. Veter- ans' Bureau	U. S. Immi- gration Service	U. S. Public Health Service officers and em- ployees	Lepers	Miscel- laneous
United States.....	682	391	-----	22	1	-----	1	18	5	-----	14	209	-----	4	16	1
Hawaii, Panama, Philippine Islands, and Porto Rico.....	35	30	1	-----	-----	-----	-----	2	2	-----	-----	-----	-----	-----	-----	-----
Armenia.....	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Austria.....	5	4	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----
Belgium.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bohemia.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bulgaria.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Canada.....	29	27	-----	1	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----
Central America.....	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
China.....	2	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----
Cuba.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Denmark.....	16	13	-----	1	-----	-----	-----	1	-----	-----	-----	-----	1	-----	-----	-----
Egypt.....	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
England.....	24	18	1	-----	-----	-----	-----	1	-----	-----	-----	3	-----	-----	-----	1
Finland.....	21	21	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
France.....	3	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----
Germany.....	24	21	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	-----	-----	-----	1
Greece.....	4	4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Holland.....	5	5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Hungary.....	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----
Indies, East.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Indies, West.....	18	15	1	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	1	-----
Ireland.....	22	15	-----	-----	-----	-----	-----	1	1	-----	1	4	-----	-----	-----	-----
Italy.....	5	2	-----	-----	-----	-----	-----	1	-----	-----	-----	3	-----	-----	-----	-----
Japan.....	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----
Mexico.....	6	3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	2	-----
Norway.....	55	46	4	1	-----	-----	-----	2	-----	-----	-----	1	1	-----	-----	-----
Poland.....	10	7	-----	-----	-----	-----	-----	-----	-----	-----	-----	3	-----	-----	-----	-----
Rumania.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Russia.....	12	7						1		1	2			1	
Scotland.....	11	6	1					2			2				
Serbia.....															
South Africa.....															
South America.....	11	10	1												
Spain.....	13	12	1												
Sweden.....	33	29					2				1		1		
Switzerland.....	5	5													
Turkey.....															
All others.....	54	39		4		1	2	3	1		3	1			
Total.....	1,110	736	10	29	1	2	30	14	1	18	234	4	7	21	3

NOTE.—Immigration patients (10) who died at Ellis Island Marine Hospital are not included.

TABLE 11.—*Number of discharged American seamen admitted with specified diseases or injuries as a major condition during the fiscal year 1930*

Diseases or conditions	Number discharged	Diseases or conditions	Number discharged
Abnormalities and congenital malformations.....	32	Muscles, fasciæ, tendons, and tendon sheaths, diseases and injuries of.....	733
Blood and blood-forming organs, diseases and injuries of.....	29	Nervous system, diseases and injuries of:	
Bones and cartilages, diseases and injuries of.....	1,517	Epilepsy without psychosis.....	36
Circulatory system, diseases and injuries of:		Neuritis.....	148
Heart disease, valvular.....	197	All others.....	354
Varicose veins.....	202	Obstetric and gynecological conditions.....	22
All others.....	743	Parasitic diseases:	
Communicable and infectious diseases, not including tuberculosis and venereal:		Uncinariasis.....	13
Conjunctivitis, granular trachomatous.....	7	All others.....	69
Dengue.....	2	Poisonings and intoxications:	
Influenza.....	321	Alcohol (ethyl) poisoning, acute.....	271
Malaria.....	312	Alcoholism, chronic (without psychosis).....	55
Rheumatic fever, acute.....	76	All others.....	64
Typhoid fever.....	41	Psychiatric diseases:	
All others.....	347	Drug addiction without psychosis.....	19
Dental.....	99	All others.....	171
Digestive system, diseases and injuries of:		Respiratory system, diseases and injuries of (exclusive of tuberculosis):	
Appendicitis.....	562	Asthma.....	134
Gastritis.....	258	Bronchitis.....	406
Hemorrhoids.....	347	Pleurisy.....	169
All others.....	1,084	Pneumonia.....	227
Ear, nose, and throat, diseases and injuries of:		All others.....	24
Deviation, nasal septum.....	206	Skin and its appendages, diseases and injuries of.....	582
Otitis media.....	117	Tuberculosis:	
Tonsillitis.....	1,594	Tuberculosis, pulmonary.....	814
All others.....	461	Tuberculosis (otherwise unclassified).....	32
Endocrines, diseases and injuries of.....	133	Tumors:	
Eye and adnexa, diseases and injuries of.....	323	Carcinoma.....	157
Genito urinary system, diseases and injuries of (exclusive of venereal):		All others.....	190
Nephritis.....	118	Venereal diseases:	
All others.....	949	Chancroidal infections.....	701
Hernia.....	997	Gonococcus infections.....	2,617
Joints and bursæ, diseases and injuries of:		Syphilis.....	1,717
Arthritis.....	439	All others.....	36
All others.....	294	Inoculations.....	3
Lymphatic system, diseases and injuries of:		Under observation.....	286
Lymphadenitis.....	296	Miscellaneous:	
All others.....	20	Cellulitis.....	203
		All others.....	2,083
		Total.....	24,459

DIVISION OF VENEREAL DISEASES

In charge of Asst. Surg. Gen. TALIAFERRO CLARK

Continuing its work along lines previously established, this division, during the fiscal year 1930, directed its attention chiefly to three major activities—scientific research, cooperation with State and local health authorities, and the dissemination of information concerning the cause and prevention of the venereal diseases.

Research projects carried on included further investigation into the infectivity of cases of syphilis in the late stages of the disease; a study looking to the evaluation of methods now in general use in the treatment of syphilis; and further search for a biological product which might prove effective in the treatment of gonorrhea. A new project undertaken was concerned with the possible effect of mass treatment of syphilis, on a community wide scale, in preventing the spread of the disease through removal of sources of infection. Cooperation with State, local, and other health agencies in the conduct of prevalence surveys was continued and resurveys were undertaken in a number of communities previously studied for the purpose of obtaining data which might indicate the present trend of venereal infections in the United States. As in the past, cooperative activities included the detail of trained personnel to several States to assist them in developing venereal disease control work, and the collection and dissemination of information concerning the prevalence of syphilis and gonorrhea. Educational work was continued, through the publication and distribution of literature, the presenting of popular lectures and scientific papers by various members of the division staff, and the lending of motion-picture films to numerous agencies and institutions in different parts of the country.

SCIENTIFIC RESEARCH

The marked reduction in the incidence of syphilis in England, Germany, and other countries, where treatment of existing cases on an intensive scale has been made a major control measure during the past few years, indicates that the removal of sources of venereal infections through early and adequate treatment may prove to be our most effective weapon in the campaign being waged against syphilis and gonorrhea. With this thought in mind the division of venereal diseases has directed its research and demonstration activities during the past year chiefly toward the evaluation of treatment methods already in use, the development of better methods where possible, and the stimulation of interest on the part of State and local authorities and practicing physicians in treatment applied as a control measure.

COOPERATIVE CLINICAL STUDIES

In the annual report for 1929 attention was called to the organization of the Committee on Research in Syphilis. The participation of the service in a world-wide clinical study of syphilis in cooperation with the League of Nations also was mentioned. When the League of Nations study was undertaken, plans were made to conduct simultaneously, by utilizing the same sources of information, a more intensive clinical investigation of the results of treatment for syphilis in the United States. With the assistance of the Committee on Research in Syphilis, and the cooperation of five of the leading syphilis clinics in various sections of the country, this study was begun in the fall of 1929.

During the past year the five participating clinics—Johns Hopkins University, Baltimore; Mayo Clinic, Rochester, Minn.; University of Pennsylvania, Philadelphia; University of Michigan, Ann Arbor; and Western Reserve University, Cleveland—have submitted abstracts of 2,544 case records of patients who began treatment while in the early stages of syphilis. These cases had been under observation or treatment six months or longer.

A paper on Cutaneous and Mucosal Relapse in Early Syphilis and its Differentiation from Reinfection was prepared from these records to be presented by one of the clinic directors at the International Congress on Dermatology and Syphilology held at Copenhagen, Denmark, in August, 1930.

During the year the Public Health Service has received 8,236 abstracts of case records of patients treated for syphilis for six months or longer. This number is 82 per cent of the 10,000 case records which the Public Health Service undertook to assemble for the League of Nations for an analysis of the results of treatment of syphilis in the United States as compared with those obtained in four other nations.

STUDIES OF SYPHILIS AT THE MARINE HOSPITAL, STAPLETON, N. Y.

Studies undertaken during the preceding year were continued and new investigations along other lines were inaugurated.

Early in the year a study was completed and a report prepared for publication dealing with lymph gland transfer from human beings to rabbits for the purpose of testing this procedure as a practical criterion of cure. The study embraced 69 human cases of different types and of varying therapeutic history. The conclusions were that this method is not entirely suitable for the purpose outlined.

Recent experimental evidence dealing with the penetration of broken mucous membrane by the syphilis spirochete seemed to indicate that the entire subject of human prophylaxis could well be reviewed from an experimental standpoint. This work was undertaken and has been continued throughout the greater part of the year. Through the use of a highly virulent strain of *Treponema pallidum* and a contact method of infection, with careful guarding against injury to the mucous membrane, preliminary results have been obtained which tend to show the importance of moisture in the primary infection. The results obtained through protecting the animal with various dehydrating agents and the use of dry air tend

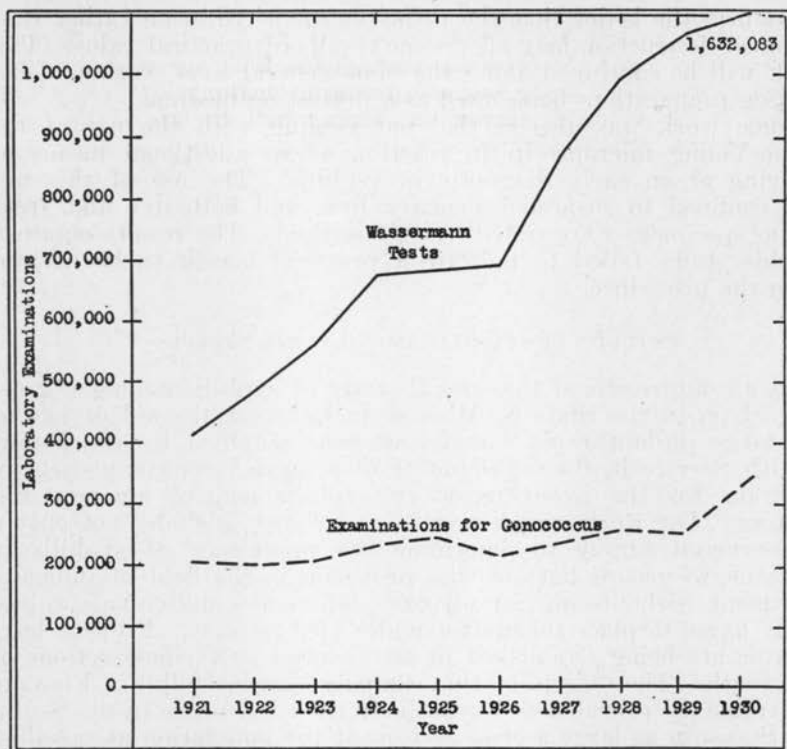


FIGURE 1.—Laboratory examinations reported by State health departments

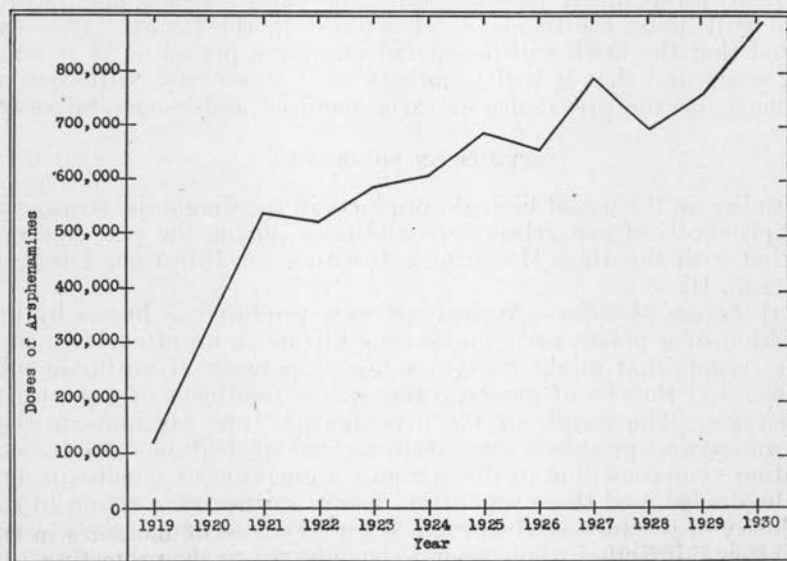


FIGURE 2.—Doses of arsphenamines distributed by State health departments

to confirm the belief that the principle of dehydration rather than chemical destruction may offer some results of practical value. This work will be continued along the same general lines, various dehydrating preparations being used as a protecting medium.

Some work was also carried out dealing with the use of the Kline-Young microprecipitin reaction as an additional means of arriving at an early diagnosis in syphilis. The use of this test was confined to suspected primary lues, and both dry and fresh serum specimens were tested by this method. The results obtained in this study failed to indicate a practical benefit to be derived from the procedure.

STUDIES OF SYPHILIS AMONG RURAL NEGROES

As an outgrowth of the special study of syphilis among negroes carried on in the State of Mississippi last year the aid of one of the large philanthropic foundations was obtained by the Public Health Service in the development of a much more comprehensive program for the investigation of syphilis control among rural negroes. The work, which now is under way, includes not only a Wassermann survey to determine the prevalence of syphilis in large negro groups but also the provision in the field of intensive treatment without cost for all cases where the individuals voluntarily agree to place themselves under medical care. Projects have been or are being established in six counties in various sections of the South. The objects of this campaign are as follows: First, to determine the prevalence of syphilis in the rural negro in the Southern States in as large a cross section of the population as possible; second, to demonstrate the practicability of mass treatment on a large scale under the conditions existing in rural communities; and third, to ascertain, if possible, what the effect of such mass treatment will be on the incidence of syphilis in the future. It is expected that the work will be carried on over a period of 18 months to 2 years and that it will terminate with a resurvey, with special emphasis on the prevalence of early acquired and congenital cases.

STUDIES ON GONORRHEA

Studies on the use of biologic products in the diagnosis, treatment, and prognosis of gonorrhea were continued during the year in cooperation with the John McCormick Institute for Infectious Diseases, Chicago, Ill.

(a) *Serum therapy*.—Antiserums were produced in horses by the injection of a potent toxic gonococcus filtrate in an attempt to produce serums that might contain a higher potency of antitoxic substances and thus be of greater value in the treatment of gonococcus infections. The results of the investigation thus far indicate that the antiserums produced were antitoxic and of definite value in controlling symptoms due to the systemic absorption of gonotoxin, but in the dosage used there was little, if any, antimicrobial action in the majority of instances. The practical use of antiserums in the absence of systemic infection would seem to be deferred to such time as artificial bodies can be produced with a high titer and a low protein content.

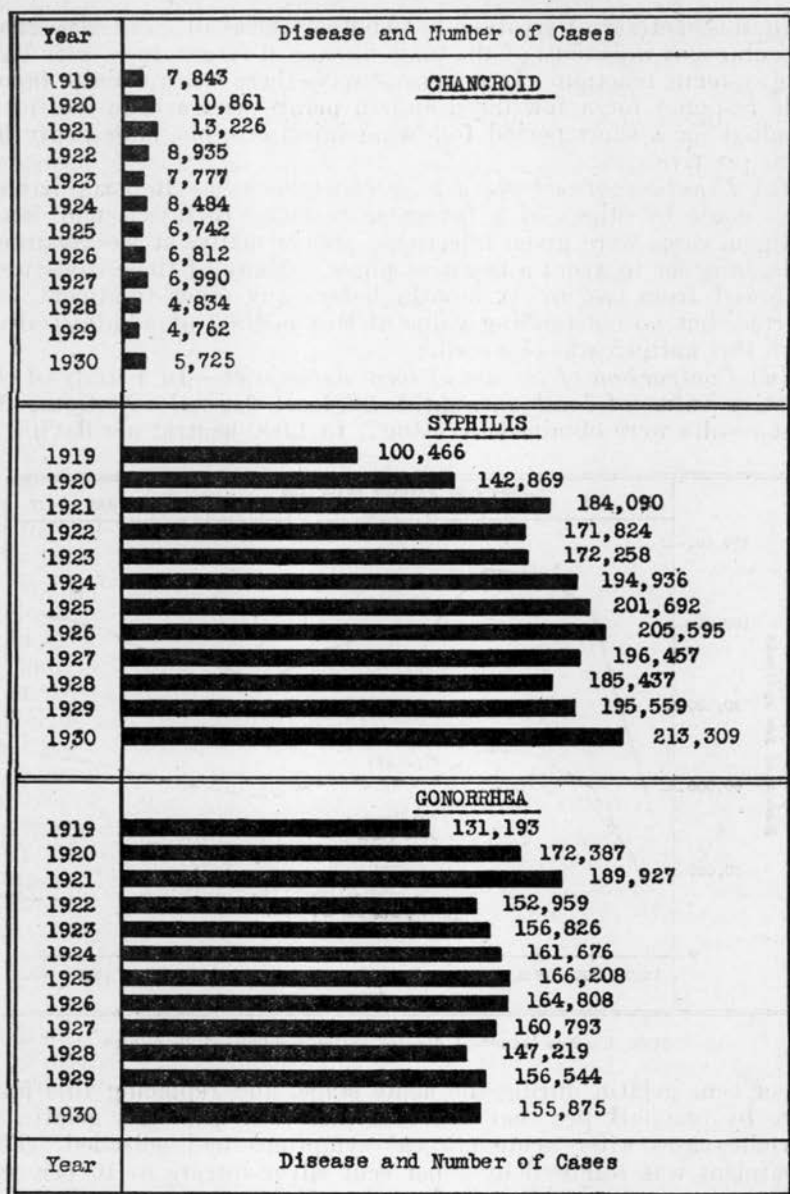


FIGURE 3.—Cases of venereal diseases reported to State health departments

(b) *Gonococcus boullion filtrates, intracutaneously and subcutaneously.*—It has been demonstrated that five to seven days' boullion filtrates contain a substance that produces skin reactions in dilutions as high as 1-500 to 1-1,000.

A series of treatments was given to patients who had previously received antiserum therapy but were still positive by smears. In this series a great many remained positive, indicating no apparent value

with this method of treatment. Another series of cases was given subcutaneous injections of the toxic filtrate in larger doses with definite systemic reaction. In many instances there was a definite favorable response for a few days, and in many cases a negative smear resulted for a short period following injections, but later many became positive.

(c) *Injection of ectoantigen intracutaneously.*—Reports having been made by others of a favorable response to injection of ectoantigen, cases were given injections intradermally, at weekly intervals, in order to avoid a negative phase. Many of these cases were followed from two to six months before any other treatment was started, but no outstanding value of this method of administration with this antigen was observed.

(d) *Comparison of the use of local antiseptics.*—In a study of the relative value of local antiseptics by local vaginal injections, the best results were obtained by using 1 to 1,000 neutral acriflavine in

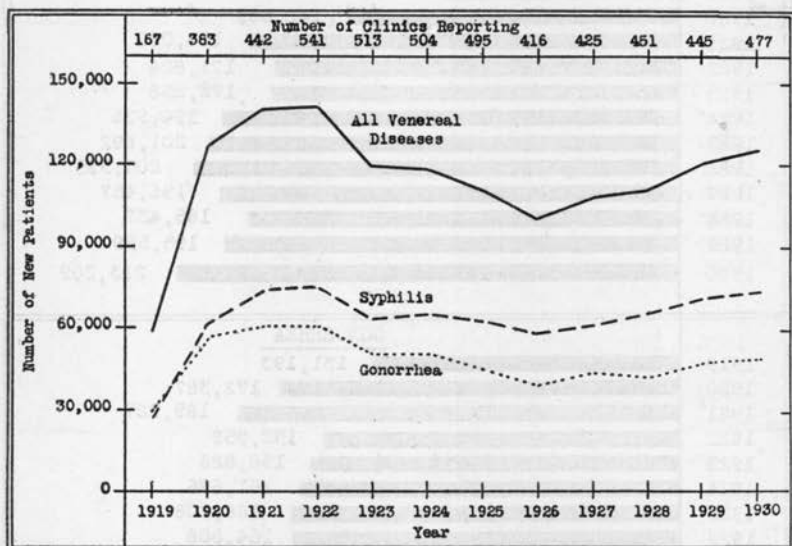


FIGURE 4.—New venereal disease patients admitted to clinics

7 per cent gelatin during the acute stage, and replacing this mixture by one-half per cent silver nitrate in 7 per cent gelatin in chronic cases after acute clinical symptoms had subsided. This treatment was followed by 1 per cent silver nitrate in 10 per cent gelatin in very persistent infections. Only average results were obtained with 1 per cent mercurochrome in lanolin base, metaphen in olive oil, merthiolate in salt solution, 1 per cent ammoniated mercury, and mercuric ointment with vaseline bases.

(e) *Use of live gonococci.*—Studies were also made with the use of live gonococci. In 20 cases the immediate effect, so far as control of the discharge and a decrease of positive smears were concerned, was not strikingly favorable; but in 4 to 6 weeks 80 per cent of the cases became gonococcus free and clinically cured.

The results of these investigations will be made the subject of a special report and published in Venereal Disease Information.

COOPERATIVE ACTIVITIES WITH STATES

The division continued to give assistance to State health authorities in the organization and development of venereal disease control work, through the detail of specially trained personnel. Members of the field staff were engaged temporarily on such duty in Mississippi, Tennessee, New Jersey, and New York at various times during the year.

Forty-four States cooperated with the service by making regular reports on the prevalence of venereal diseases and on control activities carried out.

A large increase in laboratory examinations for the diagnosis and treatment of syphilis and gonorrhea was noted. Of 1,991,827 such examinations made in the several States during the fiscal year, 1,632,083 were Wassermann tests and 349,259 were tests for gonorrhea. These figures compare with 1,332,545 for all examinations,

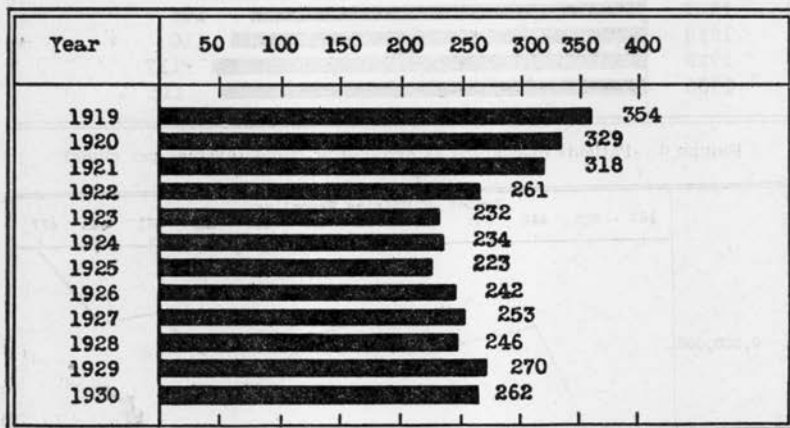


FIGURE 5.—New patients admitted to clinics (average per clinic)

1,073,339 for syphilis and 250,737 for gonorrhea, for 1929. Doses of arsphenamine distributed totaled 880,276, as against 751,279 for the preceding year.

NOTIFICATION OF CASES

The total number of cases of venereal disease reported by the States for the period July 1, 1929–June 30, 1930, was 374,909. The case rate per 1,000 inhabitants was 3.24, as compared with 3.09 for the preceding year. There were 213,309 cases of syphilis, 155,875 of gonorrhea, and 5,725 of chancroid. While the total number of cases reported exceeded the number for 1929, it is impossible to draw any conclusion as to whether or not the increase represents an actual increase in the prevalence of the diseases. It is of interest to note, however, that the number of cases of the venereal diseases reported for the calendar year 1929 exceeded the number of cases reported for that year for any other communicable disease, not excepting measles. It is also interesting to find that the number of cases of chancroid reported is almost negligible in comparison with the total for syphilis.

CLINIC ACTIVITIES

It has been gratifying to note that there was a considerable increase in the number of local clinics reporting treatment activities to the Public Health Service during 1930. The number of new admis-

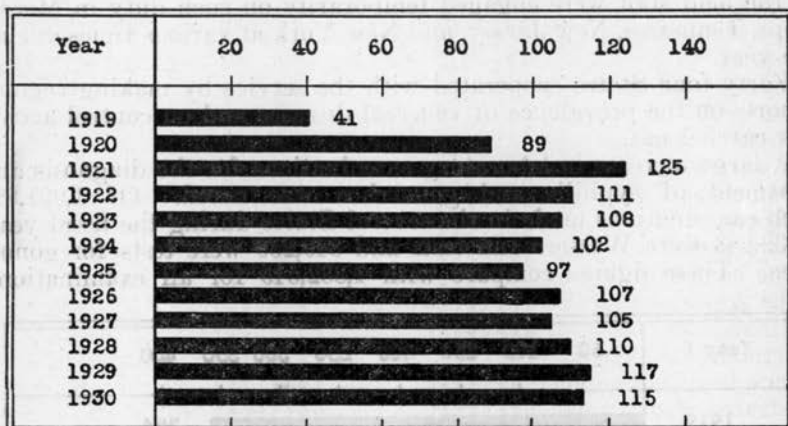


FIGURE 6.—Patients discharged as arrested or cured (average per clinic)

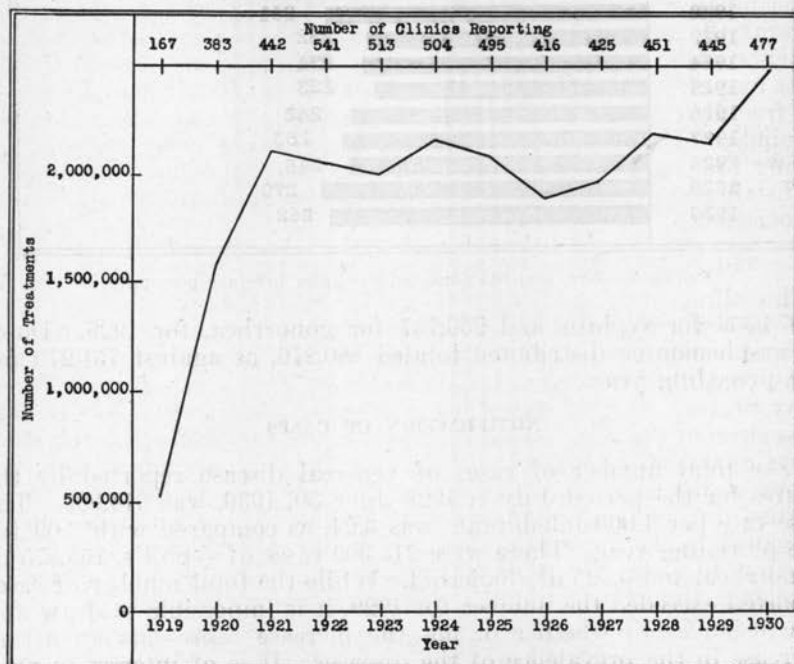


FIGURE 7.—Venereal disease treatments given in clinics

sions to clinics also increased, the total for 1930 being 124,842, as against 120,315 for 1929, resulting in an increase of 3.8 per cent. The number of new admissions to clinics and the number of treat-

ments given in clinics per 1,000 inhabitants are given for each reporting State in Table 5.

EDUCATIONAL ACTIVITIES

Approximately 153,000 pieces of free literature on the venereal diseases were sent out to individuals, institutions, or organizations in response to more than 14,254 requests. In addition to these, 86,911 copies of Venereal Disease Information, the monthly bulletin prepared by the division of venereal diseases, were distributed on subscription, of which number 52,876 copies were sent to paying subscribers. Nearly 65,000 single copies of reprints from this bulletin also were sold.

Numerous informal addresses were presented to selected groups by members of the division staff during the year, and several motion-picture films were kept almost constantly in circulation.

The campaign for prevention of venereal diseases among seamen in the American merchant marine, begun in the fiscal year 1929, was continued throughout 1930. Plain talks on venereal diseases, in understandable language, were given to thousands of patients in marine hospitals by medical officers of the service. These talks were illustrated with appropriate motion pictures and slides. Effort was made to impress upon these men the serious nature of syphilis and gonorrhea, the necessity for early and adequate treatment, and the advisability of using proper methods of prevention after exposure. Several thousand leaflets on prophylaxis were also distributed to patients. Steamship companies continued to cooperate in the movement by placing placards on board vessels and making arrangements for free distribution of prophylactic materials to members of crews. A number of companies were added to the list of firms cooperating during the course of the year. Much valuable assistance was given in distributing special literature for seamen by the Marine Library Association.

THE PUBLIC HEALTH SERVICE CLINIC AT HOT SPRINGS, ARK.

This clinic, maintained by the Public Health Service in cooperation with the National Park Service for the treatment of indigent cases of venereal disease which come to Hot Springs for the free baths, continued to serve a large number of individuals coming from many States. In this way a valuable contribution was made to the prevention of the interstate spread of syphilis and gonorrhea through the elimination of sources of infection in a group most likely to become a public menace. A total of 5,704 applicants for relief were handled during the year, and 79,180 treatments were administered, as against 75,519 for 1929, indicating an increase of 4.8 per cent. In addition to these treatments, 107,296 baths were given. Table 7 presents a summary of the activities of the clinic for 1930.

PREVALENCE STUDIES

In cooperation with the American Social Hygiene Association and with State and local public health organizations the Public Health Service, in its effort to establish basic prevalence and incidence rates for determining the future trend of venereal diseases in the United States, has continued the prevalence studies by means of the 1-day census method.

Although a survey in the city of New York, made during the past fiscal year, has brought the total population under survey to approximately 24,500,000, or 20 per cent of the total population of the country, the results of this survey made no change in the previously published rates and the consequent estimation of the number of persons constantly under medical care for syphilis and gonorrhea and the number of fresh infections occurring each year.

In the latter part of the present fiscal year two new surveys were made, one in Baltimore, Md., and five contiguous counties, and the other in Charleston, W. Va. In addition to these, resurveys were made in 14 localities which previously had been surveyed. Although the work of collecting these data is practically finished, the analyses will not be completed until some time in the next fiscal year.

TABLE 1.—Activities of State health departments for the control of venereal diseases, July 1, 1929, to June 30, 1930

State	Doses of arsphenamine administered	Laboratory examinations			Number of bulletins and pamphlets distributed	Lectures, films, exhibits, and slide showings	
		Wassermann (or other similar) tests	Microscopic examinations for <i>Treponema pallidum</i>	Microscopic examinations for gonococcus		Number	Average attendance
Total.....	880,276	1,632,083	10,485	349,259	660,810	3,034	74
Alabama.....	58,596	82,634	274	3,304	179		
Arizona.....							
Arkansas.....	12,116	18,306	633	6,119	1,550		
California.....	87,934	53,677	328	9,207	30,327		
Colorado.....	3,167	7,350	16	2,438	1,285	2	225
Connecticut.....	12,534	49,223	30	3,767	7,661	4	51
Delaware.....	4,474	3,666	48	1,061			
District of Columbia.....	6,348	3,880	16	1,698	2,797	5	244
Florida.....	10,497	5,512		1,679			
Georgia.....	48,601	56,505	8	1,850	7,984	67	125
Idaho.....	611	13,234		2,178	256		
Illinois.....	79,023	78,724	2,080	43,880	68,833	18	111
Indiana.....	27,300	35,472	28	6,397	19,946	9	123
Iowa.....	5,047	2,330		2,451	234		
Kansas.....	5,614	25,788	17	2,984	5,320		
Kentucky.....	17,669	7,222	310	2,219	6,300	7	157
Louisiana.....	8,204	7,817	133	1,034	1,071	8	69
Maine.....	2,702	5,584	7	4,121	2,861	49	94
Maryland.....	23,694	6,099	119	4,564	2,100	4	79
Massachusetts.....	73,079	86,430		7,073	51,050	96	57
Michigan.....	35,508	37,877	1,620	31,898			
Minnesota.....	6,509	51,054	43	9,673	2,540	5	18
Mississippi.....	10,192	34,723		683	10,384	17	149
Missouri.....	22,165	23,372	825	15,791	2,000		
Montana ¹							
Nebraska.....	5,736	23,372	101	5,382	148,784		
Nevada.....		2,918		1,064			
New Hampshire.....	3,344	5,545	16	1,647	1,544	1	370
New Jersey.....	33,202	30,831	294	6,146	47,912	383	99
New Mexico ¹							
New York.....	75,037	584,638	630	78,712	91,253	1,054	96
North Carolina ¹							
North Dakota.....	132	5,431	5	2,776	16,109	10	95
Ohio.....	48,822	89,101	2,120	10,024			
Oklahoma ²	1,598	272		263			
Oregon.....	3,164	8,996	57	5,069	1,644		
Pennsylvania.....	33,718	54,493		12,729	12,266	734	27
Rhode Island.....	10,433	9,581	43	4,410	16,707	13	239
South Carolina ³	4,546	1,384		2,696	1,725		
South Dakota.....		6,038					
Tennessee.....	34,345	41,084	292	6,249	7,036	9	13
Texas.....	22,535	8,226		10,412	4,401		
Utah ¹							
Vermont ⁴	912	2,074	10	853	501		
Virginia.....	7,519	5,704		2,301	13,137	53	69
Washington.....	7,178	41,142	203	22,491	378		
West Virginia.....	21,365	6,972	5	3,153	26,210	25	239
Wisconsin.....	5,106	7,802	168	6,804	46,525	451	53
Wyoming ¹							

¹ Not reporting.

² For 4 months.

³ For 8 months.

⁴ For 6 months.

TABLE 2.—Cases of venereal diseases reported to State health departments and reported venereal disease incidence per 1,000 inhabitants, July 1, 1929, to June 30, 1930

State	Syphilis	Gonorrhea	Chan- croid	All venereal diseases	
				Number of cases	Annual rate per 1,000 in- habitants
Total.....	213,309	155,875	5,725	374,909	3.24
Alabama.....	10,163	5,559	674	16,396	6.20
Arizona.....	187	208	7	402	.95
Arkansas.....	3,120	1,599	3	4,722	2.55
California.....	12,016	8,234	29	20,279	3.59
Colorado.....	585	739	17	1,341	1.30
Connecticut.....	1,976	1,637	—	3,613	2.25
Delaware.....	1,063	493	91	1,647	6.95
District of Columbia.....	913	485	17	1,415	2.91
Florida.....	4,599	1,299	70	5,968	4.07
Georgia.....	8,116	3,842	96	12,054	4.15
Idaho.....	105	237	—	342	.78
Illinois.....	11,927	18,275	435	30,637	4.02
Indiana.....	2,157	1,892	194	4,243	1.32
Iowa.....	789	532	13	1,334	.54
Kansas.....	1,068	943	1	2,012	1.07
Kentucky.....	3,652	3,993	218	7,863	3.00
Louisiana.....	2,491	1,201	146	3,838	1.83
Maine.....	535	915	8	1,458	1.82
Maryland.....	1,733	1,631	150	3,514	2.16
Massachusetts.....	2,964	5,632	—	8,596	1.97
Michigan.....	16,973	9,604	303	26,880	5.58
Minnesota.....	4,338	3,824	28	8,190	3.20
Mississippi.....	17,402	27,447	28	44,877	22.35
Missouri.....	3,861	2,588	72	6,521	1.80
Montana ¹	—	—	—	—	—
Nebraska.....	1,013	1,827	41	2,881	2.08
Nevada.....	0	0	0	0	—
New Hampshire.....	121	153	—	274	.69
New Jersey.....	6,833	4,320	63	11,216	2.80
New Mexico ¹	—	—	—	—	—
New York.....	44,698	14,407	—	59,105	4.69
North Carolina ¹	—	—	—	—	—
North Dakota.....	473	1,379	3	1,855	2.72
Ohio.....	6,858	4,493	1,375	12,726	1.92
Oklahoma ²	268	262	89	619	.78
Oregon.....	724	1,190	18	1,932	2.03
Pennsylvania.....	3,388	2,512	135	6,035	.63
Rhode Island.....	441	537	5	983	1.43
South Carolina ³	5,540	5,778	167	11,485	9.95
South Dakota.....	243	343	2	588	.85
Tennessee.....	4,780	3,013	490	8,283	3.17
Texas.....	3,932	1,804	499	6,235	1.07
Utah ¹	—	—	—	—	—
Vermont ⁴	195	176	—	372	2.07
Virginia.....	1,673	538	8	2,219	.92
Washington.....	2,082	3,080	79	5,241	3.36
West Virginia.....	15,844	5,274	137	22,255	12.88
Wisconsin.....	439	1,980	14	2,433	.82
Wyoming ¹	—	—	—	—	—

¹ Not reporting.² For 4 months.³ For 8 months.⁴ For 6 months.

TABLE 3.—Report of 7½ correctional institutions

New cases admitted:

Syphilis.....	5,704
Gonorrhea.....	3,259
Chancreid.....	187

Total..... 9,150

Cases discharged as arrested or cured..... 6,497

Treatments given..... 291,437

Doses of arsphenamines administered..... 32,863

Wassermann tests made..... 48,313

Microscopic examinations for gonococcus..... 9,131

TABLE 4.—*Report of cooperative clinics furnished through State health departments, from July 1, 1929, to June 30, 1930*

[Numbers in parentheses indicate the number of clinics included in the tabulation for the city]

State and city	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsenamines administered	Wassermann tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Total.....	4,893	124,842	73,805	48,230	2,807	54,748	2,440,626	645,012	405,470	198,540
Alabama.....	165	12,365	8,418	3,665	282	6,273	168,254	60,359	17,794	3,321
Anniston.....	12	261	237	24	---	196	4,403	1,986	766	27
Birmingham (2).....	23	3,151	2,368	783	---	2,051	48,135	19,080	5,819	1,168
Decatur.....	12	298	193	105	---	239	5,810	3,179	893	472
Florence.....	10	90	49	40	1	93	4,419	817	---	---
Gadsden.....	12	176	80	93	3	154	6,218	618	180	160
Huntsville.....	12	176	141	32	---	84	2,397	1,439	602	83
Mobile.....	12	1,905	1,278	600	27	523	27,557	8,735	1,312	122
Montgomery.....	12	1,052	716	251	85	612	7,887	3,076	564	---
Selma.....	12	136	132	4	---	57	2,003	720	329	---
Talladega.....	12	129	99	29	1	---	7,929	3,083	1,826	47
Tuscaloosa.....	12	411	274	137	---	321	7,622	1,376	476	187
Tusculum.....	12	93	58	31	4	43	1,868	722	39	28
Cooperative clinics.....	12	4,487	2,790	1,536	161	1,900	42,006	15,528	4,988	1,027
Arkansas.....	66	4,648	3,078	1,569	1	4,105	1,188,009	11,628	13,377	5,663
Fort Smith.....	12	41	39	2	---	21	493	322	175	29
Hot Springs (2).....	24	3,951	2,547	1,404	---	4,058	182,133	9,341	8,408	4,804
Little Rock.....	12	623	477	145	1	14	5,315	1,933	4,405	607
Pine Bluff.....	7	1	---	1	---	5	18	---	135	2
Texarkana.....	11	32	15	17	---	7	50	32	254	131
California.....	230	6,089	3,825	2,230	34	1,629	115,190	37,591	22,138	6,926
Alhambra.....	11	31	14	17	---	3	221	136	84	49
Azusa.....	6	7	6	1	---	---	98	58	48	2
Belvedere.....	6	37	32	4	1	7	526	367	164	14
Compton.....	6	11	10	1	---	---	205	129	39	2
El Monte.....	12	18	18	---	---	1	400	225	101	---
Fresno.....	12	133	100	32	1	45	2,198	857	239	44
Glendale.....	6	8	5	3	---	7	164	52	36	11
Huntington Park.....	4	7	4	3	---	---	168	89	24	6
Inglewood.....	6	24	13	11	---	5	300	101	31	27
Los Angeles (4).....	50	2,654	1,684	962	8	725	58,934	21,405	6,961	1,728
Monrovia.....	6	7	7	---	---	---	153	61	49	---
Oakland.....	7	257	140	117	---	65	6,119	1,843	2,019	157
Pomona.....	6	15	14	1	---	5	386	189	13	5
San Diego.....	12	388	212	176	---	461	5,284	1,202	1,191	314
San Fernando.....	6	34	19	15	---	12	622	400	153	19
San Francisco (4).....	38	1,643	1,134	486	23	182	29,416	7,844	9,301	3,252
San Jose.....	12	26	23	2	1	13	810	393	260	---
Santa Monica.....	6	23	17	6	---	2	308	202	104	9
Stockton.....	12	754	364	390	---	95	8,672	1,906	1,227	1,269
Whittier.....	6	12	9	3	---	1	206	132	94	18
Colorado.....	52	762	368	387	7	700	16,553	3,167	1,598	1,033
Colorado Springs.....	12	29	21	8	---	13	1,016	331	47	36
Denver (2).....	24	645	325	320	---	585	13,443	2,441	1,408	925
Fort Collins.....	4	34	---	33	1	37	922	16	6	25
Pueblo.....	12	54	22	26	6	65	1,172	379	137	47
Connecticut.....	88	1,097	537	555	5	491	26,543	6,589	1,665	1,352
Bridgeport.....	12	94	65	29	---	34	5,366	1,270	423	102
Hartford.....	12	370	149	218	3	243	7,475	2,049	431	591
New Britain.....	4	36	22	14	---	4	866	448	61	15
New Haven.....	12	185	91	94	---	57	8,956	1,344	479	204
New London.....	12	26	16	10	---	22	663	192	87	1
Norwich.....	12	17	16	1	---	---	353	351	35	8
Stamford.....	12	206	80	125	1	114	1,286	494	124	406
Waterbury.....	12	163	98	64	1	17	1,578	441	25	25
Delaware.....	36	873	419	363	91	386	5,916	4,001	581	124
Dover.....	12	381	58	282	41	239	2,349	860	---	---
Wilmington (2).....	24	492	361	81	50	147	3,567	3,141	581	124

¹Includes 107,296 baths given patients at the U. S. Public Health Service clinic at Hot Springs National Park, Ark.

TABLE 4.—*Report of cooperative clinics furnished through State health departments, from July 1, 1929, to June 30, 1930—Continued*

State and city	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arphen- amines administered	Wassermann tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chaneroid					
District of Columbia.....	12	1,411	909	485	17	36	18,287	6,348	3,886	1,698
Washington.....	12	1,411	909	485	17	36	18,287	6,348	3,886	1,698
Florida.....	30	4,050	2,958	1,021	71	1,313	20,857	10,497	5,512	1,679
Jacksonville.....	6	712	662	44	6	67	8,019	4,956	1,495	53
Miami.....	12	862	569	228	65	73	11,030	3,902	1,790	591
Tampa.....	12	2,476	1,727	749	---	1,173	1,808	1,639	2,227	1,035
Georgia.....	71	4,454	3,490	948	16	1,841	59,198	22,096	19,982	258
Atlanta (2).....	23	1,888	1,117	771	---	---	13,221	6,696	8,974	---
Augusta.....	12	197	90	96	11	121	11,961	2,895	3,016	193
Brunswick.....	12	966	965	1	---	916	23,396	4,130	4,964	1
Columbus.....	12	322	267	55	---	7	2,418	1,132	---	---
Savannah.....	12	1,081	1,051	25	5	797	8,202	7,243	3,028	64
Illinois.....	274	10,683	5,387	5,019	277	6,546	334,797	75,282	58,990	41,854
Alton.....	12	113	74	38	1	166	6,831	704	160	160
Cairo.....	12	295	243	52	---	203	5,426	2,497	563	21
Calumet City.....	12	12	8	4	---	---	2,185	---	---	---
Chicago (11).....	144	8,706	4,166	4,352	188	5,122	287,905	63,439	55,890	39,952
Decatur.....	12	286	167	115	4	197	6,095	2,416	397	315
East St. Louis.....	12	318	146	146	26	285	7,013	610	244	503
Evanston.....	12	183	148	35	---	116	2,782	917	355	112
La Salle.....	12	9	2	7	---	6	448	23	5	40
Litchfield.....	10	12	8	4	---	---	167	73	17	12
Peoria.....	12	228	155	61	12	142	4,436	1,699	505	206
Rockford.....	12	152	71	81	---	73	2,888	804	230	136
Springfield.....	12	369	199	124	46	236	8,621	1,472	616	397
Indiana.....	192	3,079	1,610	1,408	61	1,525	88,125	26,388	6,838	2,380
Anderson.....	12	177	78	99	---	62	6,127	68	233	159
Columbus.....	12	60	40	19	1	15	1,252	316	64	77
Elwood.....	12	16	13	3	---	1	1,114	2	25	9
Evansville.....	12	570	293	273	4	154	17,382	4,482	1,308	280
Fort Wayne.....	12	247	123	118	6	211	2,732	778	218	215
Hammond.....	12	157	111	39	7	93	4,500	1,011	439	11
Indianapolis.....	24	335	125	187	23	284	19,605	5,452	2,081	491
Kokomo.....	12	92	52	40	---	7	3,190	1,125	126	30
Madison.....	12	56	13	36	7	42	1,120	98	33	16
Marion.....	12	66	34	32	---	99	2,768	646	36	---
Muncie.....	12	340	177	153	10	269	8,464	4,677	198	133
New Castle.....	12	53	26	27	---	66	793	336	61	15
Richmond.....	12	68	53	15	---	5	2,383	753	217	39
South Bend.....	12	315	194	121	---	162	7,596	3,621	773	707
Terre Haute.....	12	527	278	246	3	55	9,099	3,023	1,026	198
Iowa.....	111	1,117	715	392	10	532	19,513	5,043	2,330	2,685
Belle Plaine.....	12	34	11	23	---	67	1,123	421	78	147
Burlington.....	11	24	16	8	---	15	512	78	35	19
Cedar Rapids.....	8	60	54	6	---	9	1,925	834	60	2
Clinton.....	9	58	19	34	5	60	639	187	97	63
Davenport.....	12	184	174	10	---	20	1,290	512	279	17
Des Moines.....	12	523	282	241	---	251	10,515	1,977	1,407	2,341
Dubuque.....	11	31	23	8	---	21	604	272	64	36
Keokuk.....	12	18	11	7	---	2	144	63	15	17
Ottumwa.....	12	91	72	15	4	33	1,142	661	159	18
Waterloo.....	12	94	53	40	1	54	1,619	38	136	25
Kansas.....	29	490	289	199	2	71	10,590	3,106	1,091	919
Kansas City.....	5	104	43	60	1	28	1,249	324	68	61
Topeka.....	12	150	85	64	1	12	4,667	1,383	581	394
Wichita.....	12	236	161	75	---	31	4,674	1,399	442	464

TABLE 4.—*Report of cooperative clinics furnished through State health departments, from July 1, 1929, to June 30, 1930—Continued*

State and city	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsenphenamines administered	Wassermann tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Kentucky.....	234	7,713	3,543	3,952	218	2,509	56,270	17,407	6,917	2,114
Ashland.....	12	156	105	51	—	—	3,657	1,595	274	329
Beverly.....	10	49	20	28	1	32	290	77	31	29
Cadiz.....	8	16	16	—	—	5	72	22	—	—
Clinton.....	10	4	4	—	—	2	53	35	14	—
Covington.....	7	90	45	45	—	124	590	191	166	144
Danville.....	5	43	41	2	—	20	175	139	49	1
Frankford.....	12	1,085	570	515	—	1,063	2,885	747	951	537
Fulton and Hickman.....	12	26	21	5	—	14	363	293	139	25
Georgetown.....	12	67	45	16	6	49	406	196	128	10
Hazard.....	2	77	64	13	—	33	1,195	586	103	15
Henderson.....	10	46	23	23	—	23	455	154	47	28
Inez.....	11	5	1	4	—	8	1	1	4	2
Jackson.....	2	21	11	10	—	8	131	54	59	11
Lexington.....	12	1,047	633	305	109	298	13,918	3,327	1,581	626
Louisville (2).....	17	4,096	1,297	2,702	97	587	25,919	6,247	1,837	159
Middlesboro.....	3	10	9	1	—	9	107	74	48	11
Neon and Whitesburg.....	8	64	60	4	—	15	245	189	153	5
Newport.....	12	93	60	31	2	17	1,042	373	130	53
Owensboro.....	9	55	50	4	1	4	441	327	196	15
Paducah.....	4	49	37	12	—	14	656	326	105	—
Pikeville.....	11	264	162	101	1	169	1,512	856	290	40
Pineville.....	11	144	144	—	—	—	736	619	228	—
Prestonsburg.....	12	98	53	45	—	—	689	484	166	42
Salersville.....	4	29	18	10	1	7	117	52	28	1
West Liberty.....	2	1	1	—	—	—	11	4	4	—
Wickliffe.....	5	8	8	—	—	—	48	35	18	—
Cooperative clinicians.....	11	70	45	25	—	16	556	354	146	31
Louisiana.....	12	712	489	223	—	13	3,959	3,396	805	358
New Orleans.....	12	712	489	223	—	13	3,959	3,396	805	358
Maine.....	80	583	216	354	13	241	9,676	2,702	1,138	675
Bangor.....	12	167	45	121	1	—	1,411	439	165	192
Bath.....	12	15	13	2	—	6	1,653	464	61	140
Bingham.....	12	30	4	24	2	21	512	173	49	22
Calais.....	3	42	13	29	—	91	1,003	299	57	17
Lewiston.....	12	118	29	84	5	4	493	197	51	69
Portland (2).....	24	193	105	83	5	119	4,362	1,115	701	215
Presque Island.....	5	18	7	11	—	—	242	15	54	20
Maryland.....	212	3,428	1,715	1,560	153	1,310	96,418	25,484	5,970	4,448
Annapolis.....	12	136	74	62	—	75	1,827	601	228	—
Baltimore (4).....	48	2,049	1,024	886	139	701	62,273	15,248	3,725	2,282
Bel Air.....	12	6	6	—	—	—	223	116	29	—
Cambridge.....	10	27	19	8	—	2	328	243	25	1
Cristfield.....	12	101	40	60	1	46	1,029	397	63	149
Cumberland.....	12	280	121	159	—	145	19,013	3,068	531	769
Easton.....	11	107	69	29	9	56	1,595	1,289	317	36
Ellicott City.....	12	61	39	20	2	3	993	513	145	76
Frederick.....	12	228	70	157	1	94	3,489	927	262	118
Hagerstown.....	21	168	99	69	—	100	2,142	1,339	433	837
Havre de Grace.....	12	25	25	—	—	2	218	218	19	—
Hughesville.....	6	48	11	36	1	26	690	246	20	21
Rockville.....	11	42	40	2	—	1	461	223	84	—
Salisbury.....	10	82	66	16	—	2	833	731	47	9
Westminster.....	11	68	12	56	—	48	1,304	325	42	150
Massachusetts.....	198	2,881	1,479	1,402	—	1,272	100,100	25,911	13,029	12,127
Boston (9).....	54	1,777	856	921	—	634	65,016	17,959	7,685	9,016
Brockton.....	6	56	37	19	—	23	1,597	872	391	63
Cambridge (2).....	12	18	10	8	—	1	232	123	32	5
Concord Junction.....	6	42	5	37	—	64	387	163	334	—
Fall River.....	6	49	7	42	—	42	2,621	397	87	472
Fitchburg.....	6	20	15	5	—	5	360	244	24	5
Foxboro.....	6	5	5	—	—	—	398	18	193	4

TABLE 4.—*Report of cooperative clinics furnished through State health departments, from July 1, 1929, to June 30, 1930—Continued*

State and city	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsenphenamines administered.	Wassermann tests made.	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Massachusetts—Contd.										
Haverhill	6	19	6	13	—	21	715	116	32	10
Holyoke	6	25	7	18	—	13	1,151	322	93	59
Lawrence	6	47	27	20	—	8	1,145	359	205	20
Lowell	6	121	59	62	—	80	2,987	761	391	999
Lynn	6	95	60	35	—	81	2,555	586	163	98
New Bedford	6	106	64	42	—	57	3,283	832	155	60
Pittsfield	6	21	18	3	—	1	462	215	15	19
Pocasset	6	3	2	1	—	3	13	13	15	1
Quincy	6	3	2	1	—	3	94	34	1	4
Rutland	6	1	1	—	—	1	32	31	118	—
Springfield	6	84	40	44	—	54	2,499	851	270	19
Taunton	6	26	26	—	—	34	186	78	300	—
Tewkesbury	6	212	131	81	—	61	9,067	527	1,253	809
Westboro	6	11	9	2	—	6	315	220	157	78
Worcester (3)	18	140	92	48	—	80	4,925	1,290	1,115	386
Michigan	165	8,897	4,519	4,223	155	2,162	178,843	35,285	35,977	31,770
Battle Creek	12	92	38	54	—	82	808	166	187	155
Detroit (4)	48	7,187	3,587	3,460	140	1,675	143,721	28,061	29,011	26,222
Flint	12	404	143	254	7	205	17,745	2,589	1,161	3,044
Grand Rapids	12	149	80	69	—	19	3,771	424	42	263
Highland Park	12	15	7	8	—	15	977	456	111	13
Jackson	12	205	144	59	2	1	2,229	958	1,464	248
Kalamazoo	12	74	56	17	1	2	1,007	563	171	67
Lansing	12	54	32	22	—	57	319	75	78	54
Pontiac (2)	22	648	373	270	5	92	7,346	1,570	3,574	1,533
Saginaw	11	69	59	10	—	14	920	178	178	171
Minnesota	47	960	435	521	4	442	24,794	5,340	2,685	1,047
Duluth	11	483	199	282	2	217	9,627	1,470	559	529
Minneapolis (2)	24	181	81	100	—	98	7,921	1,533	820	64
St. Paul	12	296	155	139	2	127	7,246	2,337	1,306	454
Missouri	122	2,710	1,821	880	9	975	70,619	11,485	9,929	3,093
Columbia	6	24	21	3	—	—	154	75	38	—
Flat River	12	46	32	14	—	4	1,056	345	178	29
Hannibal	12	60	39	21	—	22	405	323	129	51
Kansas City (3)	34	1,032	516	513	3	146	22,922	5,182	3,346	1,584
Springfield	12	250	118	127	5	254	3,607	810	407	232
St. Joseph	12	323	173	149	1	118	3,882	1,529	487	167
St. Louis (3)	34	975	922	53	—	431	38,593	3,221	5,344	1,032
Nebraska	39	898	409	480	9	234	23,475	5,518	4,751	3,015
Hastings	3	—	—	—	—	6	31	—	—	15
Lincoln	12	198	87	111	—	125	9,776	2,241	1,828	2,319
Omaha (2)	24	700	322	369	9	103	13,668	3,277	2,923	681
New Hampshire	41	127	74	52	1	49	6,860	1,986	583	280
Concord	7	27	22	5	—	32	393	168	86	15
Dover	11	8	7	1	—	3	288	100	26	12
Manchester	12	77	34	43	—	14	5,232	1,400	193	237
Nashua	11	15	11	3	1	—	947	318	278	26
New Jersey	285	5,633	3,463	2,122	48	1,609	124,667	33,016	16,784	5,460
Atlantic City	12	421	225	196	—	2	6,062	1,267	832	—
Bayonne	12	25	25	—	—	—	486	249	708	—
Camden	12	100	91	9	—	74	1,237	469	49	2
Elizabeth	12	302	202	99	1	198	5,054	1,446	1,069	507
Englewood	12	53	50	3	—	77	1,858	141	476	178
Greystone Park	12	104	60	44	—	33	2,035	1,253	98	15
Hackensack	11	116	100	16	—	59	1,541	752	203	66
Jersey City	12	244	128	110	6	66	9,305	3,979	1,062	666
Long Branch	12	127	124	3	—	14	2,574	584	380	152
Montclair	12	130	123	7	—	—	2,877	1,709	784	40
Morristown	12	68	41	27	—	11	570	428	244	37
Mount Holly	8	30	28	2	—	18	205	201	452	2
Newark	12	2,579	1,336	1,214	29	682	58,295	12,494	5,236	2,797

TABLE 4.—Report of cooperative clinics furnished through State health departments, from July 1, 1929, to June 30, 1930—Continued

State and city	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsenphenamines administered	Wassermann tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
New Jersey—Contd.										
New Brunswick.....	12	120	78	42	—	33	1,491	875	95	49
Orange.....	12	297	222	69	6	218	5,569	2,155	3,099	240
Passaic.....	12	61	43	17	1	—	1,236	478	152	1
Paterson (2).....	24	276	139	137	—	9	6,800	2,042	579	219
Plainfield.....	12	121	103	14	4	39	1,946	571	263	16
Salem.....	12	50	45	5	—	21	1,194	426	113	5
Somerville.....	12	27	24	3	—	1	504	131	27	1
Summit.....	2	1	1	—	—	—	31	11	—	—
Spring Lake.....	12	24	24	—	—	4	831	338	137	1
Trenton.....	12	325	229	95	1	42	11,729	952	678	443
Weehawken.....	12	32	22	10	—	8	1,237	65	48	23
New York.....	587	6,233	4,129	2,064	40	3,351	166,603	45,800	20,921	8,072
Albany (4).....	47	388	218	166	4	126	12,484	2,503	642	222
Amsterdam.....	12	36	15	14	7	30	1,108	509	55	6
Auburn.....	12	14	8	6	—	7	599	95	89	47
Beacon.....	12	—	—	—	—	3	25	19	116	—
Binghamton.....	12	80	80	—	—	137	5,921	1,930	591	43
Buffalo (2).....	36	2,007	1,487	505	15	948	40,828	6,519	10,119	5,295
Cohoes.....	8	14	6	6	2	7	165	87	14	—
Corning.....	11	23	20	3	—	14	653	429	53	6
Cortland.....	6	38	19	19	—	46	231	159	95	17
Dunkirk.....	12	11	9	2	—	7	315	134	24	4
Elmira.....	12	123	75	48	—	102	3,283	1,081	224	45
Endicott.....	9	34	19	14	1	13	236	166	75	69
Glens Falls.....	12	63	27	36	—	—	2,598	982	141	84
Gloversville.....	12	27	20	7	—	11	1,282	590	66	21
Hornell.....	12	27	21	6	—	42	424	51	66	12
Ithaca.....	12	28	24	4	—	13	606	261	20	2
Jamestown.....	12	80	37	43	—	41	2,600	1,081	240	106
Little Falls.....	11	1	1	—	—	1	108	47	3	—
Mineola.....	12	67	67	—	—	10	926	875	137	—
Mount Vernon.....	12	85	65	20	—	35	1,416	697	214	24
Newburgh.....	10	46	35	11	—	2	610	200	20	4
New Rochelle.....	12	231	150	78	3	180	4,461	771	411	250
Niagara Falls.....	12	129	94	35	—	116	4,344	1,217	291	82
Olean.....	12	46	20	26	—	33	627	130	38	1
Oswego.....	12	27	15	12	—	21	1,470	904	55	34
Plattsburg.....	12	15	8	7	—	2	354	153	21	1
Port Chester.....	10	33	27	5	1	103	1,371	578	96	12
Poughkeepsie.....	12	87	73	14	—	48	2,072	820	169	54
Rochester (7).....	72	802	593	209	—	431	33,816	14,695	3,662	405
Rome.....	12	39	26	13	—	23	1,115	329	115	26
Salamanca.....	11	14	13	1	—	15	260	116	38	7
Saratoga Springs.....	11	74	54	14	6	9	909	353	87	16
Schenectady (2).....	24	157	96	60	1	45	3,061	798	169	35
Syracuse.....	12	824	325	499	—	339	16,467	1,058	1,392	483
Troy.....	12	81	42	39	—	77	3,245	1,310	243	99
Utica.....	12	139	101	38	—	108	7,066	1,517	605	102
Watertown.....	12	62	58	4	—	6	2,010	745	95	5
Wellsville.....	11	15	12	3	—	17	508	173	22	5
White Plains.....	10	54	50	4	—	49	380	248	36	—
Yonkers.....	12	212	119	93	—	134	6,651	1,470	372	448
North Dakota.....	11	34	7	27	—	28	573	140	54	166
Minot.....	11	34	7	27	—	28	573	140	54	166
Ohio.....	412	10,929	6,131	4,255	543	3,286	183,765	50,882	31,304	9,949
Akron.....	12	845	331	366	148	209	14,711	3,998	1,501	1,148
Alliance.....	7	8	8	—	—	1	91	90	15	—
Canton.....	12	106	82	24	—	8	1,810	520	299	66
Chillicothe.....	12	7	7	—	—	2	80	80	5	—
Cincinnati (2).....	23	2,165	1,483	651	31	22	27,996	6,213	5,566	449
Cleveland (10).....	129	4,243	2,053	1,839	351	1,456	86,814	21,825	14,953	6,301
Columbus (3).....	36	1,009	657	346	6	869	12,546	2,922	3,904	1,016
Dayton (2).....	24	753	466	283	4	122	9,944	4,186	1,083	56
East Liverpool.....	12	94	55	38	1	52	2,241	568	177	186
Hamilton.....	11	33	33	—	—	39	278	278	83	18
Lakewood.....	12	7	7	—	—	—	199	76	47	29
Lima.....	12	44	33	11	—	—	1,326	485	40	9
Marion.....	8	19	16	3	—	9	418	152	64	1

TABLE 4.—*Report of cooperative clinics furnished through State health departments, from July 1, 1929, to June 30, 1930—Continued*

State and city	Total monthly reports received	New cases reported				Cases discharged as arrested or cured	Treatments given	Doses of arsenphenamines administered	Wassermann tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Ohio—Continued.										
Middleton	7	36	26	10		1	406	225	75	7
Portsmouth	12	154	154			125	1,832	1,488	271	
Port Clinton	12	11	5	5	1		68	35	69	5
Springfield (2)	24	213	155	58		198	4,977	1,500	754	349
Toledo (2)	23	951	400	550	1	115	13,273	4,504	1,034	218
Youngstown (2)	24	231	160	71		58	4,755	1,737	1,364	91
Oklahoma	11	1,124	611	424	89	422	15,261	3,971	3,272	450
Oklahoma City	4	619	268	262	89	269	7,079	1,598	272	263
Picher (Bureau of Mines)	7	505	343	162		153	8,182	2,373	3,000	187
Oregon	12	478	316	158	4	160	6,911	2,345	1,115	1,072
Portland	12	478	316	158	4	160	6,911	2,345	1,115	1,072
Pennsylvania	369	4,115	2,359	1,637	119	3,089	33,189	22,233	6,778	
Allentown	3	50	40	10		6	354		230	
Altoona	9	81	57	24		85	2,475	1,023	117	
Beaver Falls	9	59	34	25		95	778	434	95	
Bedford	10	33	22	11		13	231	231	105	
Bellefonte	1	5	5				22	16		
Bethlehem	9	112	84	26	2	98	1,053	845	185	
Butler	9	29	13	15	1	23	211	199	61	
Carlisle	7	18	17	1			297	268	35	
Chambersburg	9	104	65	39		2	304	273	78	
Coatesville	9	52	34	18		7	428	235	79	
Connellsville	9	65	47	18			471	327	95	
Du Bois	9	50	28	22		61	616	480	132	
Easton	9	46	30	15	1		340	297	137	
Erie	9	184	95	89		181	1,885	1,111	634	
Hazleton	9	23	16	7		26	333	143	82	
Huntingdon	9	42	20	22			185	169	35	
Johnstown	9	199	108	87	4	57	1,187	1,044	251	
Lancaster (2)	18	71	51	20		24	915	427	133	
Lebanon	9	20	18	2		98	189	92	58	
Lewistown	9	51	22	29		43	253	253	55	
Lock Haven	5	18	18				60	60	8	
McKeesport	9	117	54	58	5	148	1,241	537	221	
Meadville	8	29	29				165	152	89	
Mifflintown	1	2	1	1		2			4	
New Castle	9	57	49	8		54	317	107	75	
Norristown	9	43	39	4		42	549	383	121	
Oil City	1	4	3	1			10	8	4	
Philadelphia	9	63	10	53		49	90	20	17	
Pittsburgh	9	639	368	269	2	567	4,103	3,168	665	
Reading (2)	10	435	157	262	16	308	424	35		
Rochester	9	19	19			15	300	299	57	
Seranton (2)	14	263	77	130	56	297	3,522	1,409	812	
Shamokin	9	69	47	22		248	899	847	152	
Sharon	8	44	39	5			258	256	24	
Stroudsburg	9	13	2	10	1	1	49	38	39	
Sunbury	9	58	32	26		33	475	415	129	
Tunkhannock	2									
Uniontown	8	110	108	2		9	767	354	175	
Washington	9	124	79	38	7	60	1,381	878	149	
West Chester	8	54	37	15	2	14	285	242	119	
West Grove	4	12					69	60		
Wilkes-Barre (2)	18	369	164	185	20	325	4,032	3,708	1,764	
Williamsport	9	82	58	22	2	2	723	625	72	
York	9	197	151	46		36	943	756	224	
Rhode Island	72	651	365	284	2	286	17,694	5,201	8,698	4,803
Newport	12	19	15	4		24	429	97	55	10
Pawtucket	12	73	45	28		26	3,470	834	283	90
Providence (3)	36	528	287	241		205	13,271	4,134	8,293	4,676
Woonsocket	12	31	18	11	2	31	524	136	67	27

TABLE 4.—*Report of cooperative clinics furnished through State health departments, from July 1, 1929, to June 30, 1930—Continued*

State and city	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsenphenamines administered	Wassermann tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
South Carolina.....	22	1,732	943	738	51	927	11,016	4,385	1,172	2,696
Columbia.....	8	312	214	63	35	189	1,822	789	351	220
Orangeburg.....	6	250	140	110	—	97	1,602	1,225	245	—
Spartanburg.....	8	1,170	589	565	16	641	7,592	2,371	576	2,474
Tennessee.....	209	6,080	3,793	1,868	419	2,147	125,442	34,259	35,672	5,356
Bolivar.....	1	4	4	—	—	—	26	22	7	—
Cleveland.....	12	46	23	23	—	32	873	323	127	1
Dresden.....	7	18	13	5	—	7	65	43	5	2
Dyersburg.....	9	46	26	15	5	15	1,149	521	87	54
Elizabethton.....	10	37	36	1	—	7	263	235	59	1
Franklin.....	10	23	17	6	—	18	208	138	82	14
Gallatin.....	3	13	11	2	—	4	67	55	11	1
Humboldt.....	12	56	49	7	—	34	1,127	460	94	11
Knoxville.....	12	1,683	878	732	73	161	30,528	8,457	2,794	1,892
Lebanon.....	9	7	5	2	—	1	208	53	6	6
Martin.....	10	51	46	5	—	14	339	228	70	1
Maryville.....	11	18	18	—	—	3	332	166	109	5
Memphis.....	10	1,475	980	397	148	934	36,825	10,571	18,197	834
Milan.....	12	48	47	—	1	11	659	410	73	3
Murfreesboro.....	12	67	67	—	—	16	606	540	137	—
Nashville (2).....	22	2,244	1,403	650	191	805	48,939	10,360	13,163	2,459
Ripley.....	12	26	26	—	—	—	420	318	92	—
Tiptonville.....	12	81	78	3	—	24	942	598	306	28
Trenton.....	12	71	60	11	—	50	1,557	583	196	25
Union City.....	11	66	56	9	1	11	309	178	57	19
Virginia.....	40	1,987	1,511	471	5	131	16,122	7,519	5,138	2,301
University.....	2	61	61	—	—	—	—	—	—	—
Danville.....	12	155	131	23	1	34	1,130	693	640	38
Petersburg.....	12	363	299	64	—	50	3,877	2,470	833	189
Richmond.....	12	1,371	983	384	4	25	10,909	4,150	3,590	2,074
Newport News.....	2	37	37	—	—	22	206	206	75	—
Washington.....	36	1,432	753	666	13	853	27,442	7,178	22,172	19,472
Seattle.....	12	1,070	525	532	13	555	18,586	5,145	18,587	16,970
Spokane.....	12	246	153	93	—	239	6,045	945	1,233	1,208
Tacoma.....	12	116	75	41	—	59	2,451	1,088	2,352	1,294
West Virginia.....	180	2,737	1,747	956	34	570	36,587	16,396	6,930	3,122
Beckley.....	11	87	58	28	1	37	2,143	1,061	279	65
Charleston.....	12	669	505	155	9	44	9,359	3,569	2,071	471
Clarksburg.....	11	216	117	99	—	68	1,499	672	195	205
Clay.....	7	68	39	23	6	7	275	151	30	6
Fairmont.....	11	99	65	31	3	30	2,779	1,170	360	116
Huntington (2).....	20	419	284	135	—	11	4,032	3,457	1,279	131
Logan.....	12	460	287	173	—	23	3,978	1,811	1,091	—
Madison.....	12	112	42	58	12	77	1,341	360	202	86
Martinsburg.....	12	145	67	78	—	52	1,238	463	166	14
Morgantown (2).....	15	111	61	49	1	61	1,547	789	137	45
New Cumberland.....	9	27	12	15	—	18	591	88	37	47
Parkersburg.....	12	117	82	35	—	60	3,508	1,266	374	183
Wellsburg.....	12	21	9	10	2	11	264	75	37	9
Wheeling (2).....	24	186	119	67	—	71	4,033	1,564	672	1,741
Wisconsin.....	141	1,650	974	672	4	267	32,508	5,078	7,894	6,802
Beloit.....	12	11	9	2	—	22	264	110	76	—
Janesville.....	12	33	10	23	—	33	813	57	164	110
Kenosha.....	11	43	28	15	—	33	485	286	183	56
La Crosse.....	12	60	19	41	—	3	1,339	191	272	262
Madison.....	11	138	34	104	—	47	2,629	278	219	442
Milwaukee (3).....	36	1,219	807	410	2	11	23,529	3,399	6,204	5,313
Oshkosh.....	12	29	21	8	—	9	849	336	206	106
Racine.....	12	48	25	23	—	55	772	214	173	72
Superior.....	11	44	21	21	2	18	1,178	207	292	114
Wausau.....	12	25	—	25	—	36	650	—	15	327

NOTE.—States which did not report and those which had no clinics have been omitted from the above table; they are Arizona, Idaho, Mississippi, Montana, Nevada, New Mexico, North Carolina, South Dakota, Texas, Utah, Vermont, and Wyoming.

TABLE 5.—Annual rate per 1,000 inhabitants of new admissions to clinics and of total treatments given in clinics, from July 1, 1929, to June 30, 1930

Sate	New ad-missions	Treat-ments	State	New ad-missions	Treat-ments
Total.....	1.23	24.00	Montana ²		
Alabama.....	4.68	63.62	Nebraska.....	0.65	16.93
Arizona ¹			Nevada ¹		
Arkansas.....	2.51	101.41	New Hampshire.....	.27	14.79
California.....	1.08	20.42	New Jersey.....	1.41	31.15
Colorado.....	.74	16.02	New Mexico ²		
Connecticut.....	.68	16.57	New York.....	.49	13.21
Delaware.....	3.69	24.98	North Carolina ²		
District of Columbia.....	2.90	37.65	North Dakota.....	.05	.84
Florida.....	2.76	14.23	Ohio.....	1.65	27.72
Georgia.....	1.53	20.40	Oklahoma.....	.94	12.78
Idaho ¹			Oregon.....	.50	7.26
Illinois.....	1.40	43.88	Pennsylvania.....	.57	4.59
Indiana.....	.95	27.32	Rhode Island.....	.95	25.75
Iowa.....	.45	7.91	South Carolina.....	1.50	9.54
Kansas.....	.26	5.63	South Dakota ¹		
Kentucky.....	2.94	21.45	Tennessee.....	2.33	48.07
Louisiana.....	.34	1.89	Texas ¹		
Maine.....	.73	12.10	Utah ²		
Maryland.....	2.11	59.32	Vermont ¹		
Massachusetts.....	1.32	45.87	Virginia.....	.82	6.67
Michigan.....	1.85	37.12	Washington.....	.92	17.62
Minnesota.....	.38	9.69	West Virginia.....	1.58	21.17
Mississippi ¹			Wisconsin.....	.55	10.83
Missouri.....	.75	19.51	Wyoming ²		

¹ No clinics.² Not reporting.

TABLE 6.—Report of cooperative clinic activities furnished through State health departments from 1919 to 1930

Year	Number of clinics reporting	New cases admitted	Total treatments given	Cases discharged as arrested or cured	Treatments per 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	124,842	2,440,625	54,748	19.55

TABLE 7.—Report of the United States Public Health Service clinic at Hot Springs National Park, from July 1, 1929, to June 30, 1930¹

Total applicants.....	5,704
Venereal cases.....	4,441
Nonvenereal cases.....	1,263
Syphilis.....	2,743
New cases.....	2,100
Readmitted cases.....	643
Gonorrhea.....	1,698
New cases.....	1,396
Readmitted cases.....	302

¹ From the annual report submitted by the clinic.

TABLE 7.—*Report of the United States Public Health Service clinic at Hot Springs National Park, from July 1, 1929, to June 30, 1930—Continued*

Syphilis (new cases)	2, 100
Primary	269
Secondary	97
Tertiary	1, 518
Neuro	189
Congenital	27
Gonorrhea (new cases)	1, 396
Acute	73
Chronic	1, 323
Total treatments given	186, 476
Syphilis and gonorrhea	75, 544
Baths	107, 296
Special treatments	3, 636
Laboratory examinations	42, 739
Wassermanns	7, 541
Kolmer quantitative	1, 992
Kahn precipitation	6, 862
Kahn quantitative	1, 762
Smears (gonorrhea)	4, 892
Darkfields	438
Icterus indices	4, 553
Widals	31
Blood counts	203
Malaria slides	249
Blood cultures	326
Blood chemistry (complete)	395
Blood sugars	247
Renal function tests	1, 090
Liver function tests	12
Urine analysis	11, 710
Feces	107
Throat cultures	46
Sputums	59
Histopathological diagnosis	2
Bacteriological water examinations	203
Autogenous vaccines	8
Guinea pig experiments for tuberculosis	8
Gastronomic analysis	3

TABLE 8.—*Report of the United States Public Health Service clinic at Hot Springs National Park, Ark., from 1922 to 1930*

Year	Number of applicants	Number of cases			Treatments given	Wassermann tests made
		Total venereal diseases	Syphilis	Gonorrhea		
Total	37, 959	27, 904	18, 562	9, 342	526, 924	57, 607
1922	2, 720	1, 775	1, 182	593	43, 830	3, 906
1923	3, 389	1, 854	1, 326	528	41, 559	4, 329
1924	3, 676	2, 186	1, 447	739	50, 683	4, 671
1925	3, 411	2, 782	2, 011	771	50, 608	4, 990
1926	3, 570	3, 064	2, 211	853	54, 590	5, 460
1927	4, 757	3, 682	2, 504	1, 178	58, 489	6, 275
1928	5, 467	4, 134	2, 626	1, 508	72, 466	7, 721
1929	5, 265	3, 986	2, 512	1, 474	75, 519	12, 714
1930	5, 704	4, 441	2, 743	1, 698	79, 180	7, 541

TABLE 9.—*Statistical summary of activities in the control of venereal diseases for the fiscal years 1929 and 1930*

Activity	1930	1929
MEDICAL ACTIVITIES		
A. Cases of venereal diseases reported to State health departments:		
I. Syphilis.....	213,309	195,559
II. Gonorrhea.....	155,875	156,544
III. Chancroid.....	5,725	4,762
Total.....	374,909	356,865
B. Doses of arsphenamines distributed by State health departments.....	880,276	751,279
C. Clinics:		
I. Clinics established during the year.....	47	25
II. Clinics reporting to State health departments.....	477	445
III. Report from clinics—		
a. New cases admitted.....	124,842	120,315
b. Cases discharged as arrested or cured.....	54,748	52,136
c. Treatments given.....	2,440,626	2,128,417
d. Doses of arsphenamines administered.....	645,012	594,545
e. Wassermann tests made.....	405,470	367,075
f. Microscopic examinations for gonococcus.....	198,540	170,893
D. Requests for medical information received by the Public Health Service.....	166	326
EDUCATIONAL ACTIVITIES		
A. Pamphlets:		
I. Requests for pamphlets received by the Public Health Service.....	14,254	14,360
II. Pamphlets distributed—		
a. By the Public Health Service to—		
1. State health departments.....	16,722	13,286
2. Others.....	1,136,207	1,130,670
Total.....	1,152,929	1,143,956
b. By State health departments.....	660,810	795,311
c. Gross total pamphlets distributed.....	813,739	939,267
Minus pamphlets distributed by the Public Health Service to State health departments.....	16,722	13,286
d. Net total pamphlets distributed.....	797,017	925,981
III. Venereal disease pamphlets issued by the Public Health Service.....	7	2
B. Lectures, films, exhibits, and slide showings:		
I. Lectures, films, exhibits, and slide showings reported by the—		
a. Public Health Service.....	28	128
b. State health departments.....	3,034	2,084
Total.....	3,062	2,812
II. Average attendance reported by the—		
a. Public Health Service.....	100	190
b. State health departments.....	74	98
Total.....	74	103
III. Motion-picture films, strip films, exhibits, and lantern-slide sets loaned by the Public Health Service to—		
a. State health departments.....	2	3
b. Public Health Service field officers.....		1
c. Others.....	228	115
Total.....	230	119

¹ Free distribution. In 1929 there were 293,701 pamphlets sold. The total number sold in 1930 is not available, but the number of copies and reprints of Venereal Disease Information sold was 120,531.

² Changed from previously published figures.

NARCOTICS DIVISION (DIVISION OF MENTAL HYGIENE)¹

In charge of Asst. Surg. Gen. W. L. TREADWAY

The year ending June 30, 1930, marks the first full 12 months' activities of the Narcotics Division of the Public Health Service. The year has been characterized by additional legislation seeking to coordinate and crystallize the functions of the division, which are of an administrative and investigative character. At the close of the year, the functions of the division included the administration of the two United States narcotic farms authorized in the act of January 19, 1929; the study and investigation of the nature of drug addiction and the best methods of treatment and rehabilitation of persons addicted to the use of habit-forming drugs; the dissemination of information on methods of treatment and research in this particular field; cooperation with State and local jurisdictions with a view to their providing facilities for the care and treatment of narcotic addicts; the supervision and furnishing of medical and psychiatric service in Federal penal and correctional institutions; the study and investigation of the abusive use of narcotic drugs and the quantities of such drugs necessary to supply the normal and emergency medicinal and scientific requirements of the United States; and, lastly, the study and investigation of the causes, prevalence, and means for the prevention and treatment of mental and nervous diseases.

The officer in charge of the division was authorized by the act of April 9, 1930, to have the grade of Assistant Surgeon General while so serving.

In accordance with the act approved January 19, 1929, the Attorney General, the Secretary of the Treasury, and the Secretary of War were authorized and directed to select sites for two institutions for the confinement and treatment of persons convicted of offenses against the United States who were addicted to the use of habit-forming narcotic drugs. A subcommittee, representing the three departments concerned, was chosen for the purpose of studying the details of this situation. The subcommittee is composed of Mr. Sanford Bates, Director Bureau of Prisons, Department of Justice; Assist. Surg. Gen. Walter L. Treadway, Public Health Service, Treasury Department; and Maj. Gen. Merritte W. Ireland, Surgeon General of the United States Army, War Department.

The first meeting of the interdepartmental subcommittee took place on July 30, 1929, when certain general or fundamental principles were adopted as guides in the selection of sites. The factors considered embraced studies of the density of the general population, the geographical distribution of the prospective inmates, the climatic conditions, availability of trunk-line railway facilities, transportation

¹ Name changed to Division of Mental Hygiene by act of June 14, 1930.

costs incident to the admission, discharge, or transfer of inmates, and the prison program of the Department of Justice. The subcommittee agreed that the first United States narcotic farm should be located somewhere in an area approximately 220 miles in circumference embracing the States of Kentucky, Tennessee, the northern portions of Georgia and Alabama, the western half of North and South Carolina, the western area of Virginia, and southern West Virginia, and that the site for the second United States narcotic farm should be located somewhere in the area embraced by the States of Arkansas, Oklahoma, northeastern Texas, southeastern Kansas, and southern Missouri.

In accordance with this agreement, the Office of the Supervising Architect, Treasury Department, was requested to advertise for proposals to furnish properties in these areas for this purpose. The Treasury Department was in receipt of 496 proposals, or bids, to furnish such property in the southeastern part of the United States. All of these proposals were analyzed and 69 were selected for intensive study. Each of them was visited by a representative of the subcommittee, a soil scientist of the Department of Agriculture, and a senior architect of the Office of the Supervising Architect, Treasury Department. These 69 properties were studied intensively from the standpoint of availability of utilities and their agricultural and building-site possibilities. Of this number, 63 were found to be unsuitable for various reasons, such as inaccessibility; mountainous or rough land; without utilities being available or obtainable; subject to overflow or unsatisfactory as to natural drainage; unsuited for carrying on agricultural activities with any degree of satisfaction or profit because of character of soil and topography; or lacking suitable, desirable, or appropriate building site.

In choosing a location for the first United States narcotic farm, consideration was given to the agricultural possibilities of the properties offered, including studies of the kind and character of soils; the drainage and the general topography; building-site possibilities, with special reference to the topography and the character of the surface and subsurface soils; the surface and subsurface drainage; and the availability and accessibility of public utilities, building materials, equipment, and supplies were all taken into account.

The subcommittee unanimously agreed that the vicinity of Lexington, Ky., is the most desirable situation for the first of these farms to serve the eastern portion of the United States, and gave very serious consideration to three properties offered in that vicinity. The merits of these three properties were given personal consideration by the Attorney General, the Secretary of the Treasury, and the Secretary of War, who, pursuant to section 2 of the act approved January 19, 1929, were authorized and directed to select sites for these institutions. On March 13, 1930, they recommended the acceptance and acquisition of a site near Lexington, Ky., locally known as the Marshall Tract, comprising 1,004 acres. This was supplemented by donations making the total area approximately 1,050 acres.

Estimates were prepared by the Office of the Supervising Architect for the purchase of the site selected, and for the cost involved in the preparation of plans for the development of the first narcotic farm. These estimates were presented to the Seventy-first Congress as an

item in the second deficiency bill. Synchronous with the activities incident to the selection of the site for the first narcotic farm, many conferences were held with the Office of the Supervising Architect relative to the kind and character of the buildings to be erected, and the preparation of plans for carrying into effect the authorization of the act of January 19, 1929.

On July 1, 1929, a system was placed into effect whereby individual reports were received concerning the personal and social characteristics of those apprehended for violation of the Federal narcotic laws. A statistical clerk-typist was employed on July 19, 1929, for the purpose of tabulating these reports. During the nine months' period ending March 31, 1930, 5,151 cases were reported. Of this number, 4,336 were formally arrested and 815 placed under surveillance of one kind or another. Of the 5,151 reported, 475 were registrants under the Federal narcotic laws and 4,376 were unregistered or engaged in the illicit traffic in narcotic drugs. Of the total reported, 3,120 were tried in Federal courts. Of the 5,151 cases reported, 3,660 were addicted to the use of habit-forming drugs, and of this group, 145 were of the registered class and 3,515 were unregistered. Of the total number of addicts observed, 2,027 were tried in Federal courts, so that this number would represent the potential admission rate to the United States narcotic farms during the first nine months of the past fiscal year. Tabulations respecting the individual and social characteristics of these prospective inmates have been published from time to time in the current issues of Public Health Reports.

Studies have also been conducted in an effort to evaluate the past experiences of States and local jurisdictions pertaining to their attempts at solving the medico-social problem of drug addiction. A review of the evolution and present status of State narcotic laws has been completed and will be published early in the next succeeding fiscal year. A law clerk was employed by the division on August 13, 1929, for that purpose. Conferences have been held from time to time with State organizations and representatives with a view to ascertaining the past experiences and the needs and requirements respecting States and local jurisdictions in the matter of providing for the drug-addict situation in those communities.

On September 30, 1929, the Attorney General requested the Secretary of the Treasury to have the Public Health Service assume the responsibility for all the medical work in Federal prisons and specifically requested the detail of a medical staff to the United States Disciplinary Barracks, Fort Leavenworth, Kans., temporarily transferred to the Department of Justice to be used for segregating all drug-addict prisoners. On January 6, 1930, Surg. Justin K. Fuller, of the Public Health Service, reported for duty at the United States Disciplinary Barracks, Fort Leavenworth, Kans., as chief medical officer of that institution, thus anticipating the establishment of the first narcotic farm by some two or more years.

The Attorney General was informed by the Secretary of the Treasury that the Public Health Service did not have the authority, personnel, or funds for supervising and furnishing the medical services in all Federal penal and correctional institutions, but that no objection would be offered to the Public Health Service supervising such

work, providing the authority and funds were available for that purpose. As a result, and with the recommendations of the two departments concerned, Congress passed, and the President approved, on May 13, 1930, an act authorizing the Public Health Service to provide medical services in the Federal prisons under the control of the Department of Justice. The details with reference to the assumption of this new function and activity by the Public Health Service were discussed with representatives of the Department of Justice and additional funds were requested for the inauguration of this work during the early part of the next succeeding fiscal year.

The United States penitentiary annex (United States disciplinary barracks), Fort Leavenworth, Kans., used for segregating all Federal prisoners addicted to the use of habit-forming drugs, affords opportunities for the Public Health Service to utilize the material available at that institution as a training center for field studies and investigations incident to the establishment of narcotic farms. A supplemental appropriation for the pay of personnel was requested for this purpose and plans have been perfected for assembling a suitable medical staff at that institution early in the next succeeding fiscal year.

As the chief of the narcotics division is a member of the committee on drug addiction of the National Research Council, the Public Health Service cooperated during the year with that organization in matters of chemical and biological research studies concerning opium and its derivatives. A consultant in alkaloid chemistry was appointed by the Public Health Service for duty at the Cobb Chemical Laboratory, University of Virginia, Charlottesville, Va., effective October 16, 1929, in connection with certain chemical investigations being carried on at that place. A consultant biologist on alkaloids was appointed on June 12, 1930, for duty at the University of Michigan, Ann Arbor, Mich., in connection with the determination of the toxicity and physiological action of substances produced at the Cobb Chemical Laboratory. The Public Health Service has also further cooperated with the committee on drug addiction of the National Research Council in the matter of evolving an educational program on the indispensable uses of opium and its derivatives in medical practice.

An act to create a Bureau of Narcotics in the Treasury Department, approved on June 14, 1930, changed the name of the "Narcotics Division" of the Public Health Service to the "Division of Mental Hygiene," transferring all of the authority, powers, and functions exercised by the narcotics division to the division of mental hygiene. The same act authorized and directed the Surgeon General of the Public Health Service to make such studies and investigations, as may be necessary, of the abusive use of narcotic drugs; of the quantities of crude opium, coca leaves, and their salts, derivatives, and preparations, together with such reserves thereof, as are necessary to supply the normal and emergency medicinal and scientific requirements of the United States; and of the causes, prevalence, and means for the prevention and treatment of mental and nervous diseases. The act, by special resolution of Congress, was to take effect on July

1, 1930. Copies of the several acts, or parts thereof, relating to the division of mental hygiene are appended to this report.

The widening scope of Public Health Service activities, illustrated in this report, again calls attention to the increasing tendency for diversification of service work and to a pressing need for enlarging the regular medical corps so as to permit and promote specialization in certain lines of its essential work.

[PUBLIC—No. 203—71ST CONGRESS]

[H. R. 9235]

An Act To authorize the Public Health Service to provide medical service in the Federal prisons

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That hereafter, authorized medical relief under the Department of Justice in Federal penal and correctional institutions shall be supervised and furnished by personnel of the Public Health Service, and upon request of the Attorney General, the Secretary of the Treasury shall detail regular and reserve commissioned officers of the Public Health Service, pharmacists, acting assistant surgeons, and other employees of the Public Health Service to the Department of Justice for the purpose of supervising and furnishing medical, psychiatric, and other technical and scientific services to the Federal penal and correctional institutions.

SEC. 2. The compensation, allowances, and expenses of the personnel so detailed may be paid from applicable appropriations of the Public Health Service in accordance with the law and regulations governing the personnel of the Public Health Service, such appropriations to be reimbursed from applicable appropriations of the Department of Justice; or the Attorney General is hereby authorized to make allotments of funds and transfer of credit to the Public Health Service in such amounts as are available and necessary, which funds shall be available for payment of compensation, allowances, and expenses of personnel so detailed, in accordance with the law and regulations governing the personnel of the Public Health Service.

Approved, May 13, 1930.

[PUBLIC—No. 201—71ST CONGRESS]

[H. R. 7410]

An Act To establish a hospital for defective delinquents

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Attorney General is authorized and directed to select a site, either in connection with some existing institution or elsewhere, for a hospital for the care and treatment of all persons charged with or convicted of offenses against the United States, and who are in the actual custody of its officers or agents, and who at the time of their conviction or during the time of their detention and/or confinement are or shall become insane, afflicted with an incurable or chronic degenerative disease, or so defective mentally or physically so to require special medical care and treatment not available in an existing Federal institution.

* * * * *

SEC. 6. There is hereby authorized to be created a board of examiners for each Federal penal and correctional institution where persons convicted of offenses against the United States are incarcerated, to consist of (1) a medical officer appointed by the warden or superintendent of the institution; (2) a medical officer to be appointed by the Attorney General; and (3) a competent expert in mental diseases to be nominated by the Surgeon General of the United States Public Health Service. The said board shall examine any inmate of the institution alleged to be insane or of unsound mind or otherwise defective and report their findings and the facts on which they are based to the Attorney General. The Attorney General, upon receiving such report, may direct the warden or superintendent or other official having custody of the prisoner to

cause such prisoner to be removed to the United States hospital for defective delinquents or to any other such institution as is now authorized by law to receive insane persons charged with or convicted of offenses against the United States, there to be kept until, in the judgment of the superintendent of said hospital, the prisoner shall be restored to sanity or health or until the maximum sentence, without deduction for good time or commutation of sentence, shall have been served.

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Approved, May 13, 1930.

[PUBLIC—No. 357—71ST CONGRESS]

[H. R. 11143]

An Act To create in the Treasury Department a Bureau of Narcotics, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be in the Department of the Treasury a bureau to be known as the Bureau of Narcotics and a Commissioner of Narcotics who shall be at the head thereof. The Commissioner of Narcotics shall be appointed by the President, by and with the advice and consent of the Senate, and shall receive a salary at the rate of \$9,000 per annum. The commissioner shall make an annual report to Congress.

* * * * *
Sec. 4. (a) The Narcotics Division in the office of the Surgeon General of the United States Public Health Service in the Treasury Department, as created by the act entitled "An act to establish two United States narcotic farms for the confinement and treatment of persons addicted to the use of habit-forming narcotic drugs who have been convicted of offenses against the United States, and for other purposes," approved January 19, 1929 (U. S. C., Supp. III, title 21, ch. 8), shall be known as the Division of Mental Hygiene. The authority, powers, and functions exercised by such Narcotics Division are hereby transferred to the Division of Mental Hygiene. The medical officer of the Public Health Service in charge of said division shall hold the rank and receive the pay and allowances of Assistant Surgeon General while so serving.

(b) The Surgeon General of the Public Health Service is authorized and directed to make such studies and investigations, as may be necessary, of the abusive use of narcotic drugs; of the quantities of crude opium, coca leaves, and their salts, derivatives, and preparations, together with such reserves thereof, as are necessary to supply the normal and emergency medicinal and scientific requirements of the United States; and of the causes, prevalence, and means for the prevention and treatment of mental and nervous diseases. The Surgeon General shall report to the Secretary of the Treasury not later than the 1st day of September each year the results of such studies and investigations. The results of such studies and investigations of the quantities of crude opium, coca leaves, or other narcotic drugs, together with such reserves thereof, as are necessary to supply the normal and emergency medicinal and scientific requirements of the United States, shall be made available to the Commissioner of Narcotics, to be used at his discretion in determining the amounts of crude opium and coca leaves to be imported under the Narcotic Drugs Import and Export Act, as amended.

(c) The Secretary of the Treasury is hereby authorized to appoint such professional, technical, and clerical assistants as may be necessary to carry out the provisions of this section.

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Approved, June 14, 1930.

DIVISION OF PERSONNEL AND ACCOUNTS

In charge of Asst. Surg. Gen. C. C. PIERCE

The organization of the division of personnel and accounts has remained unchanged throughout the fiscal 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 incumbrances, records of expenditures, including administrative audit, and all records of nonexpendable property are administered under the supervision of the assistant surgeon general in charge of the division.

The passage of the act approved April 9, 1930, the text of which is printed herewith, will, without question, materially improve the situation that has existed for several years past with respect to resignations from the commissioned corps of the service. The public health aspects of this legislation are discussed in other portions of this report. Some of the very important features of the act as relate to the recruiting and retaining of well-qualified officers are discussed in the paragraphs following the text of the act.

[PUBLIC—No. 106—71ST CONGRESS]

[H. R. 8807]

An Act To provide for the coordination of the public-health activities of the Government, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That upon the request of the head of an executive department or an independent establishment which is carrying on a public-health activity the Secretary of the Treasury is authorized to detail officers or employees of the Public Health Service to such department or independent establishment in order to cooperate in such work. When officers or employees are so detailed their salaries and allowances shall be paid by the Public Health Service from applicable appropriations.

SEC. 2. (a) The Surgeon General of the Public Health Service is authorized to detail personnel of the Public Health Service to educational and research institutions for special studies of scientific problems relating to public health and for the dissemination of information relating to public health, and to extend the facilities of the Public Health Service to health officials and scientists engaged in special study.

(b) The Secretary of the Treasury is authorized to establish such additional divisions in the Hygienic Laboratory in the District of Columbia as he deems necessary to provide agencies for the solution of public-health problems, and facilities therein for the coordination of research by public-health officials and other scientists and for demonstrations of sanitary methods and appliances.

SEC. 3. The administrative office and bureau divisions of the Public Health Service in the District of Columbia shall be administered as a part of the departmental organization, and the scientific offices and research laboratories of the Public Health Service (whether or not in the District of Columbia) shall be administered as a part of the field service.

SEC. 4. Hereafter, under such regulations as the President may prescribe, medical, dental, sanitary engineer, and pharmacist officers selected for general

service in the regular corps of the Public Health Service and subject to change of station shall be appointed by the President, by and with the advice and consent of the Senate; original appointments shall be made only in the grade corresponding to that of assistant surgeon or passed assistant surgeon, except as provided under sections 5 and 6 of this act.

SEC. 5. The President is authorized to appoint, by and with the advice and consent of the Senate, to grades in the regular corps not above that of medical director, under such regulations as he may prescribe, not to exceed a total of fifty-five medical, dental, sanitary engineer, and pharmacist officers in the Public Health Service upon the date of passage of this act (except commissioned officers of the regular corps). Not more than four such appointments shall be in a grade above that of surgeon. In making such appointments due regard shall be had to the salary received by such officer at the time of such appointment. For purposes of pay and pay period, said officers shall be credited only with active service in the Public Health Service and active commissioned service in the Army and the Navy.

SEC. 6. The Secretary of the Treasury is authorized to order officers in the reserve of the Public Health Service to active duty for the purpose of training and of determining their fitness for appointment in the regular corps, and such active duty shall be credited for purposes of future promotion in the regular corps.

SEC. 7. Whenever commissioned officers of the Public Health Service are not available for the performance of permanent duties requiring highly specialized training and experience in scientific research, the Secretary of the Treasury shall report that fact to the President with his recommendations, and the President, under the provision of this section, is authorized to appoint, by and with the advice and consent of the Senate, not to exceed three persons in any one fiscal year to grades in the regular corps of the Public Health Service above that of assistant surgeon, but not to a grade above that of medical director; and for purposes of pay and pay period any person appointed under the provisions of this section shall be considered as having had on the date of appointment service equal to that of the junior officer of the grade to which appointed.

SEC. 8. Any person commissioned in the regular corps of the Public Health Service under the provisions of this act of an age greater than forty-five years, if placed on waiting orders for disability incurred in line of duty, shall receive pay at the rate of 4 per centum of active pay for each complete year of service in the Army, Navy, or Public Health Service, the total to be not more than 75 per centum.

SEC. 9. Hereafter commissioned officers of the regular corps of the Public Health Service, after examination under regulations approved by the President, shall be promoted according to the same length of service and shall receive the same pay and allowances as are now or may hereafter be authorized for officers of corresponding grades of the Medical Corps of the Army, except that—

(a) For purposes of future promotion an officer whose original appointment to the regular corps under the provisions of this act is in a grade above that of assistant surgeon shall be considered as having had on the date of appointment service equal to that of the junior officer of the grade to which appointed; if the actual service of such officer in the Public Health Service exceeds that of the junior officer of the grade, such actual service not exceeding ten years for a passed assistant surgeon, and fourteen years for a surgeon shall be credited for purposes of future promotion;

(b) Pharmacists shall not be promoted to the grade of passed assistant surgeon until after five years of service in the grade of assistant surgeon and shall not be promoted above the grade of passed assistant surgeon.

(c) When an officer, after examination under regulations approved by the President, is found not qualified for promotion for reasons other than physical disability incurred in line of duty—

(1) If in the grade of assistant surgeon, he shall be separated from the service and paid six months' pay and allowances;

(2) If in the grade of passed assistant surgeon, he shall be separated from the service and paid one year's pay and allowances; and

(3) If in the grade of surgeon or of senior surgeon, he shall be reported as not in line of promotion, or placed on waiting orders and paid at the rate of $2\frac{1}{2}$ per centum for each complete year of active commissioned service in the Public Health Service, but in no case to exceed 60 per centum of his active pay at the time he is placed on waiting orders.

SEC. 10. (a) The President is authorized to prescribe appropriate titles for commissioned officers of the Public Health Service other than medical officers, corresponding to the grades of medical officers. Hereafter officers of the Public Health Service in the grade of Assistant Surgeon General (except those in charge of bureau divisions) shall be known and designated as medical directors. The limitation now imposed by law upon the number of senior surgeons and Assistant Surgeons General at large of the Public Health Service on active duty is hereby repealed.

(b) Hereafter the Surgeon General of the Public Health Service shall be entitled to the same pay and allowances as the Surgeon General of the Army; and a regular commissioned officer of the Public Health Service who serves as Surgeon General shall, upon the expiration of his commission, if not reappointed as Surgeon General, revert to the grade and number in the regular corps that he would have occupied had he not served as Surgeon General.

(c) The officer detailed as chief of the narcotics division of the Public Health Service shall, while thus serving, be an Assistant Surgeon General, subject to the provisions of law applicable to Assistant Surgeons General in charge of other administrative divisions of the Public Health Service.

SEC. 11. Hereafter the Secretary of the Treasury shall appoint, in accordance with the civil service laws, all officers and employees, other than commissioned officers, of the Public Health Service, and may make any such appointment effective as of the date on which the officer or employee enters upon duty: *Provided*, That any regulations which may be prescribed as to the qualifications as to the appointment of medical officers or employees shall give no preference to any school of medicine.

SEC. 12. Hereafter officers of the Public Health Service when disabled on account of sickness or injury incurred in line of duty shall be entitled to medical, surgical, and hospital services and supplies under such regulations as the Secretary of the Treasury may prescribe.

SEC. 13. Hereafter the advisory board for the Hygienic Laboratory shall be known as the National Advisory Health Council, and the Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, is authorized to appoint, from representatives of the public-health profession, five additional members of such council. The terms of service, compensation, and allowances of such additional members shall be the same as the other members of such council not in the regular employment of the Government, except that the terms of service of the members first appointed shall be so arranged that the terms of not more than two members shall expire each year. Such council, in addition to its other function, shall advise the Surgeon General of the Public Health Service in respect to public-health activities.

Approved, April 9, 1930.

For the first time in the history of the service, authority exists in law to grant commissions in the regular corps to dental, sanitary engineer, and pharmacist personnel who are successful in passing examinations held under regulations approved by the President. Not only are these classes of personnel admitted to the examinations for commission, but under regulations prescribed by the President, candidates for commission who possess the requisite qualifications and pass the required examination, may enter the service in the grade of passed assistant surgeon. Heretofore all original appointments have been in the grade of assistant surgeon.

The measure also removes the limitation on the number of appointments to the grade of senior surgeon which has heretofore existed, and creates the grade of medical director. The provision that hereafter officers of the regular commissioned corps, after examination under regulations approved by the President, shall be promoted according to the same length of service and shall receive the same pay and allowances as may be authorized for officers of the Medical Corps of the Army, will perhaps do more to improve the morale of the corps and retain the services of well-qualified younger officers than any legislation which has been heretofore enacted. Until

the passage of this act, but 10 officers on active duty could be promoted to the grade of senior surgeon, and only three to the grade of assistant surgeon general at large (now the grade of medical director). It is now possible for every officer to attain the grade of senior surgeon after 20 years of service, and the grade of medical director after 26 years of service, upon successfully completing the examinations required by the regulations.

Under section 5 of the act referred to, the President is authorized to appoint, by and with the advice and consent of the Senate, to grades in the regular corps not above that of medical director, a total of not to exceed 55 medical, dental, sanitary engineer, and pharmacist officers now in the service. This section affords opportunity for the recognition of the valuable services rendered by highly qualified officers in these professions who have long been identified with the Public Health Service, and at the close of the fiscal year examinations were in progress to fill the authorized number of appointments.

Further authority is contained in the legislation for appointment by the President of persons for permanent duties requiring highly specialized training and experience in scientific research, when commissioned officers of the service are not available for such duties. Appointments of this kind are limited to three in any one fiscal year, and commissions may be given to such persons in grades not above that of medical director.

Other features of the law include pay and allowances for the Surgeon General equal to the pay and allowances of the Surgeon General of the Army and medical, surgical, and hospital services for officers taken sick or injured in the line of duty. Specific provision is also made for the disposition of the cases of officers who fail to pass the examinations prescribed by regulations for promotion to higher grades.

Examinations were held on September 9, 1929, January 27, 1930, and May 5, 1930, of candidates for commission in the grade of assistant surgeon in the regular corps of the service. These examinations were held simultaneously in Washington, D. C., Chicago, Ill., New Orleans, La., and San Francisco, Calif. The examination held on May 5 was also given at New York, N. Y. Although announcements of the examinations were published in the leading medical journals and sent to hospitals and medical schools, a very limited number of qualified physicians made application. The examination held on May 5, 1930, was open to internes on duty at hospitals of the service, and for this reason was taken by a much larger number of men than the examinations in September and January. All told, 40 candidates successfully passed the examination during the year.

Again the matter of resignations of officers in the grade of assistant surgeon presented a problem deserving of serious consideration. During the fiscal year 13 resignations were submitted by officers in this grade. In addition to this number, two men who qualified in the entrance examination declined to accept commissions when issued. In the case of practically every resignation the opportunity to earn greater compensation outside the service was given as the reason for leaving. Under the present law, compensation of an assistant surgeon without dependents is \$2,699 per annum, while that of an officer of this grade

having dependents is \$3,158. The matter of increased pay in the entrance grade of assistant surgeon is therefore one of great importance if the service is to continue to attract and hold young physicians who can meet the high standards set for admission.

Another law passed by Congress during the fiscal year which will necessitate future growth in the personnel of the service is the act approved May 13, 1930. This act provides that hereafter authorized medical relief under the Department of Justice in Federal penal and correctional institutions shall be supervised and furnished by personnel of the Public Health Service and directs that the Secretary of the Treasury, upon the request of the Attorney General, shall detail regular and reserve commissioned officers, pharmacists, acting assistant surgeons, and other employees to the Department of Justice for the purpose of furnishing medical, psychiatric, and other technical and scientific services to such institutions.

On April 23, 1930, the director of field survey of the Personnel Classification Board called upon all departments of the Government to submit a new allocation of field positions, as required by section 2 of the act of May 28, 1928, based upon the Preliminary Class Specifications of Positions in the Field Service, issued by the Personnel Classification Board. At the close of the fiscal year the work of preparing the lists of field positions in accordance with the board's instructions was in progress.

Summarized reports of the activities of the directors in the six public health districts are given below, followed by information relating to the various classes of personnel in the service and a tabulated statement of personnel on duty July 1, 1930.

PUBLIC HEALTH DISTRICTS

Public health district No. 1.—Headquarters are located at room 503, 45 Broadway, New York City. Senior Surg. E. K. Sprague served as district director throughout the fiscal year. The district comprises the States of Maine, New Hampshire, Vermont, Massachusetts, New York, Connecticut, Rhode Island, and New Jersey.

The district director states that the work of relief stations in his district has been carried on with satisfactory results during the year. He reports that the morale of officers in charge of third-class stations is high, and that in a great majority of cases these officers take a great deal of pride in their connection with the service. These are stations where local physicians hold appointment for relief duty, receiving compensation according to the amount of relief rendered, and the director states that his inspections show that this class of stations is being efficiently and economically administered.

In the first district there are three marine hospitals located in the metropolitan area of New York—one at 67 Hudson Street, one at Ellis Island, and a third at Stapleton, Staten Island. An increase in the number of beneficiaries treated at these stations is reported. In addition to these hospitals, others are located at Boston, Mass., Portland, Me., Buffalo, N. Y., and Vineyard Haven, Mass. The district director reports satisfactory conditions, both with regard to administration and the care rendered beneficiaries at all first-class stations, but stresses the need for additional bed capacity at hospitals in the metropolitan area.

Two large quarantine stations are located in the first district—one at Rosebank, Staten Island, and the other at Gallops Island, in Boston Harbor. The director points out the need of berthing facilities for the boats at Gallops Island, as well as additional quarters for one or two officers on the island. He emphasizes the efficient administration of both of these stations throughout the year.

Two large immigration stations are also located in the first district—at Ellis Island and at Boston. Both of these stations were inspected during the year, as were immigration and quarantine stations on the Canadian border.

Surveys and recommendations regarding the disposition of un-serviceable property were conducted at stations at the time of inspection.

The director has maintained contact with State and local health authorities and, during the year, held numerous conferences with officials of the New York City Board of Health on the subject of the prevalence of psittacosis. Assistance was also rendered the officials of the Bureau of Animal Industry, Department of Agriculture, in measures to prevent the introduction of foot and mouth disease.

In the office of the director of the first district the soliciting of proposals for the furnishing of subsistence and other supplies to meet the needs of the four stations located in New York is centrally conducted. Inspections of certain of these supplies by representatives of local offices of the Bureau of Animal Industry and the Bureau of Agricultural Economics have been routinely maintained.

This office has also handled shipments of freight and personal effects of officers of the service going abroad and returning from foreign duty, and maintains a disbursing office for salary payments to personnel other than commissioned officers at the larger stations.

Public health district No. 2.—In the second district, Surg. B. S. Warren served as director throughout the year, with headquarters at room 415, Customhouse, Baltimore, Md. The district includes the States of Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Tennessee, North Carolina, South Carolina, and Georgia.

During the year investigations and inspections were made of practically all activities within the district. Marine hospitals at Baltimore, Md., Pittsburgh, Pa., Norfolk, Va., Louisville, Ky., Memphis, Tenn., and Savannah, Ga., were inspected, as was the Cragmont Sanatorium, at Black Mountain, N. C.

Inspections made by the director also included the relief stations at Philadelphia, Pa., and Washington, D. C.; the supply depot at Perry Point, Md.; 19 third-class and 1 fourth-class relief stations; 12 quarantine stations; and 9 immigration stations. Visits were also made to the National Institute of Health (Hygienic Laboratory) at Washington, field headquarters for malaria investigations at Richmond, Va., and headquarters for malarial-control operations at Albany, Ga. Trachoma hospitals at Richmond, Ky., and Knoxville, Tenn., were also inspected.

Visits were made to six relief stations for beneficiaries of the Coast Guard and Lighthouse Service, located in Delaware, Maryland, and Virginia, and a survey of the Indian reservation at Cherokee, N. C., was made on request of the Bureau of Indian Affairs. Because of the pressure of work in the third district, Surgeon Warren was also

detailed to make inspections of the marine hospital and quarantine station at Key West, Fla., the quarantine and relief stations at Jacksonville, Fla., and the relief station at Fernandina, Fla.

During the year conferences were held with the State health commissioners of Georgia, Virginia, Kentucky, West Virginia, and Tennessee, and with medical officers at United States Veterans' Bureau headquarters at Louisville, Ky., and Pittsburgh, Pa.

The director of the second district also served during part of the year as member of a special board convened to consider revision of the service regulations.

Public health district No. 3.—Surg. A. J. McLaughlin served as director of the third district throughout the fiscal year, with headquarters at 536 Lake Shore Drive, Chicago, Ill. The third district includes the States of Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, and North Dakota.

During the year inspections were made of the marine hospitals located at Evansville, Ind., St. Louis, Mo., Chicago, Ill., Cleveland, Ohio, and Detroit, Mich. Other relief stations in the district were likewise inspected, and investigations as to the need of relief facilities were made at Dubuque, Iowa, and at Gary and Indiana Harbor, Ind.

At the request of the State health authorities, surveys of public health and hospital facilities were made at Pine Bluff and Fort Smith, Ark., and reports of these surveys furnished the State health officer. A special investigation was also made of venereal disease control measures as they affect the troops at Fort Des Moines, Iowa.

In October, 1929, an investigation was made of matters affecting the United States Veterans' Bureau hospital and the United States reformatory at Chillicothe, Ohio. This investigation was undertaken at the request of the Chief Coordinator, and a full report of the investigation was furnished his office.

The director of the third district also rendered material assistance to the bureau in securing applications from senior medical students at colleges located in his district for appointment as internes at hospitals of the Public Health Service following their graduation. This was accomplished through visits to the schools and addresses to the senior classes and the physical examination of students who expressed their interest in making application.

The district director represented the Public Health Service at meetings of the Congress on Medical Education, Licensure, and Hospitals of the American Medical Association, and attended as a delegate the American Conference on Hospital Service, held in February, 1930. During the period April 3 to 5 he attended the State Public Health Conference held at Des Moines, Iowa, where he delivered an address on public health administration and venereal disease control. In April he attended the Missouri Health Officers' Conference at Jefferson City, Mo., and delivered an address on Public Health; Good Business.

At the request of State health authorities, a survey of public health activities in Iowa was undertaken in May, with a view to making report and recommendations designed to secure better coordination

of health activities in the State. This survey was completed and report made thereon in June.

In addition to other duties, the director served on several boards of examination for entrance and promotion in the service.

Public health district No. 4.—Senior Surg. John McMullen served as director of the fourth district throughout the fiscal year, with headquarters at 305 Customhouse, New Orleans, La. The fourth district includes the States of Florida, Alabama, Mississippi, Louisiana, Arkansas, Oklahoma, and Texas.

The director reports that three marine hospitals in the district, 11 of the 15 relief stations and 23 of the 32 quarantine stations in the district were visited and inspected during the year. Several Coast Guard and Lighthouse Service stations were also visited and the commandants and physicians conferred with. Unserviceable property was inspected at most of the stations visited and recommendations were made for its disposal.

Particular attention was given to conditions at immigration and quarantine stations along the Texas-Mexico border and comprehensive reports submitted on the several stations. Because of the establishment of airports at points along the border additional personnel for service work on the border was necessitated.

Numerous special investigations were made on instructions from the bureau during the year, involving complaints from beneficiaries and the adjustment of administrative procedures. The director also served with a representative of the Supervising Architect's Office in the selection of a site for a quarantine station at Port Arthur and Sabine, Tex.

In addition to other duties, the director served as acting chief quarantine officer at the port of New Orleans for five months during the year, and during this time activities in the field were necessarily curtailed.

Public health district No. 5.—Senior Surg. J. C. Perry served during the fiscal year as director of the fifth district, with headquarters at 76 New Montgomery Street, San Francisco, Calif. The fifth district includes California, Nevada, Arizona, New Mexico, Utah, and Colorado.

The director reports that all stations of the service located within the fifth district have been inspected during the fiscal year, and that larger stations, including those at San Francisco, San Pedro, Los Angeles, and San Diego, Calif., have twice been visited.

The director has continued as chairman of a board to study the occurrence of meningitis on vessels en route from the Orient to Pacific coast ports. The disease appeared on two vessels during the year, the situation showing a marked improvement over last year.

Conferences have been held with State and local officials in the district on matters relating to public health work, and close cooperation has been maintained with the health officer in San Francisco in matters relating to general public health activities in that city.

Cooperation and assistance have been given other Federal agencies as opportunity offered, and laboratory work has been performed for the Indian Service and the Department of the Interior at the Public Health Service laboratory in San Francisco.

As for several years past, the examination and vaccination of personnel starting for the Alaskan canneries was undertaken during the year, in accordance with the requirements of the commissioner of health of Alaska. A total of 3,272 persons were examined and 2,408 vaccinated.

The director of the fifth district has general charge of plague-suppressive measures in California, especially in relation to its control in ground squirrels, and the rodent survey in San Francisco. The conduct of the work of the Public Health Service laboratory in San Francisco is also under his supervision.

During the year the director attended meetings of the Pacific Coast Foreign Trade Council, at Seattle, Wash., the Health Officers' Association of California, and the American Public Health Association at Salt Lake City, Utah. Papers were presented at the public health conferences.

Public health district No. 6.—Senior Surg. L. D. Fricks served as director of the sixth district throughout the year. The district includes the States of Washington, Oregon, Idaho, Montana, and Wyoming, with headquarters at 216 Grand Trunk Dock, Seattle, Wash. General supervision and inspection of service work and stations in Alaska are also a function of the director of this district.

Activities within the district are carried on at 19 relief stations, 15 quarantine stations, 23 immigration stations, and 1 field laboratory—at Hamilton, Mont. The only marine hospital in the district is located at Port Townsend, Wash. All relief and quarantine stations within the district were inspected by the director during the year.

In addition to the duties of district director, Senior Surgeon Fricks served as medical officer in charge of the relief station at Seattle, Wash., and also had supervisory charge of all quarantine and immigration activities on Puget Sound. All acting assistant surgeons appointed for relief duty on Puget Sound were given authority during the year to perform quarantine duties when the occasion should arise. This was for the reason that it is frequently necessary for these officers to make medical examination of alien crews, and not with the expectation that they would be called upon to perform quarantine inspections or fumigations.

The director of the sixth district comments very favorably upon the professional ability and the character of services rendered by acting assistant surgeons on duty at the smaller stations within the district, and especially upon the interest manifested in the work of the service on the part of these officers generally. He states that this is also true of the medical men who have accepted local appointments to perform duty for the service in Alaska.

COMMISSIONED MEDICAL OFFICERS

On July 1, 1929, the regular corps consisted of the Surgeon General, 3 assistant surgeons general at large, 25 senior surgeons, 133 surgeons, 26 passed assistant surgeons, and 48 assistant surgeons. Of this number, aggregating 236, 2 assistant surgeons general at large, 13 senior surgeons, 5 surgeons, and 2 passed assistant surgeons were on waiting orders. During the fiscal year the following changes

occurred in the several grades: By the act of April 9, 1930, entitled "An act to provide for the coordination of the public-health activities of the Government, and for other purposes," the designation of 1 assistant surgeon general at large on active duty and 2 on waiting orders was changed to medical director; 1 surgeon in charge of the Division of Mental Hygiene was changed to assistant surgeon general; 9 senior surgeons and 18 surgeons were promoted to the grade of medical director; 14 surgeons were promoted to the grade of senior surgeon; and 10 assistant surgeons were promoted to the grade of passed assistant surgeon. In addition to these changes, the following promotions, resignations, deaths, and appointments occurred: 1 assistant surgeon general reverted to the rank of surgeon, 1 senior surgeon was detailed as an assistant surgeon general, 1 surgeon was promoted to the grade of senior surgeon, 6 passed assistant surgeons were promoted to the grade of surgeon, 4 assistant surgeons were promoted to the grade of passed assistant surgeon, and 40 candidates for appointment to the grade of assistant surgeons were successful in the entrance examination prescribed by law and the regulations of the service and were commissioned in that grade (2 assistant surgeons who successfully passed the examination declined their commissions), 1 senior surgeon and 1 surgeon were placed on waiting orders because of physical disability, 2 surgeons, 1 passed assistant surgeon, and 13 assistant surgeons resigned from the service, and 2 surgeons on active duty died.

On July 1, 1930, after these changes had occurred, the regular corps consisted of the Surgeon General, 30 medical directors, 31 senior surgeons, 102 surgeons, 33 passed assistant surgeons, and 59 assistant surgeons. Of these 256 officers, 2 medical directors, 14 senior surgeons, 6 surgeons, and 2 passed assistant surgeons were on waiting orders.

At the close of the fiscal year 1930, 4 medical directors and 4 surgeons were serving by detail as assistant surgeons general in charge of divisions of the bureau in accordance with the acts approved July 1, 1902, July 9, 1918, and April 9, 1930; four medical directors, 1 senior surgeon, and 1 surgeon were on duty as directors of the public health districts; 1 surgeon (as chief surgeon) was serving on detail to the Bureau of Mines, Department of Commerce; and 1 surgeon and 1 passed assistant surgeon were serving (the surgeon as medical director) on detail to the United States Employees' Compensation Commission. Two medical directors and 1 surgeon were assigned as assistants to the director, Pan American Sanitary Bureau, Washington, D. C.; 3 senior surgeons 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 surgeon was serving (as alienist and medical officer) on detail to the Morningside Hospital, near Portland, Oreg., which cares for the Alaska insane under contract with the Department of the Interior; and 1 surgeon was serving on detail with the Bureau of Standards.

RESERVE OFFICERS

On July 1, 1929, the reserve commissioned officers on active duty numbered 65, consisting of 1 assistant surgeon general, 1 senior

dental surgeon, 8 surgeons, 7 dental surgeons, 12 passed assistant surgeons, 16 passed assistant dental surgeons, 15 assistant surgeons, and 5 assistant dental surgeons.

On July 1, 1930, the number of reserve officers on active duty was 57, consisting of 1 medical director, 1 senior dental surgeon, 8 surgeons, 15 dental surgeons, 12 passed assistant surgeons, 8 passed assistant dental surgeons, 5 assistant surgeons, and 7 assistant dental surgeons.

ATTENDING SPECIALISTS

On July 1, 1929, there were 212 attending specialists in the service and during the year this number increased to 316, of which number 184 were consultants to marine hospitals, while 132 were available for call at second and third class relief stations.

ACTING ASSISTANT SURGEONS

On July 1, 1929, there were 596 acting assistant surgeons in the Public Health Service, and by July 1, 1930, this number had increased to 671.

Of the 671 acting assistant surgeons, 108 were on duty at marine hospitals; 377 were engaged in immigration, relief, and maritime, border, insular, and foreign quarantine work, while 6 were engaged in the prevention of trachoma; 12 were on duty in connection with field investigations of public health and rural sanitation; 112 were on detail with the United States Coast Guard; 8 were serving with the Bureau of Mines by detail; and 47 were engaged in antivenereal disease activities as part-time employees at nominal compensation. Fifteen of the 47 acting assistant surgeons engaged in antivenereal disease activities held appointments as collaborating epidemiologists.

INTERNES

On July 1, 1929, there were 62 internes in the service; on July 1, 1930, there were 84, of whom 18 were dental and 3 students. Internes are appointed for temporary periods of one year for duty at marine hospitals.

CONTRACT DENTAL SURGEONS

On July 1, 1929, there were 37 contract dental surgeons employed at marine hospitals and second, third, and fourth class relief stations. 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 7 contract dental surgeons were at the marine hospitals; 27 were at second, third, and fourth class relief stations; and 4 were detailed to the United States Coast Guard for duty.

EPIDEMIOLOGISTS

The number of assistant collaborating epidemiologists was increased slightly during the fiscal year. 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. During the year the number of collaborating epidemiologists remained at 43, these appointees being on duty in the different States, and the number of assistant collaborating epidemiologists was increased from 4,512 to 4,547. Fifteen of the collaborating epidemiologists also hold appointments as acting assistant surgeons under the Division of Venereal Diseases.

NATIONAL INSTITUTE OF HEALTH

At the close of the fiscal year the personnel of the National Institute of Health included in addition to the director and assistant director, 3 chiefs of division, 1 senior surgeon, 5 surgeons, 4 passed assistant surgeons, 1 pharmacist, 5 special experts, 1 consultant pathologist, 1 consultant syphilologist, 1 consultant dermatologist, 1 consultant cytologist, 1 consultant chemist, 2 senior chemists, 2 chemists, 4 assistant chemists, 2 junior chemists, 1 biochemist, 1 associate biochemist, 1 pathologist, 1 physiologist, 3 bacteriologists, 1 junior bacteriologist, 1 senior pharmacologist, 2 pharmacologists, 1 assistant pharmacologist, 1 junior pharmacologist, 1 senior microanalyst, 1 biophysicist, 1 bacteriological technician, 1 artist, 14 other technical employees, 11 administrative and clerical employees, and 52 laboratory attendants and others.

PHARMACISTS AND ADMINISTRATIVE ASSISTANTS

At the close of the fiscal year there were on duty in the service 30 pharmacists and 23 administrative assistants. The number of pharmacists decreased by 1 during the fiscal year. The appointment of 3 additional administrative assistants was responsible for the increase in this class of personnel.

At the end of the fiscal year the pharmacists and administrative assistants were classed as follows:

Chief pharmacists.....	26
Pharmacists.....	1
Junior pharmacists.....	3
Administrative assistants (first class).....	10
Administrative assistants (second class).....	5
Administrative assistants (third class).....	6
Administrative assistants (fourth class).....	2

BOARDS

During the fiscal year 1930, 167 boards were convened for various purposes throughout the service, as follows: 9 for the medical examination of detained aliens; 23 for the examination of commissioned officers of the Public Health Service to determine their fitness for promotion; 15 for the examination of applicants for commission in the grade of assistant surgeon in the regular corps; 2 for the examination of scientific personnel for promotion; 3 for inspecting service property; 101 for the purpose of making physical examinations in connection with the appointment, promotion, and retirement of com-

missioned officers, warrant officers, and cadets in the United States Coast Guard; 1 to consider the revision of the service regulations; 1 for the purpose of formulating regulations to prevent further introduction of cerebrospinal meningitis into the United States or its possessions; 1 for the purpose of making recommendations to the bureau relative to a social-service organization to serve in common the marine hospitals in New York City; 1 for the purpose of making a survey of the hulk *Chase*; 1 for the purpose of considering the question of the eligibility for promotion under the regulations of certain passed assistant surgeons who will have completed eight years of service; 1 for the purpose of considering the needs as regards repairs, new construction, or alteration necessary at the quarantine station, Charleston, S. C., to place the station in good condition; 1 for the purpose of examining the records and reviewing papers submitted by a subboard in Dublin, Ireland; 1 for the purpose of making a thorough investigation of the alleged desecration of the mortuary on Swinburne Island, New York City Harbor; 1 for the purpose of making physical examination of an employee; 1 for the purpose of making a physical examination of a chief pharmacist; 1 for the purpose of investigating the circumstances surrounding the death of a cadet after the fumigation of the steamship *President Taft*; 1 for the purpose of making certain studies at the Hygienic Laboratory (National Institute of Health); 1 for the purpose of considering methods of conducting entrance and promotion examinations for the regular corps; 1 for the purpose of examining a junior pharmacist for promotion.

The advisory board of medical officers, established in 1923 for the purpose of considering compensation claims based on injuries or occupational diseases referred for its action by the chairman of the Employees' Compensation Commission, reviewed and reported upon 16 such cases during the fiscal year.

PROPERTY RECORDS

The property-record section has accounted for all property of the service and property returns for 301 stations have been audited during the year. Sales of unserviceable property (including boats), livestock, hides, and old metals, aggregated \$10,286.62. Surplus property not desired by any other Government department was sold for \$460.85. Property surplus to the Public Health Service valued at \$10,220.84 has been transferred to other Government departments. Property valued at approximately \$103,574.73 has been transferred from service stations where it was surplus to other service stations where it could be used.

ACCOUNTS SECTION

The accounts section of the division of personnel and accounts conducts all bookkeeping and accounting in connection with the expenditure of 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 tabular statement following shows the personnel of the service as of July 1, 1930. Of the 9,892 employees shown in the table, 4,575 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 disease. 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.

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Personnel of the Public Health Service

[Figures as of July 1, 1930]

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PUBLIC HEALTH SERVICE

Activity	Medical and scientific												
	Regular corps						Reserve corps					Acting assistant surgeon	Attending specialist and consultant
	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	Contract dental surgeon
BUREAU													
Surgeon General's Office.....	1												
Divisions.....			8		1				1				
Detailed to other offices.....		2		3	5	1						8	
FIELD													
Coast Guard.....		1			1					2	8	5	112
Division of Mental Hygiene.....					1								2
Perry Point, Md.....													
Public-health districts.....		4		1	1			1					
Waiting orders.....		2		14	6	2							
Hospital division:													
Marine hospital, Baltimore, Md.....		1			1	1	3				2		5
Marine hospital, Boston, Mass.....		1					3			1	1		3
Marine hospital, Buffalo, N. Y.....					1					1			4
Marine hospital, Carville, La.....										1			4
Marine hospital, Chicago, Ill.....					1		3			1			8
Marine hospital, Cleveland, Ohio.....		1			1		1			1			7
Marine hospital, Detroit, Mich.....					1		1				1		6
Marine hospital, Ellis Island, N. Y.....					4	1	2			1		15	7
Marine hospital, Evansville, Ind.....					1		1						5
Marine hospital, Fort Stanton, N. Mex.....						1				1			3
Marine hospital, Key West, Fla.....					1		1						1
Marine hospital, Louisville, Ky.....					1								2
Marine hospital, Memphis, Tenn.....					1								2
Marine hospital, Mobile, Ala.....											2		1
Marine hospital, New Orleans, La.....					1	1	13			1		2	8

Marine hospital, New York, N. Y.					1	1				2	2	3	13	16				1
Marine hospital, Norfolk, Va.					1		3			2	2		4	5		10		1
Marine hospital, Pittsburgh, Pa.					1		1						4	6		1		
Marine hospital, Portland, Me.					1		1				1	1	1	10				
Marine hospital, Port Townsend, Wash.					1		1						2					
Marine hospital, St. Louis, Mo.	1												3	15	1	1		
Marine hospital, San Francisco, Calif.	1				3	2	3			1	2	1	5	12		9		1
Marine hospital, Savannah, Ga.						1				2			8	7		1		
Marine hospital, Stapleton, N. Y.	1				3	2	3			2			4			9		2
Marine hospital, Vineyard Haven, Mass.	1												1	1	1			
Relief stations:																		
Second class.		1		1	2	1	3			2	1		17	40	9			1
Third class.													110	7	17			
Miscellaneous.													1		1			
Foreign quarantine division:																		
Baltimore, Md.					1								1					
Boston, Mass.					2								3					
Ellis Island, N. Y., immigration	1		2		3								15					
El Paso, Tex.					1								3					
Galveston, Tex.													1				1	
Fort Monroe, Va.	1												1					
Laredo, Tex.													4					
Marcus Hook, Pa.					1								1					
New Orleans, La.					2		3						3					
Rosebank, N. Y.	1				2		1						3					
San Francisco, Calif., immigration and quarantine	1		1		1		1						7	1				3
San Juan, P. R.					1								2					
Foreign ports	1		3	17	7	7	7						73					2
All others			3	10	5	2							132					1
Domestic quarantine division:																		
Interstate					1								1				11	
Trachoma					1								6	1				
Rural sanitation	1				2	1							5					
All others			1															
Scientific research division:																		
National Institute of Health	2		1		5	4								4				1
Leprosy investigation					1		1							2				
Malaria					1												2	
Nutrition studies					1									1				
Stream pollution														7				
Sewage disposal														4			5	
Industrial hygiene and sanitation					2	1							3	32			1	
Child hygiene													3	4				
Statistical office														4			2	
All others	1					1							1	14			2	
Venereal diseases division													47	9				
Miscellaneous					1													1
Total	1	26	8	31	98	33	59	1	1	23	20	12	671	316	38	84	24	30

Personnel of the Public Health Service

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PUBLIC HEALTH SERVICE

Activity	General and technical												Total				
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific National Institute	Administrative assistant	Druggist	Nurse	Aide	Dietitian	Laboratorian in Röntgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other employees	Medical and scientific	General and technical	Sub	Grand
BUREAU																	
Surgeon General's Office.....												3	2	1	5	6	
Chief clerk's office.....												28	22		50	50	
Divisions.....					2							129	5	12	136	148	
Detailed to other offices.....														19		19	
Total.....																	223
FIELD																	
Coast Guard.....														133			133
Division of Mental Hygiene.....													1	3	1		4
Perry Point, Md.....												4	8	1	12		13
Public-health districts.....			1									4		7	5		12
Waiting orders.....												4		24			24
Hospital division:																	
Marine hospital, Baltimore, Md.....			1	1	25	2	2	1	2			8	58	40	100	140	
Marine hospital, Boston, Mass.....			1		19	1		1	1			8	60	23	91	114	
Marine hospital, Buffalo, N. Y.....					11	1	1		1			4	26	16	44	60	
Marine hospital, Carville, La.....			1	1	1							6	263	10	272	282	
Marine hospital, Chicago, Ill.....				1	18	1	2	1	1			8	60	34	92	126	
Marine hospital, Cleveland, Ohio.....			1		19		1		1			8	47	20	77	97	
Marine hospital, Detroit, Mich.....					16	1	1					6	48	20	72	92	
Marine hospital, Ellis Island, N. Y.....			2		54	3	4	1	1			9	194	32	268	300	
Marine hospital, Evansville, Ind.....					6							2	16	9	24	33	
Marine hospital, Fort Stanton, N. Mex.....			1	1	10	3	1					11	103	8	130	138	
Marine hospital, Key West, Fla.....					10							3	26	7	39	46	
Marine hospital, Louisville, Ky.....					8							4	21	14	33	47	
Marine hospital, Memphis, Tenn.....					6			1				2	21	11	30	41	

Marine hospital, Mobile, Ala.				12	1		1	1		4	34	13	53	66	
Marine hospital, New Orleans, La.		1	1	41	2	3	1	3		21	118	56	191	247	
Marine hospital, New York, N. Y.			1	6	5		1	2		10	42	39	67	106	
Marine hospital, Norfolk, Va.			2	28	2	1	1	1		10	86	28	131	159	
Marine hospital, Pittsburgh, Pa.			1	11	1					4	21	13	38	51	
Marine hospital, Portland, Me.		1		8	1					2	25	15	37	52	
Marine hospital, Port Townsend, Wash.		1		13						1	28	4	43	47	
Marine hospital, St. Louis, Mo.				8		1				6	28	21	43	64	
Marine hospital, San Francisco, Calif.		1	2	34	4	2	1	1		8	103	40	156	196	
Marine hospital, Savannah, Ga.		1	1	17	1	1				5	42	20	68	88	
Marine hospital, Stapleton, N. Y.				39	3	3	2	1		14	122	26	184	210	
Marine hospital, Vineyard Haven, Mass.				2						1	8	4	11	15	
Total hospitals												523	2,294		2,817
Relief stations:															
Second class		1		3	1		1	1		15	11	78	33	111	
Third class										10		134	10	144	
Miscellaneous														2	
Total relief stations												214	43		257
Foreign quarantine division:															
Baltimore, Md.		1						1	1		17	2	20	22	
Boston, Mass.		1		1				2	2		21	5	28	33	
Ellis Island, N. Y., immigration										2	12	21	14	35	
El Paso, Tex.										1	12	4	13	17	
Galveston, Tex.								2	2		11	2	15	17	
Fort Monroe, Va.								2	2	2	18	2	24	26	
Laredo, Tex.											14	4	14	18	
Marcus Hook, Pa.		2		2				2	2	1	12	2	21	23	
New Orleans, La.								3	1	2	19	8	25	33	
Rosebank, N. Y.		3		1				5	6	8	110	15	133	148	
San Francisco, Calif., immigration and quarantine				1				4	2	3	44	7	54	61	
San Juan, P. R.									1	1	23	3	25	28	
Foreign ports										6	40	110	46	156	
All others		1	1	1				14	18	13	179	153	227	380	
Total												338	659		997
Domestic quarantine division:															
San Francisco, Calif.										1	23		24	24	
Interstate										5	41	12	46	58	
Trachoma										2	8	8	21	29	
Rural sanitation				11						6	239	9	274	283	
All others				29								1		1	
Total												30	365		395

Personnel of the Public Health Service—Continued

Activity	General and technical—Continued													Total			
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific National Institute	Administrative assistant	Druggist	Nurse	Aide	Dietitian	Laboratorian in Röntgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other employees	Medical and scientific	General and technical	Sub	Grand
Scientific research division:																	
National Institute of Health.....		32										10	64	17	106	123	
Leprosy investigation.....												1	4	4	5	9	
Malaria.....												4	18	3	22	25	
Nutrition studies.....												2	7	2	9	11	
Stream pollution.....												3	20	12	23	35	
Sewage disposal.....														4	19	4	
Industrial hygiene and sanitation.....												9	10	39	58		
Child hygiene.....						1		1				9	3	7	13	20	
Statistical office.....					1							12	4	6	17	23	
All others.....												8	34	19	42	61	
Total.....														113	256		369
Sanitary reports and statistics division.....	4,575														4,575		4,575
Venereal diseases division.....					1				1			2	8	56	12		68
Miscellaneous.....			1									2		2	3		5
Total.....	4,575	32	23	13	475	34	23	13	18	35	37	474	2,664	1,476	8,416		9,892

NURSING, DIETETIC, AND RECONSTRUCTION SECTION

The work of the nursing section has necessitated a gradual increase in the number of personnel employed. This increase for the hospital division will continue for some time to come with the opening of new hospitals and the increasing number of beds.

The nursing section continues to act as its own recruiting agent, using the civil-service application blanks and forwarding the completed application to the commission with request for certification. This seems the most satisfactory and expeditious method of securing personnel, since it has not been possible for the commission alone to secure the nurses in the numbers and with the qualifications needed. In the past fiscal year the turnover has been reduced—a total of 95 as against 124 in 1929—due, it is believed, to the increase in salary granted under the act approved May 28, 1928. There are at present 440 nurses in the Public Health Service. By far the greater number of these are serving in hospitals and relief stations of the service, though the Federal prisons and narcotic farms will require a number of nurses in the near future. It is proposed to assign a chief nurse and two nurses as soon as possible to the Federal prison at Leavenworth, and later to assign nurses to all Federal prisons and to the narcotic farms when they are established.

With the increasing responsibilities placed upon the Public Health Service come also greater responsibilities for the nursing service and the necessity for securing more highly qualified nurses for the new types of service. Qualifications for nurses in the Public Health Service cover a wide range. Nurses having special training are needed as follows:

- Nurse anesthetists. Nearly all hospitals now desire such personnel.

- Expert surgical supervisors.

- Nurses trained for work in dental clinics and eye, ear, nose, and throat clinics.

- Nurses able to board ships and assist in the physical examinations and delousing of women immigrants.

- Nurses for epidemic work for the service in disasters, such as floods, tornadoes, and similar emergencies.

- Nurses for communicable disease nursing.

- Nurses for trachoma prevention work, where not only an understanding of the special types of nursing must be had but where knowledge of public-health nursing is also necessary for the follow-up work in the home.

With the new legislation placing the Public Health Service in charge of medical work in Federal prisons and with the proposed assignment of nurses to the infirmaries of those prisons, it becomes necessary to secure nurses with special psychiatric training and with some knowledge of mental hygiene. This is not an easy matter in view of the limited number available. It is proposed to use the first of these prisons as a possible training center.

With the opening of the narcotic farms authorized under the act of January 19, 1929, nurses trained in narcotic addiction work will be

required. With these highly specialized groups there must be devised a method for the future stabilization for the service, since a large turnover in these specially trained groups of personnel should be avoided if possible.

As stated before, recruiting for all these types of service is no small task, since the civil service is unable to provide nurses in the number and with the special qualifications desired without the help of the nursing section. The nursing section maintains a close contact with organized nursing and with training schools in order to obtain a sufficient number of qualified applicants. Information regarding the Public Health Service is being furnished to nursing schools, registries, and State nursing organizations at all times through printed matter, attendance at nurses' meetings, securing a place on programs of national and State association conventions, and in utilizing all opportunities to keep the nursing service of the Public Health Service in the minds of nurses. With the increase in bed capacity provided under new hospital construction many more nurses will be needed; and so while at the present time there is a small waiting list, it will be necessary to speed up recruiting if the demands are to be met.

The greatest need for the nursing service is still that for legislative action placing the nursing service of the Public Health Service on the same basis as that of the Army and Navy. The establishment of a corps of nurses with method of appointment, qualifications, educational requirements, pay and allowances, and retirement such as are now provided for the Army is a matter of vital importance to the nurses of the Public Health Service. Unless this can be accomplished there will continue to be instability in personnel induced by the constant changes in the classification, policies, and procedures which work hardship to the individual and the section without being of any advantage to the bureau. Constant change in personnel is costly, and personnel can not be stable when frequently faced with a change in status or salary.

Inspections of stations have been made by the superintendent of nurses when indicated, contacts with nursing organizations have been maintained as usual, lectures have been given and papers read to organization meetings and student groups. The lecture course for senior students of the Army School of Nursing in Washington has continued, but some readjustment must be made which will increase the attendance and reduce the number of lectures given.

The emergency-room service maintained at the bureau was continued and has been greatly increased by service given the Internal Revenue Bureau over a period of eight months. There were 2,458 visits distributed as follows:

Public Health Service.....	1,606
Internal Revenue.....	728
Census.....	42
Others.....	82

There are 21 dietitians in the service. In the smaller hospitals the chief nurse continues to act as dietitian; this has proved to be a most satisfactory arrangement, and it has been found that in those stations there is very little criticism of the food and the ration cost is maintained at the established standard. Five nurses are now serving in

the dietetic service. The same difficulty in securing qualified personnel exists here as exists in the nursing service. The civil service is rarely able to furnish the personnel required at the time when it is needed.

There are 34 reconstruction aides on duty. Due to the fact that it is impossible to secure trained reconstruction assistants, the chief aides in the service have continued to train men for this work. In a number of instances these men have taken special courses following their training and have eventually been able to qualify as physiotherapists.

Six nurses have taken physiotherapy training and are satisfactorily serving in the physiotherapy department.

The school which has been conducted at the New Orleans marine hospital, where nurses have been given training in dietetics, physiotherapy, laboratory, and X-ray work, has proved of value.

The increased work due to the increase in the number of beds and the additional responsibilities, and also due to the increase in the number of calls at the emergency room in the bureau because of the work done for the Internal Revenue and Census Bureaus, has been carried on without any additional force in the office of the superintendent of nurses, though this work has put a considerable strain on the section.

THE CHIEF CLERK'S OFFICE

PERSONNEL ON DUTY IN THE BUREAU

The civil service personnel in the bureau on June 30, 1930, numbered 193, as compared with 192 on duty at the end of the preceding fiscal year. A reduction of two employees in the chief clerk's office was offset by the appointment of three additional employees in the new division of mental hygiene. This growth was caused by the necessary increase of activities under the act of Congress by which this division was recently established.

The operation of the "average-provision" clause of the appropriation act continued to prevent the promotion of deserving employees having high efficiency ratings in those grades in which the average salary was equal to or above the standard rate of pay. As was the case in previous years these grades were those having less than 10 employees each. As these were generally the higher grades, this manifest injustice operated principally against the veteran employees of the bureau.

The number of cases of tardiness was 1.4 per employee for the year, and the average sick leave was 7.8 days per employee.

PUBLIC HEALTH SERVICE LIBRARY

The increasing number of requests for library service of all kinds from the various divisions and from the field service and the public is gratifying evidence of the growing helpfulness and usefulness of the Public Health Service library. Requests were made, almost daily, upon the Army medical library and the Library of Congress for the loan of books, and frequently the library of the Public Health Service has been able to return the courtesy.

The library added 347 bound volumes to its collection during the year and discarded 85 obsolete editions, so that its shelves now contain approximately 12,447 volumes. Of these additions, 82 works were obtained by purchase, the remainder being procured without cost. The collection of pamphlets was increased 275, and now numbers 6,515.

Journals and other periodicals to the number of 255 were received and circulated to officials concerned. Of these, 33 were paid subscriptions, the remainder being received gratuitously or by exchange. Approximately 145 monthly and weekly bulletins from State, city, and foreign health departments, were regularly received.

A systematic collection of photographs of health subjects and service activities, maintained by the library, is being consulted extensively, and numerous requests are made by authors and writers of feature articles for copies of the photographs.

NEW BUILDING FOR THE SERVICE

By the act of July 3, 1930 (Public, No. 519), authority was granted for a new building for housing the administrative activities of the service in Washington, and an appropriation of \$865,000 was granted for its construction. Steps are actively under way for the selection of an appropriate site, and plans for the new building have been prepared and approved. The need for the new quarters is exceedingly urgent.

PRINTING AND BINDING

The fund available for printing and binding for the Public Health Service amounted to \$93,000, an increase of \$2,000 over the preceding year. Even with this addition, the fund proved to be insufficient for the printing of all publications deemed necessary, but fortunately it proved to be possible, near the end of the fiscal year, for the department to make a small additional allotment. The total expenditures under this heading for the Public Health Service proved to be \$101,084.19, of which amount, \$11,180.46 was spent for printing blank forms and records.

IMPROVEMENTS

During the year a survey was completed of the various classes of files and records at the hospitals and other field stations of the service, as a result of which recommendations were submitted through the Treasury Department to the Joint Committee of Congress on the Disposition of Useless Executive Papers, and authority was thereupon granted for the disposal of a considerable quantity of these files and records which had been found not to be useful in the transaction of business and which had no permanent value or historical interest. In pursuance of this authority, special instructions were issued to the field stations, and the work of disposing of the records and papers in question was carried out. This is considered an important forward step in the improvement of the official records maintained in the field.

A study was made by a service expert of the natural and artificial illumination in the mail and records section of the bureau, and as a result of his report the Director of Public Buildings and Public Parks installed a new illuminating system, whereby the artificial illumination was brought up to the required standard. It is expected that this will add greatly to the physical well being and efficiency of the employees concerned.

The bureau library and the photostat unit cooperated during the last fiscal year in improving the method of furnishing copies of photographs desired by writers and others. The negatives in the photostat unit were numbered, and each photograph in the master file in the library was identified and given the same number. A copy of any desired photograph can now be ordered by number and furnished without delay. An index by serial number is maintained in the library.

APPENDIX

FINANCIAL STATEMENT

The following is a statement of expenditures from appropriations of the Public Health Service for the fiscal year 1930:

Expenditures from appropriations

Appropriation	Appropriated	Obligations			Unobligated balance
		Incurred	Liquidated	Outstanding	
Salaries, office of Surgeon General, Public Health Service.....	\$318,955.00	\$318,351.64	\$318,351.64	-----	\$603.36
Pay, etc., commissioned officers and pharmacists, Public Health Service.....	1,284,500.00	1,262,954.99	1,260,775.65	\$2,179.34	21,545.01
Pay of acting assistant surgeons, Public Health Service.....	345,840.00	345,547.92	344,844.94	702.98	292.08
Pay of other employees, Public Health Service.....	1,090,850.00	1,089,712.55	1,089,712.55	-----	1,137.45
Freight, transportation, etc., Public Health Service.....	29,000.00	28,661.90	24,665.99	3,995.91	338.10
Maintenance, Hygienic Laboratory, Public Health Service.....	43,000.00	42,717.74	38,327.02	4,390.72	282.26
Books, Public Health Service.....	500.00	497.45	464.39	33.06	2.55
Pay of personnel and maintenance of hospitals, Public Health Service.....	1,642,897.60	6,406,459.15	6,182,563.59	223,895.56	17,438.45
Quarantine service.....	460,000.00	455,890.09	426,590.62	29,299.47	4,109.91
Preventing the spread of epidemic diseases.....	400,000.00	275,636.97	272,791.66	2,845.31	124,363.03
Field investigations of public health.....	315,940.00	313,414.14	308,028.59	5,385.55	2,525.86
Interstate quarantine service.....	68,520.00	67,742.55	66,469.66	1,272.89	777.45
Studies of rural sanitation, Public Health Service.....	346,000.00	334,203.97	333,960.79	243.18	11,796.03
Control of biologic products, Public Health Service.....	46,620.00	46,260.47	44,296.36	1,964.11	359.53
Expenses, division of venereal diseases, Public Health Service.....	73,780.00	72,950.67	71,512.97	1,437.70	829.33
Narcotic farms, Public Health Service.....	1,904,470	8,465.11	8,047.71	417.40	579.59
Total.....	11,256,447.30	11,069,467.31	10,791,404.13	278,063.18	186,979.99

¹ Includes \$787,544.60 reimbursement for care of Veterans' Bureau patients.

² Balance available from \$10,000 appropriated for fiscal years 1929 and 1930.

Quarantine service—Expenditures by stations

Name of station	Pay of officers and employees	Maintenance	Total
CONTINENTAL QUARANTINE STATIONS			
Aransas Pass, Tex.	\$240.00		\$240.00
Baltimore, Md.	37,942.14	\$26,680.39	64,622.53
Beaufort, S. C.	900.00		900.00
Biscayne Bay (Miami), Fla.	8,274.88	1,826.60	10,101.48
Boca Grande, Fla.	2,620.00	85.00	2,705.00
Boston (Gallops Island), Mass.	44,488.09	26,235.38	70,723.47
Brownsville, Tex.	16,461.92	2,868.90	19,330.82
Brunswick, Ga.	4,560.00	1,717.74	6,277.74
Cape Fear (Southport), N. C.	8,258.24	3,932.41	12,190.65
Charleston, S. C.	20,272.87	5,951.66	26,224.53
Columbia River (Astoria), Oreg.	3,629.98	2,261.51	5,891.49
Columbus, N. Mex.	125.00		125.00
Corpus Christi, Tex.	900.00	95.00	995.00
Cumberland Sound (Fernandina), Fla.	2,104.96		2,104.96
Delaware Bay and River (Philadelphia), Pa.	11,306.51	23,964.14	35,270.65
Delaware Breakwater (Lewes), Del.	850.00	330.20	1,180.20
Del Rio, Tex.	6,029.95	1,106.09	7,136.04
Eagle Pass, Tex.	16,240.05	1,142.57	17,382.62
El Paso, Tex.	36,122.57	3,410.76	39,533.33
Eureka, Calif.		23.00	23.00
Freeport, Tex.	450.00	6.00	456.00
Galveston, Tex.	30,214.55	12,407.77	42,622.32
Gulfport, Miss.	7,112.58	717.53	7,830.11
Hidalgo, Tex.	6,408.15	845.07	7,253.22
Georgetown, S. C.	60.00		60.00
Key West, Fla.	5,728.89	314.30	6,043.19
Laredo, Tex.	25,433.45	3,702.65	29,136.10
Marcus Hook, Pa.	40,644.11	28,455.77	69,099.88
Mercedes, Tex.	2,723.20	773.14	3,496.34
Mobile, Ala.	27,768.84	12,426.09	40,194.93
New Bedford, Mass.	721.67	10.00	731.67
New Orleans, La.	64,184.83	9,245.83	73,430.66
Newport, R. I.		15.00	15.00
New York, N. Y.	232,454.47	89,720.57	322,175.04
Nogales, Ariz.	7,931.54	1,959.97	9,891.51
Norfolk (Fort Monroe), Va.	42,174.71	19,953.43	62,128.14
Pascagoula, Miss.	1,200.00		1,200.00
Pensacola, Fla.	16,070.90	2,679.86	18,750.76
Perth Amboy, N. J.	892.00	455.38	1,347.38
Port Arthur, Tex.	9,298.71	259.47	9,558.18
Portland, Me.	15,478.17	3,585.67	19,063.84
Portland, Oreg.	12,373.08	3,093.96	15,467.04
Port Townsend, Wash.	17,660.25	4,886.29	22,546.54
Presidio, Tex.	5,406.03	953.06	6,359.09
Providence, R. I.	1,700.00	795.00	2,495.00
Reedy Island (Port Penn), Del.	6,850.00	2,079.30	8,929.30
Rio Grande, Tex.	4,860.00	131.46	4,991.46
Roma, Tex.	3,829.50	721.57	4,551.07
Sabine, Tex.	15,829.67	2,613.54	18,443.21
St. Andrews (Panama City), Fla.	1,200.00	215.27	1,415.27
St. John's River (Jacksonville), Fla.	8,002.92	1,573.55	9,576.47
St. George's Sound (Carabelle), Fla.	300.00		300.00
San Diego (Point Loma), Calif.	13,939.24	4,835.33	18,774.57
San Francisco (Angel Island), Calif.	75,672.92	47,279.67	122,952.59
San Pedro (Los Angeles), Calif.	32,169.20	11,692.73	43,861.93
San Luis Obispo, Calif.	25.00		25.00
Savannah, Ga.	13,936.04	5,376.05	19,312.09
Seattle, Wash.	15,309.96	13,991.27	29,301.23
Tampa, Fla.	16,709.54	11,026.83	27,736.37
Vineyard Haven, Mass.		10.00	10.00
West Palm Beach, Fla.	1,200.00		1,200.00
Ysleta, Tex.		3.00	3.00
Zapata, Tex.	2,280.00	566.40	2,846.40
Freight and miscellaneous expenses		23,537.19	23,537.19
Travel of medical directors within districts		1,077.25	1,077.25
Total, continental quarantine stations	1,007,531.28	425,623.57	1,433,154.85
INSULAR QUARANTINE STATIONS			
Hawaii	43,326.25	14,693.43	58,019.68
Porto Rico	39,617.74	11,129.03	50,746.77
Virgin Islands	13,380.58	1,608.73	14,989.31
Total, insular quarantine stations	96,324.57	27,431.19	123,755.76
Leprosy investigation station, Honolulu, Hawaii	20,606.02	2,835.33	23,441.35
Total, all stations	1,124,461.87	455,890.09	1,580,351.96

MISCELLANEOUS RECEIPTS

(Covered into the Treasury)

The revenues derived from operations of the Public Health Service during the fiscal year 1930 are as follows:

Source	Amount
Inspection, fumigation, and disinfection of vessels at national quarantine stations.....	\$561,649.87
Care and treatment of pay patients in hospitals and at relief stations (other than Veterans' Bureau patients and immigration patients at Ellis Island).....	46,055.45
Sale of rations.....	13,416.79
Sale of obsolete, condemned, and unserviceable property.....	9,434.40
Sale of livestock and livestock products.....	1,004.39
Commissions on pay telephones installed in service buildings.....	1,150.73
Other revenues.....	2,972.07
Total.....	635,683.70

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