REPORT OF THE DELEGATES OF THE UNITED STATES OF AMERICA TO THE NINTH PAN AMERICAN SANITARY CONFERENCE

Buenos Aires, Argentina

November 12-22, 1934

B-608

CONTENTS

Tables

Report of the Delegates of the United States of America to the Ninth Pan American Sanitary Conference

I. Public Health Administration in the United States

Activities of the Federal Government.- The United States Public Health Service is the recognized Federal health agency of the Government of the United States. Many other Federal offices and bureaus also perform a certain amount of health, relief and research work, the latter in connection with diseases of animals and man.

The Public Health Service is a Bureau in the Treasury Department at Washington, D. C., whose activities are directed by the Surgeon General, its work being carried on by commissioned medical, dental, sanitary-engineering and other officers, with a corps of scientific, nursing and laboratory personnel, conducting its various field activities throughout the country and abroad. The scope of its work is fairly well indicated by the names of the different administrative divisions of the central organization, which are as follows:

Scientific Research (including the National Institute of Health); Domestic Quarantine; Foreign and Insular Quarantine and Immigration; Sanitary Reports and Statistics; Marine Hospitals and Relief; Venereal Diseases; Mental Hygiene (including work in connection with narcotics), and Personnel and Accounts.

In addition, a great deal of cooperative work is performed in collaboration with other Government Bureaus, with State, City and County Health Officers and with Voluntary Agencies.

Activities of the State Departments of Health. Most states have a full-time health officer who exercises a measure of general supervision over health and sanitary activities within the state. Not infrequently states are divided into sanitary districts, each district being under the supervision of a whole-time physician whose office is dependent upon the central state health office.

Cities and counties as a rule have their own health organizations, many cities, particularly, having very efficient health administrations, highly organized, and for the most part independent of State or Federal control.

There are many Voluntary Agencies in the United States that engage in public health work, usually in cooperation with Federal, State or local health authorities.

II. Progress in the Control of Disease

When health conditions that prevailed in the closing years of the 19th Century are recalled and compared with conditions as they exist today, it may be said that progress in the control of disease and in the prolongation of human life in comfort, has been no less than astounding and indeed most gratifying. It must not be forgotten, however, that a continuation of this happy state of affairs will require constant vigilance by men trained in health work - plus the necessary funds to carry on. It should also be said that, great as our progress has been, much still remains to be done. In order to best recount what has been accomplished and to elucidate the problems that still confront us, it is desirable to take up the study of the different diseases separately.

Alastrim.- In accordance with a resolution of the Eighth Pan American Sanitary Conference, alastrim is regarded as a mild form of smallpox. The term is not used in reporting this condition in the United States.

Septic Sore Throat.- This term is applied to a virulent form of pharyngitis not infrequently seen in epidemic form in the United States. The disease is often associated with the sale of unpasteurized milk. The outbreaks simulate scarlet fever in many respects. The apparent source is a streptococcic infection of the teats or udder of the cow, or possibly infection of the milk by a human sufferer or carrier during the process of milking. Cases of septic sore throat are sometimes fatal.

Cleanliness in the handling of milk, the elimination from the herd of cows that are infected and the exclusion of infected milkers, plus pasteurization, have been found to be the best safeguards against milk-borne outbreaks of this disease.

Anthrax.- While anthrax has never been a serious problem in human beings in the United States, there have occurred from time to time sporadic cases and small outbreaks, the latter frequently due to infected shaving brushes. There were 12 deaths in human beings from anthrax in the United States during the calendar year 1932.

Asiatic Cholera.- This disease does not exist in the continental United States. Eighteen hundred and fifty-six cases and 1240 deaths were reported in the Philippine Islands during the calendar year 1933.

Ophthalmia Neonatorum.- Practically all State and most city and county health departments have made obligatory the use of prophylactic measures for the eyes of the new-born, penalizing physicians and midwives for neglect to carry out such measures. As a rule, the prophylactic

used after thoroughly cleansing the eyes is a suitable preparation of silver nitrate - one or two drops being instilled into each eye.

The Common Cold.- This troublesome and really serious condition has been made the subject of a great deal of study in recent years. As yet, the causative agent or agents have not been determined with certainty. A number of observations made by different experimenters would seem to indicate that a plentiful supply of all vitamins, particularly vitamins A, B and D, together with the development of air conditioning, may, eventually, materially reduce the incidence of the common cold and of other upper respiratory diseases. Further studies of colds and acute respiratory conditions are most desirable.

Dengue Fever.- Considerable reduction in the incidence of dengue fever has been noted during recent years, due no doubt to the lowered incidence of the vector; however, the disease not infrequently assumes epidemic form in a number of southern states.

Diphtheria.- Gratifying results have been achieved in reducing both the morbidity and the mortality due to this disease, as will be noted in the tables in the accompanying supplement. Prior to 1900, death rates of from 40 to 50 per 100,000 population were not unusual. The reduction which has taken place is unquestionably due to earlier diagnosis, earlier and more general treatment with better grades of antitoxin, better reporting and more efficient isolation of cases and of dangerous carriers, and the popularization of the practice of immunization with toxin-antitoxin or, preferably, as a rule, with alum-precipitated diphtheria toxoid. Experience indicates that the best age at which to immunize is at any time after the eighteenth month and before the child goes to school.

Immunization is rarely required in adults or in infants less than one year old. The Schick test generally has been dispensed with as a preliminary measure to immunization.

Amebiasis.- Endamoeba histolytica has been found present in every state in the Union in which reliable surveys for this parasite have been made, but it is especially in the southern states that endamoeba histolytica is of clinical importance. However, in August, 1933, cases of amebiasis began to be reported to the Department of Health of the city of Chicago, Illinois, situated in the extreme northern part of the United States. Immediately an epidemiological study of what proved to be a somewhat extensive outbreak was begun. From August 16, 1933, to January 24, 1934, 721 clinical cases in 206 cities (including Chicago) were traced, all apparently contracted in Chicago. At first it was believed that the outbreak might be due to food handlers, but intensive study of the situation apparently showed that the cases were due to sewage pollution of the water supplies of two high-class hotels. The following is taken from the report of the committee named by the city health officer to investigate the outbreak.

".....From the field investigations so far made, three important groups of structural sanitary hazards were found in both hotels. In order of increasing importance, they are tentatively listed as:

1. Old and generally defective water and sewerage piping layouts, potentially at least permitting back siphonage of a number of fixtures, such as bath tubs and flush toilets, into water lines.

2. Chance breaks in sanitary sewers or heavy overflows of mixed sanitary sewage and storm water drainage in and outside of the basements.

3. Cross-connections of serious character between water and sewer lines or between water lines carrying potable water and water potentially subject to contamination."

A lesson taught by this outbreak was that amebiasis is frequently diagnosed incorrectly; that the disease is not infrequently mistaken for appendicitis and that operation in such cases is extremely dangerous, often fatal.

In the United States health officials have generally relied on safe water, safe milk and adequate disposal of sewage for the control of amebiasis. It should be remembered that while Endamoeba histolytica is readily removed by filtration, chlorination of water without filtration will not eliminate the parasite. In other words, it would require the addition of much more chlorine than could be tolerated to be able to kill the amoeba in water used for drinking and other domestic purposes.

Bacillary Dysentery.- There are at least two groups of organisms that cause bacillary dysentery, - both present in the United States. Organisms of the Shiga type apparently cause a severer form of this disease than do those of the Flexner group. Shiga types are apparently more prevalent in warmer climates.

Improvement in water supplies, safer milk, improved personal hygiene, better disposal of body wastes and greater protection against flies, together with more efficient care in the prevention of contact infection have greatly reduced the incidence of bacillary dysentery in the United States, although it is still prevalent during certain seasons of the year, particularly in many rural districts in the South and West.

Diarrhea and enteritis.- The same influences that have lessened the

incidence of typhoid fever, amobiasis and bacillary dysentery, have also greatly reduced diarrhea, enteritis and similar obscure intestinal disorders. In hot weather outbreaks of severe diarrhea, usually non-fatal, are observed from time to time, due to eating food that has been kept at too high a temperature. Such outbreaks may also be due to poorly cooked and improperly kept meat from sick animals and to eggs from sick fowls. The infecting agent is frequently found to be an organism of the Gärtner group. (See tables).

Deaths from diarrhea and enteritis have decreased from 140 per 100,000 population in 1900 to about 10 per 100,000 population at the present time.

Epidemic Encephalitis.- The term epidemic rather than lethargic encephalitis is used here because a considerable number of cases of this disease, as seen in the United States, show excitement rather than lethargy and because the grouping often constitutes an epidemic. However, isolated cases are by no means infrequent and even in epidemics it has not been possible, as a rule, to determine any relationship between cases. The case fatality rate has not been determined, but it is estimated to be about 20 per cent.

Epidemiological studies, at present, indicate that the disease is not milk- or water-borne. Attempts to transmit encephalitis by the bites of certain mosquitoes failed in human subjects. The disease is due to a filtrable virus and monkeys and white mice have been found to be susceptible. The possibility that epidemic encephalitis, as seen in the United States, is a new entity, or that it differs materially from other types of encephalitis,must be considered.

Venereal Diseases.- Studies of the incidence of venereal diseases show that there are approximately 643,000 cases of syphilis and 474,000 cases of gonorrhea constantly under medical care in the United States. Estimates of incidence indicate that there are 423,000 new cases of syphilis and 679,000 new cases of gonorrhea which seek treatment annually in the early or acute stages of these diseases.

A study conducted by the Public Health Service in certain districts in cooperation with philanthropic organizations, and State and local boards of health was made for the purpose of obtaining figures on the prevalence of syphilis in the negro and to demonstrate the practicability of mass treatment in remote rural areas. It was found that 20.5 per cent of 33,234 negroes in these districts gave a positive serological test for syphilis. Of the 6,800 found to be infected, treatment was indicated in 5,905, and of this number, 67.7 per cent received 8 or more doses of neo-arsphenamine and 34.8 per cent received 15 or more weeks of treatment by daily mercurial rubs.

The per capita cost of this project including the original survey and all treatment was $2.30 per annum.

Studies indicate that venereal diseases have not increased during the past five years but that there is much better reporting of these diseases.

Scarlet Fever.- The death rate from scarlet fever in the original registration area of the United States, during the first decade of the twentieth century, varied from 6.8 per 100,000 population in 1905, the lowest rate for any one year of this period, to 12.2 in 1910. During the next decade the rates were considerably lower, varying from 2.9 in

1916 to 8.9 in 1911. In the year 1921, the death rate from scarlet fever reached 6.4, but has maintained a level below 4.0 per 100,000 since that time; during the last five years for which data are available, the rates have been approximately 2.0 per 100,000. (See tables). The causes underlying this progressive and pronounced mortality decline for scarlet fever, in spite of the continued high morbidity rate, are not understood.

Within recent years, there has been developed a satisfactory hemolytic streptococcus antitoxin for the treatment of scarlet fever but its use is too limited to produce any effect on the death rate for the country as a whole. Neither can the apparent improvement in case reporting or the increased tendency toward hospitalization of cases be the explanation. Milk-borne scarlet fever is of much less frequent occurrence than formerly, due to the fact that pasteurization is much more general; however, such epidemics still occur from time to time. In some outbreaks it has been difficult to distinguish between scarlet fever without eruption (granted that such cases occur) and septic sore throat, for the reason that the cases occur side by side, apparently contracted from the same source, which are very similar in character except for the absence of the characteristic eruption, and usually the absence of exfoliation.

Active immunization against scarlet fever, through the use of graduated doses of hemolytic streptococcus toxin, is reasonably satisfactory from the standpoint of the immunity produced. However, there has been no general adoption of this method by either the physician or the public because of the many hypodermic injections required and the frequency of disagreeable reactions following one or more of the injec-

tions. The research staff of the Public Health Service has met with some success in the production of a hemolytic streptococcus toxoid as an active immunizing agent against scarlet fever.

Yellow Fever.- No case of this disease has been reported in the United States since 1905. Much has been added to our knowledge of yellow fever in recent years by observers of various nationalities. Among the outstanding achievements in the field of research in yellow fever are the following:

(1) The discovery that *Macacus rhesus* and certain other species of monkeys are susceptible to the disease.

(2) The discovery that the serum of persons who have had yellow fever at any period of their lives will protect susceptible animals against lethal doses of the virus and the application of this principle in determining that the disease has existed in populations where its presence had not been suspected.

(3) The discovery that the virus of yellow fever can be attenuated by passing it through mice, using special methods of inoculation.

(4) The discovery of a method of immunizing against yellow fever by the use of an attenuated virus and immune serum, which latter may be the serum of a person who has been artificially immunized against the disease.

(5) The discovery that a number of mosquitoes, other than *Aedes egypti* are vectors of the virus.

Because of the relatively low incidence of yellow fever in the Western Hemisphere at the present time, the people, and even health officers in infectible territory no longer manifest the keen interest in

this disease that formerly existed; but it must not be forgotten that yellow fever is still a very potential danger to the human race and vigilance against this scourge of man must never be relaxed.

Rocky Mountain Spotted Fever.- Until 1930, Rocky Mountain spotted fever was thought to be a disease of limited distribution, and that it was confined to the northern Rocky Mountain area of the United States. In the past five years it has been found that the disease is present in the eastern and southern parts of the United States, and it is evident that the greater part of the United States is in the endemic area. In addition, within the past year a disease originally described as exanthematic typhus of São Paulo (Brasil) has been shown to be identical with Rocky Mountain spotted fever. Other investigations suggest that the fievre boutonneuse of the Mediterranean littoral is at least very closely related to spotted fever, if not identical with it. Furthermore, the epidemiological and clinical descriptions of the so-called "Kenya" typhus of East Africa are very suggestive of spotted fever. It is suggested that this disease (spotted fever) may exist unrecognized in other parts of the world.

In the United States, Dermacentor andersoni and Dermacentor variabilis seem to be responsible for most of the human cases.

Methods of control for this disease have been directed toward the eradication of ticks, but without a very marked success. The best method for protection of the human population seems to be in personal care in avoiding tick-infested localities in so far as possible and in making frequent examinations of the person and clothing during the tick season. Such examinations should be carefully made after excursions into

tick-infested localities in order to remove all ticks from the body at the earliest moment. A vaccine prepared from infected ticks, apparently of considerable value, has been in use in the United States for about seven years. The protection afforded is seemingly not permanent and the vaccination is usually repeated at the beginning of each tick season.

Undulant Fever.- Until a few years ago, undulant fever was not known to occur in the United States with the exception of a small number of cases arising from infected goats in certain southwestern states.

When Evans of the Public Health Service showed that the organism causing contagious abortion of cattle is substantially the same as that causing undulant fever in man, laboratory workers began to recognize the fact that undulant fever of bovine origin is by no means rare in this country. At the present time about twelve hundred cases of undulant fever in man are reported annually. The disease is chiefly one of rural communities and small cities and towns, being confined largely to the age group above ten years. It is rare in large cities, due no doubt to the fact that the milk sold in cities is generally pasteurized.

Three types of undulant fever are recognized, namely: that derived from goats, that derived from swine and that derived from cattle. Contagious abortion is wide-spread in cattle in the United States and veterinarians are engaged in attempts to eradicate this disease.

Influenza.- Relatively little progress has been made in differentiating influenza from other similar "upper respiratory infections", in preventing the disease, or in identifying with certainty the exciting cause, or at least in determining the particular organism that is responsible for death in this disease. More and more it is being realized

that a member of the diplo-streptococcus group of organisms is almost invariably present in the lungs, and usually in the blood, of fatal cases. Influenza offers a fruitful field for further research. (See tables influenza and pneumonia).

Leprosy.- The total number of lepers known to exist in the continental United States is approximately 400. In the Philippines and Hawaii, this disease is quite prevalent. Although research has been carried on for a number of years, no great advance bearing directly on the prevention or cure of this disease has been made. Attempts at cultivation of the causative organism, while said to have been successful, have not as yet proved to be of practical value. There is a tendency among leprologists in the United States to discredit the value of chaulmoogra oil and its derivatives in the treatment of this disease. There is a growing opinion that diet is of considerable importance in the treatment of leprosy although the question seems to be one of general nutrition rather than any particular type of diet. Early diagnosis is important in the treatment.

Epidemic Cerebrospinal Meningitis.- Statistics for this disease are available only since 1910 when a death rate of .3 per 100,000 was reported. Since that time there has been a fluctuating increase in the death rate, part of which may be due to better reporting. (See tables).

The epidemiology of meningococcus meningitis requires further development. Carriers of meningococci are common, particularly where there is crowding, but it is the exception rather than the rule to be able to demonstrate causal relations between carriers and cases or outbreaks.

Overcrowding, particularly in sleeping quarters, is an important

factor in the propagation of this disease.

Pneumonia.- Much research has been done on this disease in recent years. Death rates have been considerably reduced but pneumonia and influenza are still very important causes of death. It is believed that the lowered incidence of pneumonia in the United States is due to better living conditions rather than to any marked advance in therapy, although there has been considerable improvement in the care of those suffering from this disease. (See tables Influenza and Pneumonia).

Malaria.- In two particulars the study and control of malaria have been considerably advanced in recent years. The synthesis of new remedies for the disease has given us more weapons of attack, and the use of malarial parasites in the therapeusis of mental diseases allows the study of the disease under closely controlled conditions. Dr. Bruce Mayne of the Public Health Service has developed a special technique for shipping malarial parasites for therapeutic use. He has devised a special culture medium in which may be planted sporozoites from infected salivary glands of Anopheles mosquitoes. This material can be kept viable for as long as three weeks before shipment, and has been shipped by parcel post for as long as five days in transit with successful infection resulting thereafter. Questions of immunity, of the actual course of the disease, and of the existence of strains of parasites differing in virulence have, in some measure, been clarified and solved.

The new species of parasite P. ovale, (human) recently found in Africa, has been shown to exist in the Philippine Islands. The thick-film method of examining for malarial parasites has been found distinctly advantageous by workers in the United States. Drug prophylaxis may be

said to be still in the experimental stage; results, so far, have been somewhat disappointing, but not to the extent of discouraging further experiments. The use of Paris green as a larvicide has been considerably extended during the last few years. Airplanes have been used for dusting breeding places, as have also been portable blowers for small boats. Top-minnows have been used in some places with fair results.

Poliomyelitis.- Statistics are available for this disease only since 1910, at which time a death rate of 2.5 was reported. Since then the death rate has fluctuated within relatively narrow bounds with the exception of the epidemic year, 1916, when a rate of 21.6 was recorded. (See tables). In spite of the amount of research that has been done in poliomyelitis, the disease is still a serious public health problem in the United States.

Intestinal Parasitism.- A study of the "Decrease of Hookworm Disease in the United States" was recently made by Dr. C. W. Stiles of the United States Public Health Service. Quoting from this article: "Hookworm infection, according to statistics for the years 1910 - 1921 inclusive, was still very common in the southern states in 1921. One million four hundred thirteen thousand persons examined showed an infection of 36.7 per cent. Thirty-one thousand six hundred three of these (examined in 1921) showed an infection of 32.3 per cent." In reply to a letter addressed to the southern State Boards of Health, requesting information regarding their statistics for 1929, Doctor Stiles obtained recent data on hookworm infection in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, West Virginia and Virginia. The total

number of persons examined was 121,388; of these 34,134 or approximately 28.1 per cent showed infection. These data indicate that hookworm infection is still widespread geographically in the southern states.

From October 23, 1929, to January 9, 1930, the Division of Zoology, National Institute of Health, examined for intestinal parasites 73 boys in the National Training School, Washington, D. C. Sixty-seven of these boys came from the southern states and of this number, 34.3 per cent showed hookworm infection.

As part of a five year program of researches on ascariasis in the United States, especially in its relation to the health of children, studies are being conducted by the School of Hygiene and Public Health of the Johns Hopkins University, under the auspices of the National Research Council, with the aid of a grant from the American Child Health Association. The project was started in September, 1927, and the first field investigation was carried out in the summer of 1928 in southwestern Virginia. Ascariasis is quite prevalent in many rural districts in the United States.

Three tapeworms of importance to man are Taenia saginata, Taenia solium and Hymenolepis nana. Taenia solium is rarely found in the United States. The National Institute of Health occasionally receives for determination a specimen of Cysticercus cellulosae, the larval stage of Taenia solium. The last specimen received at the Institute was in January, 1928. Taenia saginata and Hymenolepis nana are prevalent throughout the United States.

An increasing number of native cases of infection with the broad tapeworm, Diphyllobothrium latum, is being reported from the Great Lakes

region of the United States. Dr. Thomas B. Magath of the Mayo Clinic, Rochester, Minnesota, in 1927, first demonstrated experimentally that the life history of this tapeworm is complete in the United States and his studies were confirmed by Teunis Vergeer of the University of Michigan, and by H. E. Essex of the Mayo Foundation. The worm was imported into this continent by immigrants from Europe, and Doctor Magath states that the control of this infestation in America should be a matter of considerable concern.

Plague.- Extensive ground squirrel infection still exists in a number of interior counties of California and two human cases occurred in May and June, one in Oregon and one in California. Both human and rodent plague were also reported during the fiscal year in the Islands of Hawaii and Maui, Territory of Hawaii.

Combative measures against ground squirrel infection are confined chiefly to poisoning and to maintaining a squirrel free zone around cities and towns. No rat infection was reported during the year in the continental United States, but rat-proofing operations, especially in the erection of new buildings and in making extensive repairs to old structures have been continued in a number of ports and cities.

Pellagra.- Pellagra is still quite prevalent in certain southern and southeastern portions of the United States. It is relatively rare in other parts of the country. The prevalence of this disease is associated with poor economic conditions and improper dietary habits. Effort is being made to educate the people in pellagrous districts in obtaining a balanced diet and health authorities have undertaken the distribution of pellagra preventive material, particularly yeast, which has been shown

experimentally to be highly effective both as a prophylactic and a therapeutic agent. In emergencies the distribution of yeast has apparently been of great service. Research is being maintained for the purpose of demonstrating the pellagra preventive properties of foods adapted to production in the parts of the country in which the disease is prevalent. Unless the disease is too far advanced, treatment by means of a well-balanced diet is highly successful in effecting a rapid cure.

Psittacosis.- Relatively few cases of psittacosis were reported in the United States prior to 1930, although unrecognized cases have probably occurred from time to time. While the incidence of this disease during the last five years has not been great, there have been several outbreaks with a number of fatalities. Parrots and parakeets are particularly susceptible to this disease.

Intensive laboratory studies have been made of psittacosis in the United States. A noteworthy development has been the observation that the infection is due to a filtrable virus and not to the bacterial factor (Nocard's bacillus), which was long regarded as the causative agent. The second observation is that, experimentally, the disease is readily communicable to white mice, in which animals the pathological lesions present a rather characteristic picture. Laboratory infections are common, almost the rule among workers. The serum of a person who has recently had the disease apparently possesses therapeutic value if given early in the course of the disease.

Rabies.- This disease, while not constituting a major health problem in the United States, is, nevertheless, widely disseminated in dogs and is often present in other animals. There are relatively few human cases

of rabies, but each year there are a considerable number of persons who require the Pasteur treatment.

Vaccination of dogs for the prevention of rabies has not so far given very satisfactory results.

Measles.- It is hard for the general public, and even for some physicians to realize the seriousness of this disease. While the death rate from measles in the United States fluctuates considerably, a reference to the tables will show an actual reduction of considerable extent. (See tables).

Measles is widespread throughout the United States; in fact, it is perhaps the most universal of all contagious diseases. Owing to the fact that the disease is so difficult of recognition in the early stages, quarantine measures serve only a limited purpose in combating measles. It has been found, however, that when the disease is prevalent in a given community, a campaign of education to induce parents to keep children who are under five years of age from being exposed is an effective means of reducing the mortality from the disease. The dangerous age for measles is during the early years of life as by far the majority of deaths occur in children under five years of age. Inasmuch as one must have measles at some time during life, perhaps the best age to contract this disease is from the fifth to the fifteenth year.

Experimental work with immune serum and with the virus of measles holds out the hope that possibly a means of vaccination may be discovered eventually.

Typhus Fever.- It has been demonstrated that there is present in the United States a form of typhus fever usually spoken of as endemic which is

not ordinarily louse-borne, but which is transmitted by fleas. However, when flea-borne typhus appears in members of a louse infested population, it is conceivable, even probable, that louse transmission may occur and that the flea-borne type may assume the characteristics of the louse-borne.

The incidence of endemic typhus fever in the United States is extremely low.

Typhoid and paratyphoid fevers.- Safer water for drinking and other domestic purposes, safer milk, milk products and other foods, better disposal of body wastes, to a limited extent vaccination, improved personal hygiene, greater care in the prevention of contact with cases and carriers and better protection against flies are the principal measures which have been relied upon in combating typhoid and paratyphoid fevers in the United States. The success which has attended the employment of these measures is most gratifying as will be manifest by a reference to the accompanying tables.

Whooping cough.- This disease is widespread in the United States as is the case in practically all other civilized countries. The difficulty in making a diagnosis in the early stages of whooping cough, due in part to failure of parents to call a physician early, handicaps the health officer in his efforts to control this disease through quarantine measures. In whooping cough, as in measles, the danger is greatest in the early years of life, approximately 95 per cent of all deaths from whooping cough in the United States occurring in children under five.

Every effort should be made to induce parents to keep young children from being exposed to the disease. If whooping cough can be post-

poned until the child is at least five, the chances of its surviving an attack are infinitely increased. Vaccination as a preventive measure against whooping cough may be said to be still in the experimental stage.

Trachoma.- In 1912 a survey of all the Indian tribes in the United States revealed the fact that this disease was widely disseminated among Indians in this country. It was also found to be quite prevalent among the poorer classes of other races in a number of rural districts in certain southern and southwestern states. Systematic treatment of those affected in clinics, but more especially in hospitals, together with improved habits of personal hygiene, has greatly reduced the incidence of this disease.

Tuberculosis.- There has been a steady decline in both the incidence of, and the mortality from tuberculosis of all forms in the United States for more than thirty years, as a reference to the accompanying tables will show. (See tables). This decrease is attributed chiefly to better living conditions, better and more abundant food, earlier diagnosis, more effective treatment, intensive campaigns of education in personal hygiene and in the prophylaxis of the disease, more extensive pasteurization of milk and to hospitalization and training of "open" cases. Close cooperation between governmental and voluntary agencies has contributed to this result.

Tularaemia.- This is primarily an infectious disease of wild rodents, especially rabbits and hares. Secondarily it is a febrile disease of man transmitted from wild animals to man by the bites of blood-sucking wood ticks, or flies, or by contamination of man's hands or eyes by the internal organs or body fluids of infected rodents, flies or ticks.

Tularaemia has been recognized in 45 states of the United States which have reported 3,628 human cases, of which 5 per cent have died. The disease was recognized in Japan in 1925, in Russia in 1928, in Norway in 1929, in Canada in 1930, and in Sweden in 1931, but no other country has reported the infection in animals or man.

While the great reservoir of infection in the United States is the wild rabbit or hare, single cases in man have been traced to the squirrel, ground hog, muskrat, opossum, skunk, coyote, dog, cat or quail. In Russia 1,000 cases contracted the infection from the water rat of Europe (Arvicola amphibius) by skinning these animals for their pelts. In the other countries the reservoir of infection is rabbits and hares.

Smallpox.- For many years a very mild strain of smallpox has existed in the United States appearing from time to time in communities that are only partially protected by vaccination. Occasionally, a severe strain of the disease appears, often side by side with the mild strain, and when this happens the mortality in the unvaccinated may be quite high. In so far as known, the mild strain never develops or changes into the severe form but will protect fully against the latter type. Isolation of cases, vaccination, and when necessary isolation of contacts, and general vaccination invariably control all forms of smallpox if properly carried out. (See tables).

Cancer and other malignant tumors.- No very great advance has been made in our knowledge of malignant tumors, including cancer, since the date of the Eighth Conference. Cancer, in particular, is apparently still slightly on the increase in the United States. A table showing death rates from cancer as reported in the original registration states since 1900 is appended.

Goiter.- The iodine-deficiency theory of goiter causation continues to receive the support of public health officers generally and the prophylactic use of iodine in this disease seems well established and of undoubted value. In this connection it is interesting to recall the recent work in Switzerland involving the use of iodine in fertilizers for the cultivation of edible vegetables.

Snake bite.- A very decided advance in the treatment of snake bite has been made by Dr. Dudley Jackson of San Antonio, Texas. Briefly, this treatment consists in the withdrawal of the poison from the vicinity of the wound by combined lavage and suction, the latter produced by the use of numerous breast pumps. It has been found that the venom of the poisonous snake is very slowly absorbed and is still obtainable by the method of Dr. Jackson 24 hours after the bite. Anti-serum may be used at the same time. The method of Dr. Jackson is fully described in U. S. Public Health Reports and in the Pan American Sanitary Bulletin and is available in reprint form.

So-called "Ginger" Paralysis.- During 1929 and 1930, there occurred a large number of cases of poisoning in the United States from drinking a substance advertised as Jamaica ginger, but which contained, as an adulterant, a poisonous substance found to be tri-ortho-cresyl phosphate. This substance has been used in certain other countries as an abortifacient. Definite figures on the extent of the disease could not be obtained but it is certain that the number ran unto the thousands. The paralysis caused by this substance is serious and, when extensive, may last indefinitely.

Death Rates.- The lowest crude death rate that had been recorded for the death registration area of the United States prior to 1928 was for

the year 1927, being 11.4 deaths per 1,000 population. For the succeeding five years the rates are--

	Deaths per 1,000 population
1928	12.1
1929	11.9
1930	11.3
1931	11.1
1932	10.9

Data for the registration area for 1933 are not yet available, but the crude death rates for large cities of the United States for the first 42 weeks of the last five years are as follows:

	Deaths per 1,000 population
1929	12.8
1930	11.9
1931	12.0
1932	11.1
1933	10.8
1934 (26 weeks)	12.1

Since 1915, when comparable annual statistics of <u>infant mortality</u> were first collected in the United States, the infant mortality rate has been decreasing. In 1915 there were 100 deaths of infants under 1 year of age per 1,000 live births. In 1927 the rate was 65 per 1,000.

The following table gives the deaths of infants under 1 year of age per 1,000 live births in the birth registration area of the United States during the last five years:

	Deaths under 1 year per 1,000 live births
1928	68
1929	69
1930	65
1931	62
1932	58
1933 (Provisional figures)	58.2

(See tables for rates in original registration area)

III. Miscellaneous activities, etc.

Safeguarding of Water.- Safe water, adequate disposal of body wastes and safe milk are perhaps the three most important public health measures yet devised. Without these many other measures would fail of their object.

Advancement in the production of a safe and palatable water for public use during recent years has been largely along the line of development of chemicals for use in treatment processes which would permit treatment plants to handle successfully increasing pollution and to obviate taste and odors in the treated water. There has been no particular change in the design of water treatment devices nor in the development of new ones. Coagulation, sedimentation, filtration, and chlorination still continues to be the method of purification used.

The ammonia-chlorine treatment using both liquid ammonia and ammonium salts, prechlorination, super-chlorination and dechlorination, and activated carbon, used both for odor and taste removal and for dechlorination are some of the developments along the line of chemical treatment preparatory to filtration.

In 1930 nearly 31,000,000 or 45% of the urban population of the United States were being served with water which had been treated by purification methods other than simple chlorination and over twenty-one million people or 31% of the urban population were being served water treated by chlorination. This gives over 75% of the urban population of the United States or 52 million people who are being served with water receiving some method of purifying treatment.

Disposal of Sewage.- Next to a safe drinking water, a safe and adequate system for disposing of body wastes is perhaps the second prime

necessity in the safeguarding of public health. In the United States all large cities and the vast majority of smaller cities and towns are well sewered by a system of flushing, the sewage material being removed through common drains. In some cities sewage receives special treatment in order to lessen the danger of pollution which would result if raw sewage were discharged directly into lakes or streams. In many rural districts a great deal has been done toward educating rural dwellers in the construction of inexpensive but well protected privies and small septic tanks, the latter most often used in schools, churches, etc. Those who can afford it find the mechanical toilet very well adapted for their needs. In spite of the campaigns of education that have been carried on, there are still many rural districts where body wastes are either discharged directly onto the ground or into privies which are very poorly constructed.

Milk Sanitation.- The U. S. Public Health Service has promoted the adoption of a uniform, effective, milk ordinance, and has constantly urged milk consumers either to demand pasteurized milk or to pasteurize or boil the milk in their homes. Five hundred and sixty-two municipalities have adopted this milk ordinance to date. Copies of this ordinance are furnished in the form of a publication, issued by both the U. S. Public Health Service and the Pan American Sanitary Bureau. It is estimated that ninety per cent of the population of the United States, living in cities of 10,000 population or over, use pasteurized milk. Persistent propaganda on the part of raw milk interests against pasteurization was met by a careful study of this problem by the Public Health Service, the conclusion reached being as follows: Children who are fed the average

supplementary American child diet, in addition to milk, thrive as well as children who are fed raw milk, and contract certain communicable diseases less frequently. Orange or tomato juice, or both, should be given to children freely, whether milk is taken raw or pasteurized; other vitamin-containing foods should also be given.

Disposal of Garbage.- While nothing like as important a public health measure as the providing of safe water, safe milk or for adequate disposal of body wastes, the disposal of garbage is still a necessity in modern life and a considerable factor in safeguarding the public health.

Incineration is a very satisfactory but somewhat expensive method of disposing of garbage.

In colder climates the sanitary fill has proven to be relatively inexpensive and quite satisfactory. Besides, the fill contributes to the raising of the level of low-lying areas and is a means of reclaiming such tracts and of beautifying the landscape.

Garbage reduction plants and garbage farms are in use in some localities. The feeding of garbage to swine where this is practicable is perhaps the most inexpensive method of disposing of the garbage problem.

Nutrition.- Great advances have been made in the study of nutrition during the past few years, which have, for the most part, been recorded in current literature. Recently, more attention has been given to the knowledge of inorganic elements in diet, it having been shown, for example, that traces of copper are necessary for the formation of hemoglobin. The presence of fluorine in drinking water appears to be responsible for the occurrence of a condition of the teeth, known as mottled enamel. An experimental syndrome has been produced in rats using

a diet deficient in manganese. Ascorbic acid has been shown to be apparently identical with vitamin "C". Additional foodstuffs have been shown to contain the pellagra preventive material. A number of fish oils, other than cod liver oil, have been shown to be rich in vitamins "A" and "D".

Studies have been made of milk to which has been added vitamin "D" and also of milk which has been irradiated in an effort to determine the value of such milk in the prevention of rickets, a matter which is still an open question.

Mental Hygiene.- There has been created in the office of the Surgeon General of the United States Public Health Service a Division of Mental Hygiene whose functions are as follows:

(1) The administration of two farms dedicated to the treatment of persons addicted to the use of habit-forming drugs; (2) Studies and investigations of drug addiction and the best methods of treatment and rehabilitation; (3) Dissemination of information on methods of treatment and research in this particular field; (4) Cooperation with State and other agencies in the solution of the problem of drug addiction; (5) Studies and investigations of the abusive use of narcotic drugs and quantities of such drugs necessary to supply the normal and emergency and medicinal and scientific requirements of the United States; (6) Studies and investigations of causes, prevalence and means for the prevention and treatment of mental and nervous diseases.

It has been estimated that the per capita requirements for the United States would be represented somewhere between 5.69 grains and 7.32 grains of crude opium, having a morphine content of 12.25 per cent.

It has been found to be practically impossible for any local Government in the United States to keep pace with the legitimate needs of the mentally ill. During the half century from 1880 to 1931, the number of persons under care in State hospitals for the insane, alone, increased from 63.7 to 236.1 per each one hundred thousand of the general population.

The number of hospital beds furnished for the insane in the United States represents almost one-half of the total for all other diseases. Over 95 per cent of these beds are maintained by funds from the public treasuries of states, counties and cities. The rapid expansion in public facilities for the care of but one form of mental illness, mainly the insanities, has entailed not only a heavy annual charge for maintenance, but an enormous outlay of public funds for buildings and equipment.

Industrial Hygiene.- Protection of the health of the worker has long been of fundamental concern to governments. In the United States, the enforcement of legal provisions devolves on the State and local authorities, but there are certain important fields of activities under the Federal Government. These include:

(1) Investigations of particular problems at the specific request of State authorities; (2) Fundamental research in the field of investigation to provide a body of information which can be utilized by legal authorities, by the operators of industries and by workers; (3) Sponsorship of agreements for the protection of the public and the workers; (4) Publication of reports of sickness and mortality among industrial workers.

The field of occupational diseases and industrial hygiene deals with the problems of dust and fumes, toxic gases, temperature, humidity, air motion, light, overcrowding, cleanliness, safety devices, noise, hours of labor, emergency clinics, physical examinations of the workers, prevention of communicable diseases and many other factors.

Health and the Economic Depression.- As yet, the economic depression has not materially increased the death rate in the United States, which is lower than at any other period in its history. However, a study of 12,000 families in eight large cities indicates that there has been a decided increase in morbidity among people who formerly lived in comfortable circumstances, but who have now become poor. This group has apparently suffered a great deal more than those who were in poor circumstances prior to the depression.

Unemployment Relief.- Greater effort has been made by both governmental and private agencies in providing food, shelter and work for those who are unable to secure remunerative employment than ever before in the history of the United States. It has been exceedingly difficult to give productive employment to those seeking work and to prevent abuses on the part of some of those soliciting relief. The situation is one that has awakened a tremendous interest and which will require much further study and experimentation.

IV. The Federal Civil Works Project of the Public Health Service

As the economic depression in the United States became more acute in 1932, distress resulting from widespread unemployment prevailed to such an extent that the individual States, with insufficient available resources to meet the sudden and unprecedented demand for relief of the

destitute, were no longer able to carry the burden without assistance. It therefore became necessary for the Federal Government to supplement State and local relief funds through grants in aid to the State relief organizations.

In planning the work program to be undertaken in the several States, the Civil Works Administration considered it desirable that the projects undertaken be in the interest of the public welfare and community improvement as far as possible. Accordingly, the Public Health Service was asked, along with other Federal agencies, to suggest projects on which beneficiaries of the Civil Works Administration might be profitably employed. Four projects were recommended by the Public Health Service: namely, an intensive malaria control drainage program in the 14 States where malaria has prevailed most extensively; the construction of sanitary privies in the small towns and villages and in the unsewered outskirts of larger cities; surveys to determine the extent of endemic typhus fever in rodents in important seaports and in certain inland areas where the disease now prevails; and the sealing of abandoned coal mines to reduce the acid wastes being discharged into streams used for water supplies.

In order that these projects might be given proper technical direction they were placed under the general supervision of the Public Health Service.

The health officers of the States participating in the several programs were made the agencies of the Public Health Service for technical supervision of the work.

The amounts set aside for labor totaled approximately $4,500,000

for malaria control, $5,000,000 for community sanitation $1,000,000 for typhus fever surveys, and $1,500,000 for sealing abandoned coal mines. However, difficulties encountered in securing local allotments of labor and some unavoidable loss of time in organizing the work prevented the actual expenditure of the entire amounts alloted before the Civil Works program came to an end on February 15, 1934. It is estimated that not more than one-half of the funds tentatively alloted for labor on the malaria control and sanitation projects actually were expended and not more than one-third for sealing mines.

Malaria Control.- In each of the States selected for malaria control work, malaria is the major public health problem in much of its territory. The results of the work can only be estimated but it is believed that the economic benefit derived from the removal of this hazard will represent an annual saving of not less than $100,000,000.

Community Sanitation Project.- The community sanitation project was selected as a profitable means of employment of civil works labor because of the opportunity afforded to perform a service of value to the whole population of rural and semirural communities, and because the project was well adapted to the use of the type of labor predominating in such communities. The work was carried on in 24 States. Incomplete reports show more than 200,000 privies were constructed.

Typhus Fever Control.- Although formerly not an important cause of illness in this country, during the past 3 years endemic typhus fever has been increasing steadily and markedly in prevalence in certain areas of the United States.

In spite of the very short time of unrestricted operations (1 month

from the time of approval of the project), it is felt that some worthwhile results were accomplished. In several communities where rapidly increasing prevalence of typhus fever had created widespread apprehension on the part of the citizens, it was possible to locate the exact sources of infection and promptly institute intensive control measures. In other parts of the infected areas, where the early termination of the projects precluded complete achievement of the desired objectives, the partially completed work has at least been of substantial educational value, and the people have been awakened to the need of continued effort on their own part if a permanent reduction in the incidence of this disease is to be effected.

Sealing Abandoned Coal Mines.- The sealing of abandoned coal mines was undertaken to provide work for unemployed miners and for the purpose of protecting the public health through the safeguarding of water supplies from the effects of acid mine-drainage. The action of oxygen, pyrites, and water in abandoned or idle bituminous coal mines brings about the formation of acid salts and sulphuric acid. In many sections the amount of acid thus formed and discharged into streams is sufficient to bring about an acid condition in these streams and in the larger rivers into which they discharge. This condition, which has been increasing in intensity in recent years, is materially affecting the efficiency of treatment of many public water supplies and has made the use of the water from some of the smaller supplies impossible.

V. International Activities

International Code of Signals for Standard Quarantine Measures.- In order to facilitate quarantine operations and the granting of pratique,

the Office International d'Hygiène Publique has prepared a scheme for International Quarantine Messages to be used for wireless sanitary declarations by vessels coming from abroad.

The plan consists of the use of certain code words having the same meaning in all languages. The message may be all code, part code, or may be sent in the "clear." The practice of communicating with approaching vessels before their arrival, in order to obtain information concerning sanitary conditions on board, has proven very valuable and often saves a great deal of time.

The code words appear in the Official International Code of Signals, now in effect.

The International Sanitary Convention for Air Navigation.- During the past decade, international sanitarians have become increasingly concerned with the rapid development of international air traffic and the opportunity offered by such traffic for the spread of communicable diseases, particularly the quarantinable diseases, from infected territories to infectible territories. It was recognized that maritime and land-border quarantine measures provided under the Pan American Sanitary Code of Habana, 1924, and the International Sanitary Convention of Paris, 1926, were not adequate safeguards against the potential spread of quarantinable diseases, particularly yellow fever, in international air traffic, largely due to the voyages requiring less time than the accepted respective incubation periods of these diseases. The manifest advantages incident to international accord and cooperation in regard to quarantine formalities attendant upon international maritime and land-border traffic attain a very decidedly increased importance where international air

traffic is involved. In fact, the essential time-saving advantage of aerial navigation would in most instances be altogether nullified by time-consuming quarantine formalities which it would be necessary to invoke at ports of arrival if all precautions against the potential spread of quarantinable disease from infected areas were deferred until arrival.

Several years ago, the International Office of Public Hygiene in Paris began to give consideration to the problem of adequately safeguarding international air traffic from incidentally serving as a most potent vehicle for the dissemination of the quarantinable diseases. It was concluded that international cooperation offered the only practical solution in which infected countries would agree to take all necessary precautions to prevent the departure of actually or potentially infected persons or things destined for other countries, which would minimize the imposition of time-consuming quarantine formalities at countries of arrival with the consequent nullification of the time-saving advantage of aerial navigation, which constitutes in a very large measure the reason for its existence. Accordingly, a draft International Sanitary Convention for Air Navigation was prepared with the assistance of the International Commission for Air Navigation, set up under the Convention relating to the Regulation of Aerial Navigation, 1919. This draft convention received preliminary consideration at the Second Pan American Conference of Directors of Health, held in Washington in April, 1931. At this meeting some changes were suggested, and the convention was tentatively approved in principle. In May, 1931, the Permanent Committee of the International Office of Public Hygiene in Paris met, and further consideration was given particularly to the changes suggested by the meeting in

Washington, all of which resulted in the preparation of a final draft by the International Office of Public Hygiene, which was adopted at its May, 1932, meeting. The proposed convention provides for the deposit of ratifications with the Government of the Netherlands at The Hague. To date the following countries have signed the Convention: Australia, Austria, Belgium, Egypt, France, Germany, Great Britain, Greece, Irish Free State, Italy, Lebanon, Monaco, Morocco, Netherlands, New Zealand, Poland, Roumania, Spain, Sweden, Syria, Tunis, Union of South Africa and United States of America.

The United States delegation will be glad to furnish a copy of the Convention to any delegate who may not already have obtained one.

DEATHS (ALL CAUSES)

Death rates (all causes) per 1,000 estimated population in the registration States of 1900 for the years 1900 to 1930 inclusive.

Year	Deaths per 1,000 population
1900	17.2
1901	16.4
1902	15.4
1903	15.6
1904	16.4
1905	15.9
1906	15.9
1907	16.2
1908	15.1
1909	14.9
1910	15.6
1911	15.0
1912	14.6
1913	14.7
1914	14.4
1915	14.3
1916	15.0
1917	15.0
1918	18.9
1919	13.5
1920	13.8
1921	12.1
1922	12.5
1923	12.8
1924	12.2
1925	12.3
1926	12.8
1927	11.7
1928	12.3
1929	12.3
1930	11.5

INFANT MORTALITY

Deaths of infants under 1 year of age per 1,000 live births in the registration area for the years 1915 to 1930, inclusive.

Year	Deaths under 1 year per 1,000 live births
1915	100
1916	101
1917	94
1918	101
1919	87
1920	86
1921	76
1922	76
1923	77
1924	71
1925	72
1926	73
1927	65
1928	69
1929	68
1930	64.6

DEATH RATES PER 100,000 REGISTRATION STATES OF 1900

Year	Typhoid and paratyphoid fever	Measles	Scarlet fever	Whooping cough	Diphtheria	Meningococcus meningitis
1900	31.3	13.4	9.6	12.3	40.4	- - -
1901	27.5	7.4	13.5	8.7	33.4	- - -
1902	26.3	9.3	11.9	12.4	29.7	- - -
1903	24.6	8.8	12.3	14.3	31.0	- - -
1904	23.9	11.3	11.6	5.8	29.3	- - -
1905	22.4	7.4	6.8	9.0	23.6	- - -
1906	22.0	11.8	7.3	14.5	25.8	- - -
1907	20.5	8.9	9.8	9.5	24.0	- - -
1908	19.6	10.2	12.9	9.4	21.6	- - -
1909	17.2	11.0	10.8	9.9	21.1	- - -
1910	18.0	12.6	12.2	10.7	22.5	0.3
1911	15.3	9.3	8.9	10.6	18.5	0.6
1912	13.2	9.0	6.2	8.0	16.8	0.7
1913	12.6	11.5	8.3	9.0	19.2	0.8
1914	10.8	7.4	6.6	8.8	18.4	1.3
1915	9.2	6.6	4.0	8.9	15.8	1.4
1916	8.8	10.6	2.9	9.1	15.1	2.4
1917	8.1	10.4	3.8	8.8	18.2	3.2
1918	7.0	12.1	3.2	15.3	16.4	3.0
1919	4.8	3.7	3.0	4.9	17.7	2.1
1920	4.9	10.3	5.2	11.9	17.3	1.8
1921	5.2	4.2	6.4	8.3	17.8	1.7
1922	3.9	7.9	4.0	5.7	14.7	1.2
1923	3.6	8.6	3.5	8.2	12.2	1.2
1924	3.5	5.8	3.3	6.5	10.1	1.2
1925	3.8	3.4	2.6	5.8	8.1	1.1
1926	2.8	11.1	2.8	7.7	7.6	1.3
1927	1.9	1.9	2.6	4.7	8.4	1.3
1928	1.9	5.5	2.1	5.1	7.4	3.2
1929	1.6	2.5	1.9	4.2	6.7	5.5
1930	1.6	2.6	1.8	3.4	4.3	3.6

DEATH RATES PER 100,000 REGISTRATION STATES OF 1900

Year	Smallpox	Poliomyelitis	Influenza and Pneumonia 1/	Bronchitis and Broncho-Pneumonia 2/	Tuberculosis (Respiratory)	Tuberculosis (Other Forms)
1900	.316	- - -	179.4	68.1	173.3	21.9
1901	3.615	- - -	165.8	70.9	171.5	18.2
1902	6.514	- - -	126.6	73.5	156.2	17.9
1903	1.529	- - -	132.4	72.3	158.3	18.9
1904	.825	- - -	152.1	75.5	168.5	20.0
1905	.598	- - -	132.9	69.4	160.3	20.3
1906	.108	- - -	120.8	72.8	156.9	20.9
1907	.141	- - -	145.2	76.3	154.9	20.6
1908	.112	- - -	115.4	67.7	148.1	21.3
1909	.063	- - -	113.3	76.4	142.3	21.0
1910	.535	2.5	121.8	79.2	138.1	26.6
1911	.073	1.8	114.0	73.5	136.8	22.2
1912	.124	1.7	103.8	74.2	129.1	20.6
1913	.091	1.5	103.3	75.9	127.4	21.4
1914	.062	1.2	95.1	74.6	128.4	20.2
1915	.103	0.9	107.2	75.5	127.3	19.4
1916	.034	21.1	124.3	76.1	124.7	19.1
1917	.145	1.2	126.4	75.3	128.5	18.6
1918	.157	0.9	517.2	104.8	132.2	18.8
1919	.104	0.8	165.0	71.6	105.3	19.6
1920	.110	1.2	144.3	82.0	93.1	18.6
1921	.129	2.0	59.3	54.1	80.1	14.0
1922	.119	1.1	85.0	65.2	78.7	12.6
1923	.084	1.0	96.8	64.6	77.5	12.1
1924	.863	1.5	70.5	52.9	73.2	12.4
1925	.321	1.3	78.7	51.3	70.9	11.2
1926	.038	0.9	95.6	60.6	71.2	11.2
1927	.053	1.6	66.3	43.9	65.4	9.9
1928	.052	1.3	86.3	50.3	65.3	9.6
1929	.076	0.7	96.8	49.5	63.1	8.8
1930	.100	- - -	61.2	41.6	59.1	8.6

1/ Pneumonia includes all forms except bronchopneumonia.
2/ Acute and chronic bronchitis are included in the above rates.

DEATH RATES PER 100,000 REGISTRATION STATES OF 1900

Year	Puerperal Septicemia	Diarrhea and Enteritis*	Cancer and other Malignant Tumors	Diabetes Mellitus	Heart Disease
1900	5.8	139.9	64.0	11.0	137.4
1901	5.5	116.3	66.2	11.5	139.5
1902	5.3	103.2	66.1	11.7	144.9
1903	5.5	98.9	69.8	12.6	151.5
1904	6.6	110.3	71.5	14.2	163.7
1905	6.4	117.2	73.7	14.1	162.2
1906	5.9	119.8	73.9	14.8	164.7
1907	6.5	113.4	76.3	15.7	178.2
1908	6.2	115.4	77.2	15.2	167.6
1909	6.1	105.1	79.6	16.0	169.3
1910	6.7	119.4	83.0	17.6	180.9
1911	7.1	94.8	83.9	17.7	182.2
1912	6.0	87.6	86.0	17.7	180.5
1913	6.6	89.9	88.8	18.6	181.4
1914	6.5	80.9	89.2	19.4	189.4
1915	5.9	76.2	92.0	21.5	193.8
1916	6.1	76.6	93.9	20.7	205.4
1917	6.4	74.3	95.0	21.7	209.7
1918	5.6	70.6	94.7	20.2	210.3
1919	5.2	53.3	95.8	19.2	183.6
1920	6.0	55.6	98.7	20.4	197.6
1921	6.0	47.7	101.9	20.7	192.7
1922	5.1	36.2	103.9	23.2	208.5
1923	5.0	33.8	105.1	22.1	220.4
1924	5.2	27.6	108.2	20.3	218.3
1925	4.9	31.2	110.7	21.0	232.5
1926	4.6	24.9	112.6	22.0	249.2
1927	4.8	19.9	114.7	22.0	238.7
1928	4.3	19.0	115.8	23.6	259.2
1929	4.2	17.7	117.3	24.1	266.4
1930	3.9	17.4	117.6	24.0	253.2

* Ulcer of the duodenum is included beginning with 1900 through 1930.

DEATH RATES PER 100,000 REGISTRATION STATES OF 1900

Year	Automobile Accidents	Homicide	Suicide
1900	- - -	1.2	10.2
1901	- - -	1.1	10.4
1902	- - -	1.2	10.3
1903	- - -	1.1	11.3
1904	- - -	1.3	12.2
1905	- - -	2.1	13.5
1906	0.5	2.9	12.6
1907	0.7	3.9	14.1
1908	0.9	3.9	16.8
1909	1.4	3.5	15.9
1910	2.0	3.9	15.4
1911	2.5	4.2	15.8
1912	3.3	4.1	15.2
1913	4.8	4.5	15.4
1914	4.9	4.3	16.2
1915	6.5	4.1	16.5
1916	8.1	4.0	14.8
1917	10.1	4.6	14.6
1918	10.8	3.7	12.8
1919	11.7	4.3	12.2
1920	12.1	4.2	10.9
1921	13.3	4.6	13.2
1922	14.5	4.3	12.7
1923	16.8	4.5	12.7
1924	18.0	5.0	12.8
1925	19.0	5.0	13.0
1926	19.3	5.0	13.3
1927	21.3	5.0	14.2
1928	22.4	4.8	14.9
1929	25.1	5.0	15.6
1930	25.0	5.1	16.9