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MENINGOCOCCUS MENINGITIS AND MEASURES FOR ITS CONTROL[1]

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It would have been hard to select a less satisfactory subject from the public health officer's point of view than epidemic meningitis; but I hope that, in the discussion to follow, more light will be thrown on this important disease than has hitherto been available. Apparently during the past year we have had in the United States a more severe outbreak of epidemic cerebrospinal meningitis than at any time since the World War, and, indeed, we must go back to about 1905 to find the last comparable prevalence of the disease. In general, the condition has been more serious in the West than in the East. Indeed, it may properly be said that in some western communities the prevalence of the disease has been distinctly alarming. There is good authority for the statement that the age incidence, at least in some communities, has been somewhat higher than is ordinarily the case, though this is not a unique experience. There is no question that there have been outbreaks of very marked severity. I had occasion to make an investigation of a group of three cases in a southern city. One patient had died in 12 hours, another in 25 hours, and the third was recovering after having been regarded as practically hopeless for several days. Doctor Beatty, State health officer of Utah, reported cases in his jurisdiction that terminated fatally in as short a time as 4 hours, and others that survived not more than 24 hours.

So far as symptoms and diagnosis are concerned, nothing need be said here save that it appears to be not sufficiently recognized that cases may occur without characteristic symptoms referable to the central nervous system. Purpuric cases fatal in a day or less may occur even without examples of the classical type in the community. Diagnosis in such cases perhaps can be established definitely only by laboratory procedures, either the isolation of meningococci from the blood stream or the finding of the organism in smears or sections from the skin lesions.

[1] Read at the Twenty-seventh Annual Conference of State and Territorial Health Officers with the United States Public Health Service, Washington, D. C., June 4, 1929.

SEROLOGICAL TYPES OF MENINGOCOCCI

There have been generally recognized four types of meningococci based on the agglutination, or agglutinin absorption tests, which are in common use. There are other serological means of identification, and tests made by different procedures do not necessarily give identical results. One thing seems quite clear—that in any outbreak we may have in the same community, all or nearly all of the types prevailing simultaneously. Thus, Pope and White [2] reported that in the recent Chicago outbreak among 9 cases definitely assignable to types, 3 proved to be type I, 2 type III, and 4 type IV. Many strains can not be assigned definitely to any particular type, though they are clearly meningococci. It should be understood that these type classifications refer purely to serological differentiation. So far as we know they have no reference to type of cases clinically or to epidemiology.

The question of types naturally brings me to the possible value of therapeutic sera. Generally speaking, we are accustomed to say that polyvalent serum has reduced the mortality from about 75 per cent to about 25 per cent. I am not familiar with any series of cases which definitely establishes the value of serum in terms that permit trustworthy statistical conclusions. It has been charged within recent years that the commercial serums have proven ineffective, and we have heard a great deal about the high mortality in certain series of cases in which commercial serums have been used. I do not doubt at all that the facts are as stated, but we have not heard so much about series in which commercial serums have been successfully used. For example, Carbonell and Cook, of the Army Medical Corps,[3] report 19 cases with 2 deaths, making a mortality of less than 11 per cent. Commercial serums were used and, as you see, the death rate is very much lower than is claimed for serum treatment in general. Again, Wildman, of the Naval Medical Corps,[4] reporting an outbreak in northern Haiti, had 77 cases with 12 deaths, a mortality of 15.5 per cent—also much better than the best that ordinarily is claimed for serum.

Fox [5] reported 12 deaths among 69 cases, excluding fulminating types which died within a few hours after admission to the hospital, also a very good result for the best of serums.

In a recent visit to communities in which meningitis has been especially prevalent I have made it a point to inquire of clinicians as to the value of the commercial serums used. The results were reported as generally satisfactory.

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[1] Jour. Prev. Med., Jan., 1929, vol. 3, No. 1, p. 63.
[2] The Military Surgeon, Jan., 1929, vol. 64, p. 49.
[3] U. S. Navy Med. Bull., Jan., 1929, vol. 27, p. 96.
[4] Wisconsin Medical Journal, Jan., 1929, vol. 28, pp. 1–42.

There is hardly any more unsatisfactory standardization in connection with biological products than the present day standardization of antimeningococcus serum. The methods we employ may or may not have any bearing on the clinical usefulness of the serum. About the best we can hope to do (with our present knowledge) is to see to it that animals are immunized with a sufficient variety of specific type strains to insure reasonably high serological titers for the generally recognized types of meningococci. We know from experience that such a serum will fail to meet the needs in some cases.

The question has been raised as to whether it is possible to prepare a serum to meet the types prevailing in any given outbreak. The difficulties here are almost insuperable. It takes months to get horses sufficiently immunized to yield a satisfactory serum. By this time the epidemic may be on the wane or there may have been a shift in serological types. Some of the failures charged to serum in the current outbreak doubtless were due to use in cases that were of such severity as to be doomed from the beginning. Serum can scarcely be expected to be of much service in a case that proves fatal anywhere from 4 to 24 hours after onset.

We are endeavoring to meet the situation as respects the potency of the serum by having one of our best bacteriologists study the strains that have been secured recently, with a view to selecting those most suitable as antigens and utilizing them in the immunization of horses for the preparation of serum.

CONTROL MEASURES

I wish that we were in a position to tell you that as the result of scientific investigation we were in possession of definitely effective measures for the control of meningitis. However, nothing could be further from the truth than this, and I could perhaps dismiss this phase of the discussion by saying simply that we know nothing of any value. Possibly such a summary disposal of the subject is not warranted.

The report of the Committee on Standard Regulations for the Control of Communicable Diseases of the American Public Health Association mentions under "Methods of Control of Meningococcus Meningitis" the following: Recognition of the disease, and isolation of infected persons until 14 days after onset of the disease. Immunization is mentioned as in the experimental stage. Quarantine is not recommended, and concurrent disinfection is advocated. The committee also suggests search for carriers among those exposed to recognized cases, education as to personal cleanliness, and prevention of overcrowding. Under the head of "Epidemic Measures" is the following:

1. Increase the separation of individuals and the ventilation in living and sleeping quarters for such groups of people as are especially exposed to infection

because of their occupation or some necessity of living conditions. Bodily fatigue and strain should be minimized for those especially exposed to infection.

2. Carriers should be quarantined until the nasal and pharyngeal secretions are proved by bacteriological examination to be free from the infecting organism. (*Am. Jour. Pub. Health, 1927, vol. 17, p. 15* of the *Supplement.*)

We have nothing to add to this. Perhaps we would have said even less had it been left to us. The one measure on which everyone agrees is that persons suffering from the disease should be isolated. This seems to be a reasonable procedure and in keeping with the handling of other infectious diseases.

The question of controlling carriers comes promptly to the fore in dealing with any outbreak of meningitis. So far as I know no serious attempt has been made to control an epidemic in a civil population in this manner. Even under military conditions where, presumably, such an effort would be more likely to be successful than elsewhere, we find a divergence of opinion. Allow me to quote from two distinguished authorities: First, Victor C. Vaughan [6] has the following to say:

In military life the segregation of carriers is generally easy, even if the number mounts to the hundreds.

On the other hand, Mink, of the naval medical establishment, speaking from his extensive experience with the disease in 1917–18, has the following to say:

It was possible during the epidemic to make cultures of practically every one of the 24 barracks connected with regiments. We found barracks in which meningitis developed that contained 8 or 9 per cent of carriers. On the other hand, we found barracks in which no meningitis developed that contained 25 or 30 per cent of carriers. In the instances in which a large percentage of carriers was found, carriers were removed, and in other instances the carriers were left in the barracks. New cases failed to develop in both instances. It was early found impracticable to remove all the carriers without producing overcrowding among the carriers, which resulted in additional cases. There seems little doubt that the oft-repeated statement that carriers rarely develop the disease is erroneous, as the incident rate among carriers is higher than the rate for the general station. It is not the intention to maintain that carriers do not transmit the disease, but it is maintained that to combat this disease by the removal and segregation of all carriers is absolutely impracticable.[7]

The question of disinfection of carriers has been the subject of a great deal of discussion and of some experimentation. Many chemical disinfectants have been employed as solutions, sprays, or in the form of vapors. I am not acquainted with any data that would be seriously considered as conclusive which illustrate the value of any of these preparations, and Colonel Vaughan says:

Notwithstanding the many experiments resorted to for this purpose nothing definite has come out of them, and from a fairly large experience and observa-

[6] Epidemiology and Public Health, vol. 1, p. 592.
[7] Epidemiology and Public Health, 1922, vol. 1, p. 577.

tion with these procedures during the war we are inclined to the conclusion that there was no demonstration of their value. * * * There is one thing that clears up the carrier, and that is life in uncontaminated, not overheated, air.[8]

Most carriers clear up within a few days regardless of what one does or does not do, and it remains to be shown that the process of recovery from the carrier condition can be hastened by any means now at our disposal.

During the prevalence of infection, carriers are very numerous. In a study made in Detroit recently [9] it was reported that 46 per cent of household contacts were found to be carriers, while as high as 6 per cent of unexposed persons showed meningococci in the nasopharynx. Data of this sort lead one to realize the well-nigh hopeless nature of any attempt to control the carrier.

Perhaps I might close this section on the control of epidemic meningitis by a quotation from Rosenau: [10]

It is not clear than any of the measures so far taken have either materially influenced the course of epidemics or prevented the spread of the disease.

STUDIES ON THE BIOCHEMISTRY OF SULPHUR

III. CHEMICAL GROUPS INVOLVED IN THE NAPHTHOQUINONE REACTION FOR CYSTEINE AND CYSTINE

By M. X. Sullivan, *Biochemist*, and W. C. Hess, *Junior Chemist, Hygienic Laboratory, United States Public Health Service*

In the first paper of this series, details were given by Sullivan (1926) of a distinctive test for cysteine which, by modification to bring cystine into the reduced form, could be used as a test for cystine.

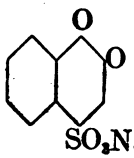
In the second paper (Sullivan 1929) it was shown that the reaction has a greater degree of specificity than has any other method so far developed for cysteine or cystine.

In the 1926 report several modifications of the cysteine test were given. The most satisfactory procedure, however, was the sodium-sulphite modification, and most of the subsequent work has been with this modification. The procedure in the reaction is as follows:

Cystine.—To 5 c. c. of the solution under test (containing not more than 400 parts per million of cystine in approximately 0.1 N hydrochloric acid, at a temperature of about 25° C., add 1 or 2 c. c. of a freshly made 5 per cent aqueous solution of sodium cyanide. Mix and wait 10 minutes. Then add 1 c. c. of a freshly prepared

[8] Epidemiology and Public Health, 1922, vol. 1, pp. 592-593.
[9] J. A. M. A., Apr. 27, 1929, vol. 92, p. 1456.
[10] Preventive Medicine and Hygiene, 1927, p. 258.

0.5 per cent solution of 1. 2-naphthoquinone-4-sodium sulphonate



, sodium sulphite, etc., as given below for cysteine.

Cysteine.—To 5 c. c. of solution containing not more than 400 parts per million of cysteine in 0.1 N hydrochloric acid, add (*a*) 1 c. c. of 1 per cent sodium cyanide in 0.8 N sodium hydroxide, mix and add (*b*) 1 c. c. of a freshly prepared 0.5 per cent aqueous solution of 1. 2-naphthoquinone-4-sodium sulphonate, mix and add (*c*) 5 c. c. of 10 to 20 per cent solution of anhydrous sodium sulphite in 0.5 N sodium hydroxide, mix and wait 30 minutes. A reddish brown color appears. Then add (*d*) 1 c. c. of a 2 per cent solution of sodium hyposulphite ($Na_2S_2O_4$) in 0.5 N sodium hydroxide. The brown red color in the presence of cysteine (or cystine treated with sodium cyanide) is converted to a purer red.[1]

The further addition of 2 c. c. of 5 per cent aqueous sodium cyanide is advantageous in the cysteine reaction, since it stabilizes the reaction more or less and, what is in some cases more important, destroys any interference by iron compounds if they are present.

In the cystine modification, the control is cystine under the same treatment as the unknown.

In cysteine studies the control is cysteine, under the same treatment as the unknown.

Most of our work has been with the cystine modification; that is, 10 minutes' treatment with 2 c. c. of 5 per cent sodium cyanide before adding the naphthoquinone, etc. This modification has given satisfaction in quantitative work on proteins. In work on Abel's crystalline insulin, Du Vigneaud (1927) used the cystine reaction for the determination of cystine in insulin.

Specificity of the test.—Aside from cystine, no other amino acid or thio compound tested gives the red color in the presence of sodium sulphite. Cystine solutions slowly give a slight red color, which is due to a slow reduction of cystine to cysteine by the sulphite. Within 30 minutes, however, the color given by cystine in concentration of 400 parts per million and less is practically negligible. Ammonia, if present as a 1 per cent ammonium hydroxide solution, may interfere with the estimation of cysteine by giving a greenish-brown color, and some amines, like benzidine, may give a red color. On the addition of the hyposulphite ($Na_2S_2O_4$) the cysteine solution becomes a

[1] The reaction requires a high final pH. In case of hydrolysates of foodstuffs, which we have studied for cystine content, it was found necessary to add 1 or 2 c. c. of 5 N sodium hydroxide just before adding the final reducing agent, sodium hyposulphite ($Na_2S_2O_4$). The work on foodstuffs will be published in separate papers.

purer red while all other compounds so far tested give only a slight yellow color. Even reduced glutathione made according to Hopkins' (1921) procedure is negative in the cysteine reaction.

The cysteine reaction as described by Sullivan (1926) is not given (*A*) by compounds containing the (SH) group alone; (*B*) by compounds containing the (NH_2) group alone; (*C*) by compounds containing (NH_2) and S–S as in cystine; (*D*) by mixture of amino acids (NH_2) and compounds containing (SH) and (NH_2), but with these groups far apart in the molecule as in reduced glutathione to which Quastel, Stewart, and Tunnicliffe (1923) gave the formula

$$\begin{array}{l} CH_2SH \\ | \\ CHNH—COCH_2CH_2CHNH_2COOH \\ | \\ COOH \end{array}$$

As the reaction is a cysteine test it can be used for the estimation of substances which yield cysteine by reduction, by hydrolysis, or by a combination of these processes, for example, cystine and glutathione.

It was presumed formerly that the cysteine reaction would be given by compounds containing (SH) and (NH_2) in close proximity.

To test out the assumption that the cysteine reaction would be given by compounds containing nonsubstituted (SH) and (NH_2) on the same or neighboring carbon atoms, several compounds containing (SH) and (NH_2) on neighboring carbon atoms were synthesized and tested as such or in the disulphide form. These compounds are ortho-aminothiophenol or ortho-aminophenylmercaptan, $C_6H_4SHNH_2$; the disulphide,

$$C_6H_4\begin{array}{c} S — S \\ NH_2 \quad NH_2 \end{array}C_6H_4;$$

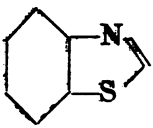
and cystine amine

$$\begin{array}{l} CH_2S——SCH_2 \\ | \qquad\quad | \\ CH_2NH_2 \quad CH_2NH_2 \end{array}$$

These compounds failed to give the cysteine reaction, with or without the use of sodium cyanide to keep them in the reduced form.

The methods of making these compounds and peculiarities of their reactions in the naphthoquinone cysteine-cystine reaction are given in the following pages.

Preparation of ortho-aminophenolmercaptan $C_6H_4\begin{array}{c} SH \\ NH_2 \end{array}$ and its disulphide $C_6H_4\begin{array}{c} S — S \\ NH_2 \quad NH_2 \end{array}C_6H_4$. The ortho-aminothiophenol was made by a modification of Hofmann's (1879, 1880, 1887) potash fusion of a thiazole. This modification was communicated to us by A. M.

Clifford, of the Goodyear Tire and Rubber Co. The starting compound in the procedure was a mercaptobenzothiazole  CSH.[2]

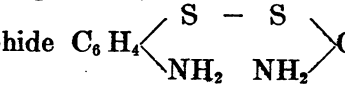
The crude thiazole contains free sulphur. It is necessary to remove this, since, otherwise, the product of fusion is the disulphide of o-aminothiophenol. Since it was desirable to get first the aminothiophenol, the sulphur was removed by a procedure given by Clifford. Two hundred grams of crude thiazole were boiled in 1.5 liters of water to which had been added 125 grams of anhydrous sodium sulphite. The thiazole was filtered off and the process was repeated with a smaller quantity of sulphite. After washing and drying, the thiazole was found to melt at 179° C. It was then ready for fusion.

Fusion of the thiazole with potash.—Six hundred grams of solid potassium hydroxide were placed in a metal container, an alkali can 6 inches deep and 4½ inches in diameter. To this were added 125 c. c. of water and the can was placed in a sand bath ¼ inch deep. A thermometer encased in a test tube containing mercury was clamped to one side so as to dip within the solution. The mixture was then heated until the alkali dissolved and a mechanical stirrer was placed in the solution. Heating, with stirring, was then continued until the temperature reached 215° C. A lively jet of steam was then directed over the surface of the mixture to insure against possible oxidation during the fusion. After setting up a glass shield and using gloves to protect against the spattering of the melt, 170 grams of the thiazole were added in portions of 15 grams. The reaction usually begins rather suddenly after the addition of three or four such portions; the mixture froths and becomes dark red in color. When the frothing had subsided, the remainder of the thiazole was added in small portions within five minutes. The melt was further heated, with stirring, for 10 minutes longer with the temperature held at 230° C. The melt was then allowed to cool to 175°, and 700 c. c. of water was cautiously added, with stirring.

From this point on all operations were carried out so far as possible in a nonoxidizing atmosphere—such as carbon dioxide. With a stream of carbon dioxide playing over the surface, the melt was allowed to cool to room temperature. The cooled solution, in a large wide-mouth 5-pound salt bottle equipped with a stirring device, was placed in a freezing mixture of ice and salt. The solution was then neutralized. About 300 c. c. of 50 per cent acetic acid was slowly run in, with stirring, and the neutralization was completed by

[2] This compound can be purchased from the R. T. Vanderbilt Co., 50 East Forty-second Street, New York City.

means of strong hydrochloric acid until, as recommended by Clifford, the solution was alkaline to congo red but acid to litmus. Considerable hydrogen sulphide was liberated as layers began to form. A brown-black oily layer formed at the surface and on the bottom, separated by a light-colored concentrated salt solution. The salt solution was siphoned off and extracted once with 150 c. c. of carbon tetrachloride. The oily sludge was treated with the same carbon tetrachloride. The carbon tetrachloride was filtered and the solution was distilled. When the temperature reached 85°–90° C., practically all of the solvent had disappeared and the temperature began to rise rapidly. The brown liquid remaining in the flask is perfectly dry ortho-aminothiophenol. This was distilled under reduced pressure. The boiling point at 10 millimeters pressure was 123° C. Part of the ortho-aminothiophenol was placed in a sealed tube free from air. Part of it, however, was allowed to oxidize to the disulphide form by standing in an open dish, with occasional stirring.

The disulphide  is a yellow crystalline substance. Taken up in boiling alcohol it recrystallized as leaflets on cooling. These, sucked dry, melted at 93° C.

Precautions should be taken not to allow the aminothiophenol or its solutions to come in contact with the skin, since, as noted by Hofmann (1887), it may produce an irritating eczema.

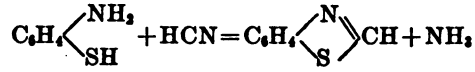
Analyses showed that both the aminothiophenol and the disulphide were of a high degree of purity as shown below:

	Sulphur		Nitrogen	
	Theoretical	Found	Theoretical	Found
Aminothiophenol	25.62	25.38	11.19	11.13
Disulphide	25.82	25.62	11.28	11.34

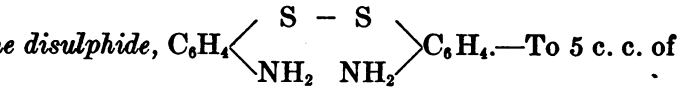
Behavior of ortho-aminothiophenol and the disulphide in the cysteine-cystine reaction.—Ten milligrams of orthoaminothiophenol were mixed into 10 c. c. of water. Five c. c. of this mixture were treated with 1 c. c. of 0.5 per cent 1.2-naphthoquinone-4-sodium sulphonate, the tube was shaken, and 5 c. c. of 10 per cent anhydrous sodium sulphite in 0.5N NaOH were added. A slight yellow precipitate occurred. After standing 30 minutes, no red appeared. The addition of 1 c. c. of 2 per cent sodium hyposulphite made the solution colorless; that is, the cysteine reaction was negative.

The experiment was repeated after treating the aminothiophenol with sodium cyanide. To 5 c. c. of the thiophenol was added 1 c. c. of 5 per cent aqueous sodium cyanide. A precipitate occurred. This precipitate is undoubtedly the methenyl base mentioned by Hofmann

(1880) as forming when aminophenylmercaptan is treated with potassium cyanide.



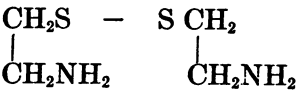
To the turbid mixture were added 1 c. c. of 1.2-naphthoquinone-4-sodium sulphonate and 5 c. c. of 10 per cent Na_2SO_3 in 0.5 N NaOH. The mixture stayed turbid and colorless, with and without the addition of more alkali; that is, the cysteine reaction was negative.

Reaction of the disulphide,  .—To 5 c. c. of saturated solution of the disulphide in water, 2 c. c. of a 5 per cent aqueous sodium cyanide were added. The mixture was allowed to stand 10 minutes. Then there were added consecutively 1 c. c. of 0.5 per cent 1.2 naphthoquinone-4-sodium sulphonate and 5 c. c. of 10 per cent anhydrous sodium sulphite in 0.5 N sodium hydroxide. A slight brown red color developed. After 30 minutes' standing of this solution 1 c. c. of 2 per cent sodium hyposulphite ($Na_2S_2O_4$) in 0.5 N NaOH was added. The solution became colorless. Repetition of the experiment with the addition of 2 c. c. of 5 N NaOH, before adding the hyposulphite, gave the same result—a negative cystine reaction.

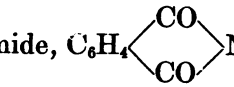
Neither the aminothiophenol nor its disulphide give the Sullivan cysteine-cystine reaction.

The disulphide reacts like cystine in the Folin-Looney (1922) cystine method, and in the Okuda (1925) iodometric method for cystine.

Preparation of cystine amine.—The cystine amine



was synthesized according to the Gabriel (1891) synthesis. The steps involved are as follows:

First, phthalimide,  , then (2) the potassium salt, and then (3) bromethylphthalimide were made according to directions in Organic Synthesis, volume 2, page 75 (phthalimide), and Organic Synthesis, volume 7, pages 8 and 9. These directions are based on the work of Gabriel (1887, 1888, 1889).

From brom-ethylphthalimide  was made ethyl mercaptophthalimide by the procedure given by Gabriel (1891).

Twenty-five grams of brom-ethylphthalimide were warmed in a 100 c. c. pressure bottle with 25 c. c. of alcohol until entirely dis-

solved. To the warm solution was added 55 c. c. of an alcohol solution of potassium sulphydrate made by passing hydrogen sulphide through 55 c. c. of alcohol containing 6.16 grams of potassium hydroxide (i. e., a 2 N solution of potassium hydroxide in alcohol). The closed pressure flask was immersed in boiling water for one hour. After cooling, the total contents of the flask, including the precipitated potassium bromide, were poured into 250 c. c. of water, and the emulsion formed was placed in the cold room at 5° C. over night. The brownish white crystals of ethyl mercaptophthalimide separated out. These were redissolved in 190 c. c of alcohol.

The mercaptophthalimide was converted to the disulphide by heating the alcohol solution in a water bath and adding powdered iodine, as recommended by Coblentz and Gabriel (1891), in small portions, with stirring, until a permanent red color occurred, which indicated a proper excess of iodine. The reddish yellow crystals of diphthalimidoethyl disulphide which separated from the hot alcohol above 60° C., had a melting point of 138° C. On cooling the mother liquor there settled out a second batch of crystals of a lower melting point, a mixture of mono- and disulphide.

Cystine amine.—Nine grams of the diphthalimidoethyl disulphide melting at 138° C. were put into a sealed tube with 36 c. c. of concentrated hydrochloric acid (S. G. 1.17), and the mixture was heated for nine hours at 160° C. Upon cooling, the tube was opened and the separated phthalic anhydride filtered off. The solution was evaporated to dryness on a water bath. A brownish crystalline crust resulted. The crystalline material was dissolved in boiling alcohol, 96 per cent, from which, on cooling, needles separated. These proved to be dithioethylamine hydrochloride, or cystine amine hydrochloride,

$$\begin{array}{ll} CH_2S & - \quad S\,CH_2 \\ | & \quad\quad | \\ CH_2NH_2HCl & \quad CH_2NH_2HCl \end{array}$$

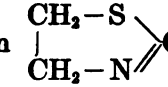
The cystine amine hydrochloride melted at 203° C., as found by Coblentz and Gabriel (1891). A picrate was made by adding aqueous picric acid to an aqueous solution of the hydrochloride. Recrystallized from alcohol the picrate formed yellow needles melting at 199° C., as found by Coblentz (1891).

Analysis for nitrgoen and sulphur showed the compound to be the hydrochloride of diaminodiethyl disulphide, cystine amine,

$$\begin{array}{ll} CH_2S & - \quad S\,CH_2 \\ | & \quad\quad | \\ CH_2NH_2HCl & \quad CH_2NH_2HCl \end{array}$$

Analysis

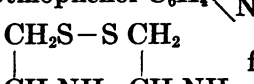
	Theoretical	Found
N	12.44	12.27
S	28.47	28.50

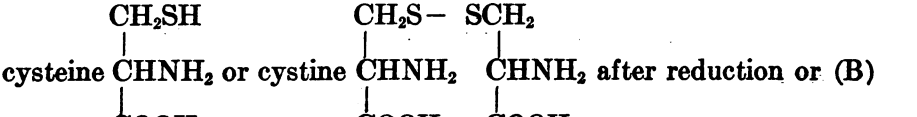
Various other methods of making cystine amine were tried; such as dry distillation of cystine as done by Neuberg and Ascher (1907), decarboxylation along lines followed by Johnson and Daschavsky (1924) in the carboxylation of tyrosine, and the Pinkus (1893) synthesis of methylthiazolin  from thioacetamide and ethylenebromide and hydrolyzing as recommended by Gabriel (1891). None of these methods gave satisfactory results as compared with the phthalimide method described.

Reaction of cystine amine compared with cystine.—One hundred milligrams of the cystine amine dihydrochloride were dissolved in 100 c. c. of water. This gives a solution containing 1,000 parts per million of the hydrochloride or approximately 676 parts per million of the cystine amine. This solution was compared with a 400 parts per million solution of cystine in 0.1 N hydrochloric acid and a 500 parts per million of tyrosine in 0.1 N hydrochloric acid. To 5 c. c. of each solution was added 1 c. c. of 5 per cent sodium cyanide. The mixture was shaken and allowed to stand 10 minutes. Then there were added 1 c. c. of 0.5 per cent aqueous solution of the naphthoquinone followed by 5 c. c. of a 10 per cent solution of anhydrous sodium sulphite in 0.5 N sodium hydroxide. After 30 minutes, the cystine amine solution was red, the cystine was red, the tyrosine solution was yellow. On the further addition of 1 c. c. of 2 per cent sodium hyposulphite ($Na_2S_2O_4$) in 0.5 N sodium hydroxide the cystine amine solution became a pale yellow, while the cystine solution became a vivid red. The cystine amine does not give the Sullivan reaction for cystine or cysteine.

The cystine amine behaves like cystine in the Folin-Looney cystine method and in the Okuda iodometric method and in the reaction with sodium nitroprusside in the presence of sodium cyanide as first shown by Mörner (1899). It likewise acts like cystine in the Hunter and Eagles (1926) modification of the Sullivan method.

CONCLUSION

Since aminothiophenol $C_6H_4\langle^{SH}_{NH_2}$ is negative and especially since cystine amine  fails to give the typical reaction given by cystine in the cystine modification, it would seem that, for the Sullivan cysteine reaction, three nonsubstituted groups are necessary, the (SH), (NH_2), and (COOH) groups, and that it is given (A) only by



by compounds of the same configuration of the alphatic series.[3] In so far as is known, cysteine and cystine free or combined are the only compounds of this nature occurring in vegetable or animal tissue or extracts thereof. It is planned to test out the effect of lengthening the carbon chain and thus separating the reacting groups and to test the reaction of isomers such as isocysteine and isocystine.

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[3] Since ortho-aminothiophenol and its disulphide $C_6H_4\langle^{SH}_{NH_2}$ and $C_6H_4\langle^{S}_{NH_2}—^{S}_{NH_2}\rangle C_6H_4$ do not react as cysteine amine and cystine amine $\begin{matrix}CH_2SH\\|\\CH_2NH_2\end{matrix}$ and $\begin{matrix}CH_2S—SCH_2\\|\qquad\quad|\\CH_2NH_2\quad NH_2CH_2\end{matrix}$ do, we would not expect Kwaysser's (1893) aminothiobenzoic acid $C_6H_3\begin{matrix}SH(1)\\—NH_2(2)\\COOH(4)\end{matrix}$ to act like cysteine and *a priori* would not expect it to give the cysteine reaction.

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RECENT STATE MORTALITY STATISTICS [a]

For the information of public health officials and others interested, the rates in the following tables have been computed from monthly mortality data furnished by the State health departments for the latest month for which records are available. For purposes of comparison, the mortality records for a few preceding years are given, the rates being those for the month corresponding to the latest month for which the 1928 or 1929 rate is available.

Monthly State mortality statistics

[All rates are on an annual basis, and, with the exception of mortality from all causes, infant mortality, and congenital malformations and diseases of early infancy, are per 100,000 population]

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
ALL CAUSES: ANNUAL RATE PER 1,000 POPULATION													
Alabama:													
White	8.7	8.7	8.7	9.3	11.1	17.3	11.2	10.0	9.0	9.5	8.5	10.3	------
Colored	17.1	15.7	14.8	16.6	17.5	26.9	17.2	15.7	15.3	17.6	14.6	17.5	------
California	12.2	12.5	13.2	16.6	21.2	16.8	15.7	15.4	------	14.7			
Connecticut	9.3	9.4	10.1	10.2	11.4	15.9	14.8	------	------	12.0	11.5	12.7	12.7
Hawaii	12.0	11.0	12.4	11.0	12.9	13.3	15.2	------	------	12.0			
Indiana	10.6	11.1	11.2	11.2	16.7	17.7	14.0	------	------	11.7	12.3	13.2	13.5
Kansas	9.7	10.0	9.8	10.8	18.0	------	------	------	------	------	------	------	------
Kentucky	11.0	11.5	10.5	10.4	11.7	------	------	------	------	------	------	------	------
Louisiana	12.2	11.5	11.5	11.9	15.7	------	------	------	------	------	------	------	------
Michigan	9.7	10.6	10.9	11.3	16.2	17.0	12.9	13.2	------	------	------	------	------
Minnesota	8.0	8.1	8.6	8.8	12.5	13.6	9.1	9.7	------	9.6	------	------	------
Mississippi	11.9	10.7	10.7	11.4	16.7	23.1	14.0	13.0	------	------	------	------	------
Nebraska	8.2	8.0	8.3	8.8	14.8	------	------	------	------	------	------	------	------
New Jersey	9.9	9.7	10.6	10.8	13.2	17.3	14.0	13.2	12.1	13.8	12.8	14.2	12.8
New York [1]	11.0	11.7	12.1	12.4	13.8	20.3	15.6	14.1	------	14.4	13.7	19.8	16.2
North Carolina	11.2	11.0	10.8	11.1	17.5	16.2	15.7	12.6	11.7	11.9			
Pennsylvania	10.1	10.4	10.9	11.5	15.8	19.4	14.0	12.9	------	13.8	13.4	17.5	14.5
Rhode Island	------	------	------	------	------	19.1	------	------	------	------	------	------	------
South Dakota	8.2	7.1	7.5	8.1	14.1	------	------	------	------	------	------	------	------
Tennessee	11.6	11.2	10.9	11.3	16.1	19.2	14.4	13.8	11.3	13.6	11.8	------	------
Virginia	------	------	------	------	13.1	19.1	13.5	12.0	10.3	------	------	------	------
Wisconsin	------	------	------	------	------	14.5	11.8	11.2	11.1	------	------	------	------

[1] Exclusive of New York City.

[a] From the Office of Statistical Investigations, United States Public Health Service.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
INFANT MORTALITY PER 1,000 LIVE BIRTHS													
Alabama:													
White	54	57	62	61	57	100	79	79	62	59	50	62	------
Colored	99	79	82	85	95	171	117	97	80	100	88	97	------
California	53	55	58	69	76	66	73	74	------	66	------	------	------
Connecticut	52	42	59	39	56	74	85	------	------	56	65	76	72
Hawaii	------	91	87	80	113	100	120	------	------	------	------	------	------
Indiana	63	64	60	54	81	97	83	70	60	75	58	89	70
Kansas	65	58	55	56	60	------	------	------	------	------	------	------	------
Kentucky	------	------	------	------	------	202	------	------	------	------	------	------	------
Louisiana	62	69	79	68	73	------	------	------	------	------	------	------	------
Michigan	53	58	66	69	86	112	71	71	67	------	------	------	------
Minnesota	44	38	50	41	56	83	66	48	------	------	------	------	------
Nebraska	45	50	62	45	80	------	------	------	------	------	------	------	------
New Jersey	------	56	56	67	68	93	70	71	------	------	------	------	------
New York [1]	55	60	62	63	70	87	81	77	------	73	69	95	82
Pennsylvania	58	66	66	65	90	118	95	81	------	83	82	109	94
Rhode Island	------	------	------	------	------	100	------	------	------	------	------	------	------
South Dakota	56	50	53	70	59	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	145	98	89	61	------	------	------	------
Virginia	------	------	------	56	72	140	91	78	61	------	------	------	------
Wisconsin	47	51	55	59	72	105	68	69	89	68	------	------	------
CONGENITAL MALFORMATIONS AND DISEASES OF EARLY INFANCY (159-163): PER 1,000 LIVE BIRTHS													
Alabama:													
White	25	27	29	20	27	39	28	32	29	24	30	32	------
Colored	37	29	28	25	18	39	26	28	24	32	35	33	------
California	26	29	28	31	24	35	33	31	------	29	------	------	------
Kansas	28	33	31	34	27	------	------	------	------	------	------	------	------
Louisiana	25	30	31	25	25	------	------	------	------	------	------	------	------
Michigan	30	32	24	37	39	45	37	34	35	------	------	------	------
Minnesota	30	26	33	25	20	37	35	30	------	------	------	------	------
Nebraska	27	29	27	37	34	------	------	------	------	------	------	------	------
New York [1]	36	35	38	39	40	43	43	41	------	40	38	46	40
Pennsylvania	30	28	33	34	37	41	38	33	------	35	38	42	39
Rhode Island	------	------	------	------	------	45	------	------	------	------	------	------	------
South Dakota	35	34	32	38	28	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	36	28	27	20	------	------	------	------
TYPHOID FEVER (1)													
Alabama:													
White	12.6	12.3	10.5	8.7	4.2	0.7	2.3	2.1	2.9	0.7	------	------	------
Colored	33.0	32.7	19.8	10.9	9.2	2.6	------	2.6	10.9	2.9	------	------	------
California	2.8	4.8	3.1	1.1	1.0	1.0	2.6	2.1	------	1.6	------	------	------
Connecticut	2.9	------	------	------	------	.7	------	------	------	1.6	------	------	------
Hawaii	11.1	13.9	3.4	3.5	------	------	3.7	------	------	------	------	------	------
Indiana	10.4	8.8	9.3	7.7	3.0	1.5	.4	.4	3.4	------	------	------	------
Kansas	5.8	6.6	3.8	2.0	1.3	------	------	------	------	------	------	------	------
Kentucky	26.3	28.6	27.7	29.1	13.4	6.5	5.1	3.7	------	------	------	------	------
Louisiana	12.1	25.0	14.5	12.5	7.8	------	------	------	------	------	------	------	------
Michigan	1.3	2.4	2.8	1.6	1.3	1.5	.9	.3	1.9	------	------	------	------
Minnesota	.9	1.0	.4	------	.4	------	.4	------	------	.4	------	------	------
Mississippi	27.6	15.6	12.5	10.9	7.9	6.6	2.9	6.6	------	------	------	------	------
Nebraska	1.7	3.5	.8	1.7	3.3	------	------	------	------	------	------	------	------
New Jersey	3.7	2.5	2.5	2.9	.9	.6	1.0	.3	.3	------	------	------	------
New York [1]	2.3	2.4	4.9	3.1	1.7	1.0	.9	.4	------	1.5	------	------	------
North Carolina	15.6	9.9	10.0	5.8	7.2	2.4	1.8	2.4	2.1	.4	------	------	------
Pennsylvania	3.3	4.0	3.9	2.1	1.3	1.4	2.0	.8	------	.9	2.1	------	------
South Carolina	38.5	28.1	25.9	14.4	12.6	3.2	9.1	3.2	3.9	3.9	5.9	------	------
South Dakota	3.3	8.6	3.3	------	6.7	------	------	------	------	------	------	------	------
Tennessee	30.6	30.6	18.4	21.4	8.9	2.4	2.1	2.8	2.9	------	------	------	------
Virginia	------	10.4	6.9	6.1	2.3	2.7	.5	.9	.9	------	------	------	------
Wisconsin	.4	1.2	.8	1.2	.8	.4	1.3	2.0	1.2	.8	------	------	------

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
MEASLES (7)													
Alabama:													
White	2.8	0.7	2.1	1.4	4.2	5.6	4.7	5.6	7.2	15.9	------	------	------
Colored	1.3	------	1.3	------	1.3	1.3	1.5	1.3	6.7	9.5	------	------	------
California	.3	------	.3	------	.3	------	.6	1.3	------	1.3	------	------	------
Connecticut	.7	.8	------	.7	2.2	3.6	4.8	------	------	2.4	------	------	------
Hawaii	3.4	3.5	3.4	------	3.4	3.4	3.7	------	------	------	------	------	------
Indiana	------	------	------	.8	1.1	3.0	4.9	10.4	13.4	------	------	------	------
Kansas	.6	------	------	------	------	------	------	------	------	------	------	------	------
Kentucky	------	1.9	4.6	1.4	.9	1.4	4.1	3.7	------	------	------	------	------
Louisiana	3.6	------	------	.6	1.8	------	------	------	------	------	------	------	------
Michigan	.8	.3	.5	1.1	1.3	1.3	1.1	5.1	7.7	------	------	------	------
Minnesota	------	------	.4	------	1.3	5.2	2.6	5.2	------	------	------	------	------
Mississippi	4.6	1.4	2.6	4.8	4.6	5.3	12.4	18.4	------	------	------	------	------
Nebraska	------	------	------	------	.8	------	------	------	------	------	------	------	------
New Jersey	2.5	.3	.6	1.0	.9	.9	2.4	1.8	2.2	------	------	------	------
New York [1]	.6	.4	.6	1.3	1.5	5.8	4.4	5.0	------	5.7	------	------	------
North Carolina	3.2	.8	.4	1.2	2.0	1.2	2.7	.4	.8	35.2	------	------	------
Pennsylvania	1.3	.4	.9	2.3	2.8	7.4	7.0	6.5	------	7.6	3.1	------	------
Rhode Island	------	------	------	------	------	18.1	------	------	------	------	------	------	------
South Carolina	------	------	1.3	.7	------	------	------	------	------	------	------	------	------
Tennessee	.5	1.0	------	.5	.5	------	------	.9	1.0	------	------	------	------
Virginia	------	------	------	.9	2.7	2.7	1.0	3.2	2.4	------	------	------	------
Wisconsin	------	------	------	1.2	.4	2.0	2.2	2.4	7.0	------	------	------	------
SCARLET FEVER (8)													
Alabama:													
White	------	------	0.7	2.2	------	2.8	2.3	2.1	------	------	------	------	------
Colored	------	------	------	------	------	------	------	2.6	------	------	------	------	------
California	.3	.5	1.0	1.9	3.1	1.0	2.6	2.6	------	2.1	------	------	------
Connecticut	------	------	------	------	------	2.2	------	------	------	.8	------	------	------
Hawaii	3.4	------	------	------	------	------	------	------	------	------	------	------	------
Indiana	.4	.4	2.2	1.9	2.6	6.3	5.7	4.4	3.8	------	------	------	------
Kansas	1.3	1.3	1.9	5.3	2.6	------	------	------	------	------	------	------	------
Kentucky	.5	1.9	5.5	3.3	.9	5.5	6.1	5.1	------	------	------	------	------
Louisiana	------	------	------	3.1	.6	------	------	------	------	------	------	------	------
Michigan	1.5	.3	1.0	2.7	5.9	4.4	5.4	5.4	7.7	------	------	------	------
Minnesota	.9	.4	2.6	1.3	1.7	6.1	2.2	3.9	------	3.0	------	------	------
Mississippi	------	.7	2.0	------	------	------	------	------	------	------	------	------	------
Nebraska	.8	------	3.3	.9	2.5	------	------	------	------	------	------	------	------
New Jersey	.6	1.0	.9	.6	1.8	1.5	1.4	1.2	2.2	------	------	------	------
New York [1]	.2	------	.4	2.8	1.7	4.5	3.7	3.1	------	3.6	------	------	------
North Carolina	------	1.7	.8	1.7	1.6	2.4	1.8	1.2	2.9	.4	------	------	------
Pennsylvania	.7	.5	2.8	2.0	3.1	4.8	3.3	3.0	------	4.0	4.5	------	------
Rhode Island	------	------	------	------	------	3.3	------	------	------	------	------	------	------
South Carolina	1.3	------	.6	.7	1.9	1.3	------	------	------	------	------	------	------
South Dakota	------	1.7	1.7	1.7	3.3	------	------	------	------	------	------	------	------
Tennessee	.5	.5	2.8	1.9	2.8	1.4	4.7	3.3	2.9	------	------	------	------
Virginia	------	------	------	2.8	2.3	1.4	1.0	1.8	------	------	------	------	------
Wisconsin	1.2	.4	1.6	3.3	3.6	2.4	4.4	3.6	5.4	4.5	------	------	------
WHOOPING COUGH (9)													
Alabama:													
White	1.5	4.3	1.4	5.8	5.6	8.4	5.4	4.2	7.2	5.8	------	------	------
Colored	14.5	9.5	9.2	6.8	9.2	11.9	20.0	13.2	16.3	16.3	------	------	------
California	6.7	8.8	5.4	6.4	10.9	7.0	4.3	7.2	------	3.9	------	------	------
Connecticut	8.8	3.8	5.8	2.3	2.9	6.5	4.0	------	------	8.1	------	------	------
Hawaii	3.4	7.0	6.7	------	20.2	30.4	37.4	------	------	------	------	------	------
Indiana	6.3	3.4	1.1	.8	5.6	7.0	6.2	6.3	6.5	------	------	------	------
Kansas	7.1	4.0	4.5	3.3	2.6	------	------	------	------	------	------	------	------
Kentucky	3.7	5.7	4.2	4.8	7.4	10.6	13.8	8.8	------	------	------	------	------
Louisiana	7.2	7.5	7.8	5.6	7.8	------	------	------	------	------	------	------	------
Michigan	4.9	4.8	3.3	3.2	10.0	7.2	7.7	4.6	7.2	------	------	------	------
Minnesota	5.2	1.3	2.6	3.6	6.5	9.1	6.1	4.3	------	1.3	------	------	------
Mississippi	7.9	2.7	3.9	6.8	5.9	11.2	10.2	11.2	------	------	------	------	------
Nebraska	3.3	1.7	4.2	------	5.0	------	------	------	------	------	------	------	------
New Jersey	7.4	4.5	4.0	2.5	4.9	13.3	6.8	6.2	5.7	------	------	------	------

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
WHOOPING COUGH (9)—Continued													
New York [1]	3.0	3.9	2.3	2.8	1.7	6.2	5.0	5.4	------	4.4	------	------	------
North Carolina	5.2	3.7	4.8	2.9	4.4	9.2	8.4	5.2	7.5	8.7	------	------	------
Pennsylvania	6.1	6.2	4.9	7.4	12.0	12.4	8.4	5.2	------	3.7	7.4	------	------
Rhode Island	------	------	------	------	------	3.3	------	------	------	------	------	------	------
South Carolina	8.2	3.3	7.6	2.6	7.6	3.2	9.1	7.6	13.1	13.7	14.5	------	------
South Dakota	8.4	6.9	6.7	3.5	------	------	------	------	------	------	------	------	------
Tennessee	3.8	6.3	3.3	3.9	5.2	10.4	6.8	4.2	6.3	------	------	------	------
Virginia	------	------	------	.9	6.4	18.3	9.1	6.9	6.1	------	------	------	------
Wisconsin	4.0	2.9	2.8	.8	3.2	2.4	3.5	3.2	6.6	1.6	------	------	------
DIPHTHERIA (10)													
Alabama:													
White	6.3	13.0	23.1	30.4	24.5	13.3	5.4	4.9	2.9	2.9	------	------	------
Colored	2.6	4.1	6.6	10.9	5.3	5.3	1.5	4.0	2.7	2.7	------	------	------
California	5.9	3.5	4.4	5.1	5.4	4.9	3.7	1.8	------	6.5	------	------	------
Connecticut	2.9	5.3	5.1	6.0	8.0	3.6	4.0	------	------	14.5	------	------	------
Hawaii	6.7	10.5	13.5	7.0	6.7	3.4	11.2	------	------	------	------	------	------
Indiana	2.2	4.6	7.8	10.0	10.0	5.9	5.7	3.7	5.0	------	------	------	------
Kansas	1.9	2.0	7.1	5.3	7.1	------	------	------	------	------	------	------	------
Kentucky	2.3	14.3	26.3	25.7	17.5	12.5	10.2	5.1	------	------	------	------	------
Louisiana	3.6	4.4	11.5	14.4	16.3	------	------	------	------	------	------	------	------
Michigan	6.7	7.2	8.7	9.3	12.8	12.1	8.5	12.6	10.3	------	------	------	------
Minnesota	1.3	2.2	1.7	3.1	5.2	2.2	2.2	3.0	------	2.6	------	------	------
Mississippi	1.3	9.5	11.8	12.9	15.1	6.6	5.8	2.0	------	------	------	------	------
Nebraska	3.3	1.7	5.0	6.1	4.2	------	------	------	------	------	------	------	------
New Jersey	7.1	6.0	7.1	11.8	14.2	20.6	13.0	10.2	10.5	------	------	------	------
New York [1]	1.3	3.1	2.3	4.6	3.8	4.5	3.4	3.7	------	6.1	------	------	------
North Carolina	5.6	11.2	18.4	29.4	26.4	16.8	10.2	4.8	4.1	5.0	------	------	------
Pennsylvania	3.6	4.2	6.0	10.9	10.8	10.3	7.1	9.2	------	12.7	9.3	------	------
Rhode Island	------	------	------	------	------	6.6	------	------	------	------	------	------	------
South Carolina	4.4	11.1	20.2	22.2	24.6	6.3	4.9	6.9	2.0	.7	3.3	------	------
South Dakota	1.7	------	1.7	3.5	1.7	------	------	------	------	------	------	------	------
Tennessee	2.4	12.2	17.4	24.8	18.8	7.5	4.7	4.7	2.9	------	------	------	------
Virginia	------	5.2	10.1	15.6	12.3	8.2	4.6	7.8	1.9	------	------	------	------
Wisconsin	1.2	2.5	2.8	3.7	4.8	2.8	3.1	2.0	.8	4.1	------	------	------
INFLUENZA (11)													
Alabama:													
White	11.9	12.3	21.0	35.5	152.8	711.4	241.3	110.0	47.1	78.9	37.7	98.5	------
Colored	25.1	30.0	33.0	42.2	185.9	973.1	261.3	150.4	64.0	107.7	77.5	137.2	------
California	8.3	7.7	29.5	127.1	254.0	91.5	47.2	40.1	------	21.4	------	------	------
Connecticut	2.9	6.0	12.4	9.0	34.3	196.6	133.5	------	------	25.8	24.7	31.8	52.0
Hawaii	37.1	45.3	37.1	27.9	30.4	23.6	29.9	------	------	------	------	------	------
Indiana	8.2	11.9	16.3	24.1	267.7	341.4	131.3	66.0	36.4	82.0	36.7	119.2	101.0
Kansas	16.7	9.3	23.7	29.2	392.7	------	------	------	------	------	------	------	------
Kentucky	17.1	11.0	18.5	38.1	142.0	818.6	281.9	98.7	------	------	------	------	------
Louisiana	29.0	21.8	18.7	34.3	162.4	------	------	------	------	------	------	------	------
Michigan	5.4	8.7	10.0	13.8	157.2	237.7	76.9	39.5	24.1	------	------	------	------
Minnesota	7.8	8.0	16.4	16.1	150.1	231.9	55.4	38.9	------	28.8	------	------	------
Mississippi	19.1	11.5	9.2	38.7	213.7	897.9	172.5	118.3	------	------	------	------	------
Nebraska	11.7	9.5	20.1	30.2	367.9	------	------	------	------	------	------	------	------
New Jersey	3.4	4.8	7.7	11.5	45.0	164.2	59.4	25.0	15.0	28.0	23.0	48.3	18.6
New York [1]	2.3	4.1	8.8	13.7	37.5	235.5	98.2	36.6	------	25.3	24.9	128.7	29.1
North Carolina	7.6	6.6	14.0	35.2	195.2	375.5	281.3	116.2	59.2	58.0	------	------	------
Pennsylvania	7.7	12.1	14.4	21.0	172.3	357.9	95.6	55.0	------	50.2	45.5	143.0	65.7
Rhode Island	------	------	------	------	------	231.9	------	------	------	------	------	------	------
South Carolina	12.0	11.1	36.0	60.7	353.7	382.2	172.7	98.5	51.6	50.9	33.0	------	------
South Dakota	15.1	10.4	26.8	27.7	224.1	------	------	------	------	------	------	------	------
Tennessee	13.2	9.7	17.9	34.5	225.9	644.7	252.2	153.9	71.0	112.3	62.2	------	------
Virginia	------	------	------	21.7	155.0	591.2	192.9	88.2	48.7	------	------	------	------
Wisconsin	5.2	11.1	10.0	16.5	199.8	269.1	75.9	36.3	27.2	70.9	------	------	------

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
POLIOMYELITIS (22)													
Alabama:													
White	1.4	------	1.4	------	2.1	0.7	2.3	1.3	1.4	------	------	------	------
Colored	------	------	------	------	1.3	------	2.9	------	------	2.7	------	------	------
California	1.6	1.6	1.6	1.6	1.3	.3	.9	.8	------	1.6	------	------	------
Connecticut	1.5	2.3	1.5	------	.7	------	------	------	------	.8	------	------	------
Hawaii	------	------	3.4	------	------	------	------	------	------	------	------	------	------
Indiana	.7	.4	------	1.2	.4	.7	------	.4	------	------	------	------	------
Kansas	------	.7	.6	.7	.6	------	------	------	------	------	------	------	------
Kentucky	1.4	.5	1.4	1.4	.9	.9	1.0	.5	------	------	------	------	------
Louisiana	2.4	1.2	1.2	1.9	------	------	------	------	------	------	------	------	------
Michigan	.5	.5	1.3	.8	.8	1.3	.3	.8	.5	------	------	------	------
Minnesota	6.1	9.4	3.9	4.0	------	------	.9	------	------	------	------	------	------
Mississippi	1.3	2.0	.7	.7	------	------	1.5	.7	------	------	------	------	------
Nebraska	1.7	.9	------	------	------	------	------	------	------	------	------	------	------
New Jersey	1.5	.6	1.8	1.0	------	.3	.3	.6	------	------	------	------	------
New York [1]	.8	7.6	3.6	2.0	.4	.6	.7	.2	------	------	------	------	------
North Carolina	------	.4	.4	1.7	.4	.4	.4	1.6	1.2	.8	------	------	------
Pennsylvania	1.2	1.5	.9	.6	1.1	.6	.7	.4	------	1.0	------	------	------
Rhode Island	------	------	------	------	------	------	------	------	------	------	------	------	------
South Carolina	.6	2.0	.6	.7	------	.6	.7	.6	------	------	------	------	------
South Dakota	8.4	5.2	3.3	1.7	3.3	------	------	------	------	------	------	------	------
Tennessee	1.9	1.9	1.9	1.5	4.2	.9	.5	.9	.5	------	------	------	------
Virginia	------	1.9	1.4	.5	1.8	.5	------	1.4	.9	------	------	------	------
Wisconsin	.8	.4	------	.4	.8	------	.4	------	------	.8	------	------	------
LETHARGIC ENCEPHALITIS (23)													
Alabama:													
White	------	------	------	0.7	------	2.8	1.6	2.8	1.4	------	------	------	------
Colored	1.3	------	------	------	------	------	------	1.3	2.7	------	------	------	------
California	1.0	1.6	1.3	1.6	1.8	3.4	1.4	1.0	------	1.6	------	------	------
Connecticut	.7	.8	.7	------	.7	.7	3.2	------	------	1.6	------	------	------
Indiana	------	------	------	------	------	1.9	.8	1.1	1.5	------	------	------	------
Kansas	.6	.7	1.3	------	3.2	------	------	------	------	------	------	------	------
Kentucky	.5	.5	.5	.5	------	.5	.5	------	------	------	------	------	------
Louisiana	------	.6	.6	.6	1.2	------	------	------	------	------	------	------	------
Michigan	2.1	1.6	2.1	1.1	1.0	1.5	1.1	1.0	1.6	------	------	------	------
Minnesota	1.7	3.1	2.2	1.3	3.0	3.5	2.2	2.2	------	3.5	------	------	------
Mississippi	.7	1.4	1.3	------	------	------	.7	.7	------	------	------	------	------
Nebraska	1.7	1.7	------	.9	.8	------	------	------	------	------	------	------	------
New Jersey	1.2	1.9	1.8	1.3	.3	2.2	1.7	1.5	1.0	------	------	------	------
New York [1]	.8	.7	.6	.4	1.1	1.2	.9	1.2	------	1.1	------	------	------
North Carolina	------	------	1.2	.8	.8	.4	1.8	.8	.4	.4	------	------	------
Pennsylvania	1.5	.8	.5	1.5	1.0	1.3	2.0	1.0	------	1.6	------	------	------
South Carolina	2.5	2.6	.6	2.0	.6	1.3	1.4	5.1	2.0	1.3	4.0	------	------
South Dakota	------	------	------	------	1.7	------	------	------	------	------	------	------	------
Tennessee	.5	1.5	.5	.5	.5	------	1.0	------	1.5	------	------	------	------
Virginia	------	------	------	.9	------	2.3	.5	1.4	2.4	------	------	------	------
Wisconsin	.8	2.1	2.0	1.2	.8	.4	2.2	2.0	1.6	2.5	------	------	------
MENINGOCOCCUS MENINGITIS (24)													
Alabama:													
White	0.7	------	------	------	------	2.1	5.4	4.0	------	------	------	------	------
Colored	------	------	1.3	------	------	------	1.5	------	------	------	------	------	------
California	1.8	0.8	1.0	2.7	7.2	11.1	10.3	14.2	------	1.6	------	------	------
Connecticut	1.5	.8	2.2	------	2.2	------	2.4	------	------	.8	------	------	------
Hawaii	6.7	3.5	------	3.5	6.7	10.1	18.7	------	------	------	------	------	------
Indiana	------	.4	------	.8	1.5	1.1	------	1.1	1.9	------	------	------	------
Kansas	1.6	.7	.6	2.0	1.3	------	------	------	------	------	------	------	------
Louisiana	------	------	------	------	3.0	------	------	------	------	------	------	------	------
Michigan	2.8	2.9	4.1	3.2	4.6	6.9	12.5	29.8	37.9	------	------	------	------
Minnesota	.9	1.3	1.3	.9	3.9	3.0	2.6	.4	------	.4	------	------	------
Mississippi	------	------	------	.7	2.0	1.3	.7	.7	------	------	------	------	------
Nebraska	------	------	------	3.5	------	------	------	------	------	------	------	------	------
New Jersey	2.2	.3	1.5	1.9	3.1	3.4	2.4	2.5	2.2	------	------	------	------
New York [1]	.8	------	1.3	.2	.6	.6	1.8	1.0	------	.8	------	------	------
North Carolina	------	------	------	------	.4	------	.4	.4	.4	------	------	------	------

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
MENINGOCOCCUS MENINGITIS (24)—Continued													
Pennsylvania	0.9	0.8	0.5	1.1	1.3	1.7	2.8	3.1	------	1.3	------	------	------
Rhode Island	------	------	------	------	------	1.6	------	------	------	------	------	------	------
South Carolina	1.3	.7	------	2.6	2.5	1.3	2.8	3.2	3.9	2.0	2.6	------	------
South Dakota	1.7	1.7	------	1.7	------	------	------	------	------	------	------	------	------
Tennessee	1.4	.5	2.4	.5	2.8	1.9	1.0	3.9	3.4	------	------	------	------
Virginia	------	.5	------	.9	.9	1.8	1.5	1.8	1.4	------	------	------	------
Wisconsin	.4	.8	3.6	3.7	3.6	.4	6.6	10.0	2.9	4.1	------	------	------
TUBERCULOSIS, ALL FORMS (31-37)													
Alabama:													
White	37.8	50.7	38.5	39.1	44.9	54.7	62.9	51.9	55.0	48.5	55.0	53.5	------
Colored	168.8	128.1	141.1	158.0	125.3	129.2	134.3	146.4	159.4	184.0	189.0	209.2	------
California	120.7	113.5	118.1	129.0	146.0	137.5	147.9	149.4	------	134.6	------	------	------
Connecticut	55.4	55.8	63.5	53.5	66.4	66.0	77.1	------	75.1	78.9	86.1	81.0	------
Hawaii	148.4	104.0	121.5	90.6	141.7	108.0	89.6	------	------	------	------	------	------
Indiana	58.9	57.5	64.1	56.7	80.5	78.2	76.8	79.7	81.6	76.2	83.4	97.0	90.0
Kansas	39.8	31.2	37.2	39.1	35.9	------	------	------	------	------	------	------	------
Kentucky	108.8	101.5	97.3	109.1	97.8	116.2	121.0	91.3	------	------	------	------	------
Louisiana	96.0	72.4	55.5	77.4	85.7	------	------	------	------	------	------	------	------
Michigan	60.8	59.1	58.2	64.1	69.2	80.0	72.1	72.3	80.6	------	------	------	------
Minnesota	54.9	50.1	34.6	47.8	50.2	49.3	48.4	60.1	------	60.1	------	------	------
Mississippi	82.9	78.1	54.6	80.2	90.1	84.2	72.1	96.0	------	------	------	------	------
Nebraska	28.4	20.7	20.1	21.6	19.2	------	------	------	------	------	------	------	------
New Jersey	76.1	66.9	73.6	63.7	65.9	76.4	84.3	84.7	84.7	83.1	87.6	88.3	86.2
New York [1]	71.1	70.0	71.8	67.2	67.1	84.8	82.2	76.3	------	82.5	85.0	109.3	103.5
North Carolina	81.8	77.9	60.9	69.2	84.2	91.0	91.0	89.4	102.7	88.2	------	------	------
Pennsylvania	59.6	62.4	58.0	55.5	67.3	79.6	69.4	66.7	------	76.7	84.8	96.7	92.4
Rhode Island	------	------	------	------	------	65.8	------	------	------	------	------	------	------
South Carolina	66.3	53.5	74.5	65.9	94.7	64.4	65.0	77.7	71.2	86.8	84.4	------	------
South Dakota	95.3	29.4	36.8	43.2	60.2	------	------	------	------	------	------	------	------
Tennessee	112.5	99.7	106.8	118.2	145.9	140.7	145.9	139.3	146.9	------	------	------	------
Virginia	------	69.0	84.1	71.3	88.3	116.1	85.6	84.1	93.6	------	------	------	------
Wisconsin	52.2	49.0	42.3	47.8	48.6	44.3	47.7	63.8	72.9	63.0	------	------	------
CANCER, ALL FORMS (43-49)													
Alabama:													
White	62.4	52.1	54.7	59.4	48.4	38.6	49.7	46.3	55.8	49.2	40.7	52.7	------
Colored	47.5	46.3	47.5	43.6	54.1	27.7	30.7	38.2	40.9	36.8	50.3	39.4	------
California	128.2	144.7	143.4	141.5	164.1	151.4	129.6	135.4	------	129.2	------	------	------
Connecticut	110.2	103.3	132.8	110.1	118.2	98.3	114.4	------	106.6	97.8	107.9	92.9	101.4
Hawaii	74.2	38.3	74.2	59.3	50.6	54.0	89.6	------	------	------	------	------	------
Indiana	109.7	94.6	90.8	105.0	100.5	100.8	98.5	90.5	101.9	105.3	98.5	102.8	101.0
Kansas	93.7	103.4	108.4	104.1	117.4	------	------	------	------	------	------	------	------
Kentucky	70.1	73.4	64.1	72.0	57.7	65.0	61.8	46.6	------	------	------	------	------
Louisiana	75.5	69.9	73.1	64.3	77.3	------	------	------	------	------	------	------	------
Michigan	87.5	103.9	92.6	92.0	96.4	100.3	96.0	96.9	98.3	------	------	------	------
Minnesota	105.1	110.4	104.7	100.1	110.7	109.9	84.8	112.9	------	115.1	------	------	------
Mississippi	50.0	52.3	49.3	50.9	53.9	37.5	56.8	45.4	------	------	------	------	------
Nebraska	82.0	99.4	93.7	102.0	78.6	------	------	------	------	------	------	------	------
New Jersey	99.8	101.9	112.2	104.4	119.9	100.1	116.7	115.9	105.7	104.4	99.6	98.2	102.7
New York [1]	123.5	122.0	123.7	115.5	115.5	138.1	136.0	115.4	------	128.6	117.6	125.7	132.6
Pennsylvania	99.4	97.6	96.0	100.7	94.4	102.1	99.8	101.4	------	93.4	98.0	104.0	90.4
Rhode Island	------	------	------	------	------	136.5	------	------	------	------	------	------	------
South Carolina	34.1	41.4	30.3	47.0	49.3	34.1	37.8	32.2	34.6	34.6	35.0	------	------
South Dakota	80.3	63.9	55.2	76.0	87.0	------	------	------	------	------	------	------	------
Tennessee	55.5	55.0	50.8	54.0	66.4	49.4	59.9	57.4	63.2	67.6	49.9	------	------
Virginia	------	------	------	61.0	63.6	55.3	83.3	63.6	56.7	------	------	------	------
Wisconsin	104.1	106.7	103.7	103.0	111.2	98.1	109.0	97.3	104.7	106.7	------	------	------

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
DIABETES (57)													
Alabama:													
White	9.1	15.2	8.4	9.4	11.9	18.9	8.5	4.9	12.3	8.0	9.9	4.6	----
Colored	5.3	15.0	4.0	9.5	6.6	15.8	2.9	6.6	8.2	9.5	6.8	2.7	----
California	19.4	16.3	16.3	24.8	33.3	28.9	28.9	25.6	----	25.1	----	----	----
Connecticut	16.8	15.8	18.2	15.8	14.6	15.8	23.8	----	----	----	----	----	----
Hawaii	6.7	10.5	13.5	7.0	6.7	13.5	3.7	----	----	----	----	----	----
Indiana	14.5	16.1	16.3	10.7	14.8	17.8	14.8	16.7	13.8	----	----	----	----
Kansas	14.8	17.2	10.3	15.3	38.5	----	----	----	----	----	----	----	----
Kentucky	9.7	9.5	9.2	10.0	10.2	12.9	10.2	11.1	----	----	----	----	----
Louisiana	13.3	6.9	15.1	11.9	12.7	----	----	----	----	----	----	----	----
Michigan	16.2	18.3	20.5	19.6	26.4	26.4	21.9	22.8	21.2	----	----	----	----
Minnesota	12.5	12.5	13.4	21.9	26.0	28.1	18.6	21.2	----	24.7	----	----	----
Mississippi	7.2	5.4	6.6	3.4	14.5	11.8	5.8	10.5	----	----	----	----	----
Nebraska	13.4	19.0	15.1	22.5	40.1	----	----	----	----	----	----	----	----
New Jersey	19.4	21.3	21.3	23.9	26.2	33.9	27.9	22.8	24.5	----	----	----	----
New York [1]	24.9	21.5	25.9	20.4	28.2	41.6	29.8	28.1	----	27.4	26.4	24.7	25.2
Pennsylvania	20.0	17.4	20.8	21.3	26.2	31.7	26.2	22.5	----	27.2	20.1	23.8	20.0
Rhode Island	----	----	----	----	----	24.7	----	----	----	----	----	----	----
South Carolina	5.1	6.5	5.7	6.5	17.7	7.0	11.2	8.8	5.2	3.3	3.3	----	----
South Dakota	18.4	6.9	25.1	10.4	31.8	----	----	----	----	----	----	----	----
Tennessee	7.1	10.2	7.5	13.6	8.5	11.8	10.4	12.2	9.2	----	----	----	----
Virginia	----	----	----	9.0	13.3	19.7	8.6	7.8	10.9	----	----	----	----
DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSE (70-86)													
Alabama:													
White	69.4	72.4	72.9	89.1	100.9	80.6	86.9	95.3	97.0	----	----	----	----
Colored	133.2	132.2	116.0	139.0	125.3	114.7	112.4	110.8	129.4	----	----	----	----
California	130.3	126.8	137.7	154.1	181.2	161.8	150.8	142.4	----	142.7	----	----	----
Kansas	111.0	125.3	136.0	161.8	215.0	----	----	----	----	----	----	----	----
Kentucky	97.3	103.4	103.3	117.7	107.5	122.2	112.3	98.7	----	----	----	----	----
Louisiana	103.3	97.3	75.5	106.1	122.6	----	----	----	----	----	----	----	----
Michigan	103.4	126.4	124.1	126.4	161.8	174.1	142.5	151.8	138.6	----	----	----	----
Minnesota	76.6	82.7	88.2	80.9	99.9	109.4	95.6	112.5	----	----	----	----	----
Nebraska	97.0	96.8	102.0	102.8	117.9	----	----	----	----	----	----	----	----
New Jersey	98.3	95.8	110.9	113.7	118.9	147.6	131.0	132.2	128.3	139.5	129.5	147.8	136.9
New York [1]	120.6	136.1	139.3	136.6	148.4	194.2	175.4	170.0	----	176.1	167.5	212.8	203.0
Pennsylvania	108.1	97.6	115.4	119.8	129.1	153.4	135.5	131.4	----	----	----	----	----
Rhode Island	----	----	----	----	----	182.5	----	----	----	----	----	----	----
South Dakota	103.7	77.8	88.6	82.9	130.5	----	----	----	----	----	----	----	----
Tennessee	----	----	----	----	----	105.9	104.7	117.2	103.6	----	----	----	----
Virginia	----	----	----	106.8	119.8	155.9	142.8	123.9	125.7	----	----	----	----
CEREBRAL HEMORRHAGE, APOPLEXY (74)													
Alabama:													
White	35.7	42.7	39.2	51.4	65.9	45.6	52.8	57.5	54.3	48.5	40.7	57.3	----
Colored	75.2	80.4	83.1	72.2	63.3	68.6	65.7	55.4	79.0	85.9	48.9	62.5	----
California	91.7	88.9	94.1	112.2	128.7	113.5	105.6	97.7	----	102.3	----	----	----
Hawaii	70.8	13.9	84.3	76.7	67.5	60.7	71.0	----	----	----	----	----	----
Indiana	93.8	97.3	96.4	109.6	140.1	138.7	126.0	120.1	104.2	134.1	115.9	116.8	104.2
Kansas	82.8	96.8	106.5	131.3	165.5	----	----	----	----	----	----	----	----
Kentucky	66.4	64.3	53.5	66.7	60.9	70.1	66.9	58.1	----	----	----	----	----
Louisiana	61.6	61.8	53.1	73.6	84.5	----	----	----	----	----	----	----	----
Michigan	77.2	87.5	92.3	87.5	115.2	122.1	99.1	112.1	100.2	----	----	----	----
Minnesota	59.3	59.0	67.5	63.0	74.4	81.3	69.6	84.4	----	----	----	----	----
Mississippi	59.2	67.9	61.8	66.6	73.0	80.9	78.6	69.7	----	----	----	----	----
Nebraska	75.3	76.9	81.1	71.7	86.1	----	----	----	----	----	----	----	----
New Jersey	70.3	72.0	80.7	86.0	90.3	107.5	98.9	97.4	90.1	----	----	----	----
New York [1]	92.0	104.2	104.4	107.2	113.2	158.2	138.5	126.8	----	134.7	121.5	166.3	154.4
Pennsylvania	76.8	68.4	80.7	92.0	94.9	112.6	98.1	92.7	----	95.0	90.6	----	----
Rhode Island	----	----	----	----	----	159.5	----	----	----	----	----	----	----
South Dakota	68.6	43.2	56.9	51.9	78.6	----	----	----	----	----	----	----	----
Tennessee	----	----	----	----	----	56.4	60.4	59.8	55.9	----	----	----	----
Virginia	----	----	----	70.9	82.8	108.8	102.3	90.5	90.3	----	----	----	----

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
DISEASES OF THE CIRCULATORY SYSTEM (87-96)													
Alabama:													
White	117.7	106.5	113.5	124.6	128.3	136.0	120.3	110.7	119.5	------	------	------	------
Colored	188.5	185.3	171.4	200.3	195.1	187.2	185.4	174.1	182.6	------	------	------	------
California	256.4	267.3	293.8	387.8	496.7	427.7	383.4	372.4	------	319.2	------	------	------
Kansas	173.9	169.7	168.8	193.6	277.2	------	------	------	------	------	------	------	------
Kentucky	176.6	126.8	155.4	202.5	192.3	232.4	193.5	191.9	------	------	------	------	------
Louisiana	191.4	184.7	193.8	202.2	274.1	------	------	------	------	------	------	------	------
Michigan	188.8	222.1	240.3	241.7	345.2	347.3	273.2	276.7	266.3	------	------	------	------
Minnesota	145.3	156.0	172.2	194.4	269.5	253.9	185.6	191.6	------	------	------	------	------
Nebraska	152.2	163.3	178.1	188.4	243.3	------	------	------	------	------	------	------	------
New Jersey	213.2	215.9	250.8	254.7	307.2	391.3	344.9	305.4	297.4	306.6	264.5	274.7	244.7
New York [1]	276.5	311.4	335.4	358.2	384.7	545.9	441.9	382.3	------	369.1	356.3	496.3	383.8
Pennsylvania	196.9	218.6	236.1	243.2	330.3	369.3	299.7	278.4	------	------	------	------	------
Rhode Island	------	------	------	------	------	347.0	------	------	------	------	------	------	------
South Carolina	274.1	283.3	263.4	284.6	334.1	262.1	292.3	291.2	269.6	263.7	277.0	------	------
South Dakota	88.6	129.6	120.4	160.7	224.1	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	162.8	159.4	160.0	136.6	------	------	------	------
Virginia	------	------	------	156.4	204.4	242.8	217.7	218.6	164.4	------	------	------	------
DISEASES OF THE HEART (87-90)													
Alabama:													
White	104.4	99.2	103.0	115.2	115.6	129.7	108.6	103.0	110.8	98.5	91.9	103.1	------
Colored	180.7	166.2	155.6	182.6	187.2	175.4	175.2	163.5	171.7	199.0	119.6	142.6	------
California	214.0	223.0	245.5	344.5	442.4	372.4	338.2	329.2	------	278.6	------	------	------
Connecticut	164.9	156.0	156.8	198.3	196.3	256.1	219.2	------	------	200.3	207.9	204.9	167.0
Hawaii	121.5	115.0	114.7	108.1	108.0	114.7	141.9	------	------	------	------	------	------
Indiana	169.1	182.3	201.7	204.6	269.5	230.6	198.7	243.2	199.2	194.6	173.8	181.1	172.6
Kansas	146.3	153.2	145.0	171.1	249.0	------	------	------	------	------	------	------	------
Kentucky	150.4	100.6	144.8	154.4	169.3	194.6	158.3	160.0	------	------	------	------	------
Louisiana	178.7	179.1	181.7	187.8	260.2	------	------	------	------	------	------	------	------
Michigan	163.9	187.9	215.4	205.7	299.3	347.3	235.7	240.8	238.5	------	------	------	------
Minnesota	128.5	127.4	144.5	157.8	231.4	208.9	150.5	147.5	------	------	------	------	------
Mississippi	103.9	99.9	88.7	89.7	99.3	105.9	112.8	99.3	------	------	------	------	------
Nebraska	136.3	140.8	153.9	181.5	223.3	------	------	------	------	------	------	------	------
New Jersey	196.6	193.3	229.0	233.7	278.0	361.5	324.4	277.6	276.1	------	------	------	------
New York [1]	237.4	237.2	291.3	312.0	297.1	483.7	391.7	338.9	------	323.7	308.5	433.9	334.4
Pennsylvania	176.6	196.9	214.0	222.0	301.8	336.9	273.9	248.8	------	265.8	244.8	301.0	198.0
Rhode Island	------	------	------	------	------	304.2	------	------	------	------	------	------	------
South Dakota	85.3	112.3	75.3	138.3	204.0	------	------	------	------	------	------	------	------
Tennessee	122.4	1f8.7	126.1	123.5	158.6	149.2	148.0	150.1	125.0	133.2	------	------	------
Virginia	------	------	------	143.6	188.4	220.4	193.4	202.6	149.3	------	------	------	------
DISEASES OF THE RESPIRATORY SYSTEM (97-107)													
Alabama:													
White	35.7	37.7	59.6	91.3	114.2	236.9	100.9	114.9	84.7	------	------	------	------
Colored	54.1	81.7	76.5	148.5	192.5	383.7	165.0	145.1	136.2	------	------	------	------
California	55.8	68.1	92.0	159.2	216.6	143.4	152.2	167.2	------	130.8	------	------	------
Kansas	26.9	32.5	38.5	61.0	185.4	------	------	------	------	------	------	------	------
Kentucky	51.2	62.9	85.8	130.1	152.7	311.8	197.6	134.2	------	------	------	------	------
Louisiana	62.8	54.9	74.9	102.9	185.4	------	------	------	------	------	------	------	------
Michigan	41.5	49.3	76.2	107.9	219.8	253.9	155.5	147.0	130.1	------	------	------	------
Minnesota	26.4	39.8	56.2	78.2	153.1	163.9	74.8	83.1	------	------	------	------	------
Nebraska	27.6	30.2	53.5	83.0	194.8	------	------	------	------	------	------	------	------
New Jersey	45.6	64.0	78.3	95.8	486.9	357.5	203.0	174.1	116.9	------	------	------	------
New York [1]	44.2	65.2	82.5	104.4	145.8	332.7	185.4	152.6	------	171.1	147.0	334.1	197.7
Pennsylvania	51.9	72.8	88.9	112.7	254.2	316.7	184.2	164.4	------	------	------	------	------
Rhode Island	------	------	------	------	------	353.6	------	------	------	------	------	------	------
South Dakota	56.9	31.1	68.6	69.1	145.5	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	234.4	157.3	156.7	97.7	------	------	------	------
Virginia	------	------	------	77.5	113.9	145.0	132.6	119.8	79.9	------	------	------	------

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
PNEUMONIA, ALL FORMS (100, 101)													
Alabama:													
White	28.0	29.7	46.3	81.1	104.4	227.1	93.9	107.2	80.4	120.2	57.2	102.3	------
Colored	44.8	72.2	68.6	133.5	180.6	366.5	160.6	133.2	129.4	170.4	115.6	163.0	------
California	43.9	57.4	78.0	139.9	190.5	123.5	135.6	152.5	------	115.8	------	------	------
Connecticut	34.3	46.7	73.7	71.6	118.9	254.7	232.0	------	------	148.6	119.1	132.1	157.7
Hawaii	118.1	118.5	134.9	97.6	141.7	145.1	254.0	------	------	------	------	------	------
Indiana	33.7	44.1	61.5	80.1	233.2	270.3	169.5	137.9	83.5	173.2	99.3	161.6	135.6
Kansas	16.0	25.9	30.2	50.4	159.1	------	------	------	------	------	------	------	------
Kentucky	43.4	52.9	78.4	108.2	132.4	285.9	180.3	116.7	------	------	------	------	------
Louisiana	52.5	41.2	60.4	88.6	170.3	------	------	------	------	------	------	------	------
Michigan	21.3	37.6	61.3	90.1	190.3	224.7	136.5	125.2	114.2	------	------	------	------
Minnesota	22.9	32.6	51.0	70.2	147.5	156.2	71.4	72.2	------	160.9	------	------	------
Mississippi	13.0	29.9	28.9	76.8	142.0	191.4	107.0	110.4	------	------	------	------	------
Nebraska	28.4	23.3	43.5	76.0	179.0	------	------	------	------	------	------	------	------
New Jersey	36.4	54.1	68.4	83.7	160.5	326.9	187.3	153.8	99.4	104.1	87.9	122.7	97.0
New York [1]	35.1	53.4	65.9	89.4	128.5	297.6	165.8	135.6	------	152.8	126.0	296.2	169.5
North Carolina	24.8	31.5	48.9	78.7	151.9	185.2	177.5	130.2	113.5	125.5	------	------	------
Pennsylvania	40.4	56.2	72.8	97.1	228.6	285.1	162.0	142.8	------	187.3	157.0	295.0	209.0
Rhode Island	------	------	------	------	------	317.4	------	------	------	------	------	------	------
South Carolina	49.9	56.8	58.7	95.9	164.2	140.2	126.2	130.1	90.7	124.7	127.9	------	------
South Dakota	43.5	20.7	45.2	60.5	117.1	------	------	------	------	------	------	------	------
Tennessee	39.5	40.4	59.3	91.9	122.4	215.1	146.4	140.7	86.6	116.7	99.4	------	------
Virginia	------	------	------	64.3	98.3	131.2	120.5	104.7	68.0	------	------	------	------
Wisconsin	29.9	38.3	58.2	79.1	164.3	161.9	120.5	88.9	84.5	128.5	------	------	------
DISEASES OF THE DIGESTIVE SYSTEM (108–127)													
Alabama:													
White	136.7	109.4	94.6	72.4	66.0	47.7	46.6	141.6	46.3	------	------	------	------
Colored	147.7	115.8	85.7	57.2	69.9	67.2	59.9	182.0	91.3	------	------	------	------
California	106.2	96.7	100.8	105.0	103.6	86.3	85.6	91.2	------	------	------	------	------
Hawaii	185.6	167.3	124.8	122.0	145.1	222.7	186.8	------	------	------	------	------	------
Kansas	138.0	141.2	95.1	76.9	80.2	------	------	------	------	------	------	------	------
Kentucky	180.8	171.6	107.5	89.6	57.2	53.0	52.1	55.3	------	------	------	------	------
Louisiana	112.3	114.2	93.6	87.4	80.3	------	------	------	------	------	------	------	------
Michigan	95.7	110.5	94.6	84.5	90.8	84.4	92.2	82.8	80.0	------	------	------	------
Minnesota	50.2	58.6	64.4	57.7	58.4	56.7	59.3	62.3	------	87.4	------	------	------
Nebraska	107.0	86.4	59.4	65.7	60.2	------	------	------	------	------	------	------	------
New Jersey	101.4	90.7	78.6	68.5	74.6	72.7	61.1	86.3	76.1	85.6	77.9	80.0	79.8
New York [1]	79.8	84.6	73.7	72.4	73.0	70.9	71.9	74.2	------	79.8	68.3	80.5	89.0
Pennsylvania	94.7	118.3	86.4	73.8	72.2	73.3	74.8	73.6	------	------	------	------	------
Rhode Island	------	------	------	------	------	88.8	------	------	------	------	------	------	------
South Dakota	46.8	79.3	61.9	70.9	87.0	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	44.2	60.4	66.8	70.0	------	------	------	------
Virginia	------	------	------	48.7	51.7	35.7	48.1	55.8	52.0	------	------	------	------
DIARRHEA AND ENTERITIS UNDER 2 YEARS (113)													
Alabama:													
White	68.7	62.3	37.1	16.7	13.3	2.8	3.9	10.5	5.8	10.9	24.9	9.2	------
Colored	58.0	53.1	18.5	8.2	13.2	6.6	10.2	1.3	24.5	21.8	24.5	9.5	------
California	25.1	19.8	19.6	15.0	18.9	9.6	9.2	8.5	------	11.9	------	------	------
Connecticut	13.9	12.1	8.8	4.5	3.6	5.0	15.9	------	------	4.8	9.0	12.5	12.8
Hawaii	114.7	97.6	74.2	59.3	104.6	145.1	104.6	------	------	------	------	------	------
Indiana	50.4	47.1	28.2	12.6	5.2	8.2	6.6	11.9	5.7	6.1	7.7	10.5	9.4
Kansas	52.0	40.4	20.5	12.6	8.3	------	------	------	------	------	------	------	------
Kentucky	95.9	99.1	60.0	34.3	12.5	8.3	8.2	8.3	------	------	------	------	------
Louisiana	30.8	26.8	24.8	22.7	3.0	------	------	------	------	------	------	------	------
Michigan	23.9	38.7	25.9	15.1	13.3	11.8	19.2	9.0	11.1	------	------	------	------
Minnesota	4.3	6.7	6.1	4.9	3.0	2.6	4.3	4.3	------	------	------	------	------
Mississippi	35.5	24.3	22.4	12.2	8.5	2.6	4.4	7.2	------	------	------	------	------
Nebraska	23.4	17.3	10.0	2.6	3.3	------	------	------	------	------	------	------	------
New Jersey	29.0	24.5	16.9	14.0	12.6	11.1	7.2	10.2	10.5	12.7	12.0	12.6	18.6
New York [1]	14.5	20.9	15.2	10.0	7.4	9.9	9.6	9.5	------	10.3	7.9	15.1	21.8
North Carolina	70.9	44.7	30.9	26.1	30.1	10.4	10.2	4.0	11.2	7.0	------	------	------
Pennsylvania	32.1	50.7	30.0	15.8	15.9	15.1	14.0	15.2	------	15.7	16.6	19.7	24.0
South Dakota	6.7	12.1	13.4	12.1	8.4	------	------	------	------	------	------	------	------
Tennessee	80.5	55.9	35.8	19.9	18.4	3.3	3.6	8.9	6.8	3.4	10.8	------	------
Virginia	------	42.1	22.9	9.0	7.3	3.7	5.6	5.5	3.3	------	------	------	------
Wisconsin	8.8	9.5	8.4	4.5	13.6	8.8	15.9	14.4	11.9	16.5	------	------	------

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

State	1928					1929				Corresponding month for—			
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	1928	1927	1926	1925
NEPHRITIS (128, 129)													
Alabama:													
White (129)	60.3	73.9	65.2	75.3	91.8	72.2	76.0	78.5	79.7	73.9	61.8	86.3	------
Colored (129)	156.9	137.6	123.9	147.1	112.1	109.4	163.6	126.6	114.4	111.8	99.3	103.2	------
California	93.8	100.1	96.1	130.1	142.7	119.4	128.5	106.5	------	114.7	------	------	------
Connecticut	57.6	63.3	60.5	67.1	61.3	81.1	100.9	------	------	------	------	------	------
Hawaii (129)	60.7	59.3	40.5	66.2	54.0	87.7	48.6	------	------	------	------	------	------
Indiana	77.1	84.3	75.6	82.7	96.4	81.6	85.4	100.1	95.0	90.0	77.2	93.5	94.7
Kansas	75.7	88.2	93.7	108.7	122.0	------	------	------	------	------	------	------	------
Kentucky	76.6	80.5	96.4	84.5	86.7	104.2	84.8	68.7	------	------	------	------	------
Louisiana	102.6	93.6	117.1	124.2	138.9	------	------	------	------	------	------	------	------
Michigan	68.2	62.5	68.2	74.7	82.3	82.1	75.4	74.9	73.4	------	------	------	------
Minnesota	45.9	50.5	52.8	39.3	71.4	71.8	56.2	56.7	------	54.5	------	------	------
Mississippi	106.5	81.5	112.4	95.1	117.7	102.6	115.0	107.8	------	------	------	------	------
Nebraska	44.3	31.1	46.8	53.6	57.7	------	------	------	------	------	------	------	------
New Jersey	84.7	90.4	91.5	101.3	118.9	137.7	125.5	110.6	104.4	108.6	102.6	121.7	113.2
New York [1]	94.4	92.6	100.6	99.6	116.6	137.5	129.1	122.2	------	120.0	120.2	147.8	138.7
Pennsylvania	94.2	90.7	99.9	109.3	125.6	143.3	112.5	109.8	------	112.4	110.8	141.0	118.0
Rhode Island	------	------	------	------	------	141.4	------	------	------	------	------	------	------
South Dakota	31.8	41.3	25.1	25.9	63.6	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	77.2	65.1	78.6	77.3	------	------	------	------
Virginia	------	------	------	94.5	112.0	104.7	107.8	109.3	89.8	------	------	------	------
PUERPERAL STATE (143-150)													
Alabama:													
White	15.4	14.5	19.6	13.0	14.0	14.7	14.0	13.3	17.4	18.1	15.1	17.6	------
Colored	36.9	24.5	23.7	17.7	21.1	19.8	26.3	17.1	35.4	31.3	50.3	35.3	------
California	9.3	10.4	8.0	7.7	14.2	10.1	6.0	9.3	------	10.9	------	------	------
Connecticut (143-149)	8.0	5.3	9.5	6.0	8.8	6.5	16.7	------	------	8.9	12.3	10.0	8.5
Hawaii (146)	6.7	17.4	------	7.0	6.7	6.7	7.5	------	------	------	------	------	------
Indiana	11.1	15.3	9.3	10.3	8.9	16.7	9.9	15.9	10.7	9.2	13.9	19.5	14.9
Kansas	9.6	9.9	9.6	12.6	13.5	------	------	------	------	------	------	------	------
Kentucky	9.7	10.5	11.5	8.6	11.1	15.2	11.7	12.9	------	------	------	------	------
Louisiana	19.9	19.3	30.8	20.0	24.2	------	------	------	------	------	------	------	------
Michigan	12.6	7.7	9.7	10.6	12.3	11.8	14.2	17.2	17.2	------	------	------	------
Minnesota	7.8	4.0	5.6	4.0	8.7	9.1	8.7	9.1	------	14.3	------	------	------
Mississippi	23.0	14.3	18.4	16.3	22.4	13.2	16.0	25.6	------	------	------	------	------
Nebraska	12.5	6.9	10.9	7.8	9.2	------	------	------	------	------	------	------	------
New Jersey	12.0	10.2	12.6	14.5	8.0	10.2	8.9	10.2	10.5	------	------	------	------
New York [1]	9.7	8.9	7.6	8.7	10.1	11.0	11.4	12.4	------	12.0	13.1	13.3	14.0
Rhode Island	------	------	------	------	------	4.9	------	------	------	------	------	------	------
South Dakota	10.0	12.1	1.7	12.0	10.0	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	18.4	12.5	17.4	20.9	------	------	------	------
Virginia	------	------	------	14.2	18.3	15.1	16.2	13.3	15.1	------	------	------	------

[1] Exclusive of New York City.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Order of State department of health to city relative to sewage disposal upheld.—(Ohio Supreme Court; City of Bucyrus *v.* Department of Health of Ohio et al.,[1] 166 N. E. 370, 120 Ohio St. 426, 2 Ohio Bar 10; decided April 24, 1929.) The State department of health, acting under statutory authority and after complaint, investigation, notice, and hearing, ordered the city of Bucyrus to install works or means satisfactory to the State director of health for the collection and

[1] Copies of this and the following decision were furnished by Mr. James E. Bauman, assistant director, Ohio State Department of Health.

disposal of the sewage of the city in a manner to correct and prevent the pollution of the Sandusky River. In a proceeding in error from the department's order, the supreme court stated that all the questions raised were determined by its decision in the case of the State Board of Health *v.* City of Greenville, decided April 2, 1912, unless the adoption on September 3, 1912, of Article XVIII of the State constitution had so changed the relationship of municipalities to the State as to divest the State of its sovereignty over such municipalities in respect to sanitation within and in the vicinity of such municipalities. Said Article XVIII provided, in part:

> Municipalities shall have the authority to exercise all powers of local self-government and to adopt and enforce within their limits such local police, sanitary, and other similar regulations as are not in conflict with general laws.

The court's view was that the adoption of the article did not change the situation of the municipalities with respect to local sanitary regulations, except that before such adoption they had such power to adopt local sanitary regulations as had been conferred upon them by the legislature and since such adoption they had such power to adopt local sanitary regulations as had not been taken away from them by the legislature in the enactment of general laws. The court said:

> The effect of the constitutional provision granting to municipalities the power to adopt local sanitary regulations is, therefore, no different than though the power had been conferred by legislative enactment instead of constitutional provision; for, if conferred by legislative enactment, the act would be subject at all times to revision or repeal by the legislature. The constitutional provision conferring the power with the limitation that the municipal regulation must not be in conflict with general laws operates to bestow upon the legislature the same power to control sanitation by general laws that it had prior to the adoption of that article. The power conferred by that article is conditioned upon the legislature not having enacted general laws with which the local sanitary regulations of the municipality conflict.

The decision in the Greenville case was adhered to by the court.

With regard to the hearing before the health council, the court made the following observations:

> * * * While the technical rules of a hearing by a court are not required to be strictly observed in hearings before administrative bodies, it is the duty of such bodies to permit a full hearing upon all subjects pertinent to the issue, and to base their conclusion upon competent evidence; and such result can better be accomplished by a substantial adherence to the rules observed in hearings in court. In the instant case, the newspaper article was not competent evidence. * * * The reports of the engineers employed by the health department were official in character, authorized by statute, and were competent evidence in such hearing * * *. The city of Bucyrus was entitled to examine and to attempt to impeach such reports and each and every person who assisted in gathering data and compiling such reports. The city of Bucyrus was entitled to present its own witnesses to disprove any of the facts testified to by the witnesses

of the complainants, or any of the facts shown in the reports, and was entitled to file such papers in the case as it deemed essential to the preservation of its rights and the preservation of its cause or defense, and was also entitled to make such defense without the filing of an answer. * * *

The department's order was affirmed.

Order of State health department concerning sewage disposal upheld.—(Ohio Supreme Court; State ex rel. Neal, Director of Health, *v.* Williams, Mayor, et al., 166 N. E. 377, 120 Ohio St. 432, 2 Ohio Bar 10; decided April 24, 1929.) In a mandamus action to enforce the laws relating to the pollution of watercourses, the petition charged that the respondents were causing sewage of the city of Delphos to be discharged into certain streams, in violation of statutes, in such quantities and of such character as to pollute the streams, and that this conduct constituted a public nuisance by making the streams a menace to public health and welfare in the vicinity. The petition contained proper allegations necessary to show that, pursuant to complaints filed, an examination of the situation had been made by the State director of health; that a hearing, after due notice, had been held; that findings had been made and respondents notified thereof and directed to make other arrangements, within a specified time, for the proper disposal of sewage in a manner satisfactory to the State health authorities; and that the time fixed had elapsed and respondents had refused to comply with the order.

The respondents challenged the sufficiency of the petition and presented many other issues for the court's consideration, such as the unconstitutionality of the law under which the health department acted, misjoinder of parties, omission of parties, insufficiency of findings made by the health authorities, unreasonableness of the order, and also the claim that, under the home rule provisions of the constitution, the city could not be controlled by the State health department with respect to its disposal of the city's sewage.

The supreme court, which found against the city, disposed of the matter by saying:

This court is of the opinion that every issue presented by the pleadings and urged in the arguments and briefs of counsel has been fully and completely covered by the decisions of this court, and that there is now nothing further to be said on the subject. We refer to the case of State Board of Health *v.* City of Greenville, 86 Ohio St. 1, and cases therein cited, and to the decisions of this court that have since approved and followed the Greenville decision, as follows: [Cases cited.]

DEATHS DURING WEEK ENDED JUNE 22, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended June 22, 1929, and corresponding week of 1928. (From the Weekly Health Index, June 26, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended June 22, 1929	Corresponding week, 1928
Policies in force	74, 409, 722	71, 433, 653
Number of death claims	13, 536	14, 271
Death claims per 1,000 policies in force, annual rate	9. 5	10. 4

Deaths from all causes in certain large cities of the United States during the week ended June 22, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, June 26, 1929, issued by the Bureau of the Census, Department of Commerce)

City	Week ended June 22, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate week ended June 22, 1929 [2]
	Total deaths	Death rate [1]		Week ended June 22, 1929	Corresponding week, 1928	
Total (64 cities)	6,853	12.0	11.8	646	721	[3] 56
Akron	38			4	7	41
Albany [4]	37	16.1	12.2	3	4	59
Atlanta	106	21.7	15.0	9	6	93
White	47			4	1	
Colored	59	[5]	[5]	5	5	
Baltimore [4]	227	14.3	11.3	26	18	83
White	174			16	10	64
Colored	53	[5]	[5]	10	8	158
Birmingham	68	16.0	20.0	9	7	81
White	27			5	4	75
Colored	41	[5]	[5]	4	3	92
Boston	201	13.1	13.2	19	31	53
Bridgeport	37			6	2	104
Buffalo	104	9.8	12.7	12	22	52
Cambridge	22	9.1	11.2	2	1	36
Camden	28	10.8	14.3	1	6	17
Canton	13	5.8	8.5	1	3	24
Chicago [4]	731	12.1	10.5	69	56	62
Cincinnati	123			5	12	29
Cleveland	190	9.8	9.6	11	16	32
Columbus	69	12.1	13.8	4	10	37
Dallas	78	18.7	9.8	10	4	
White	61			7	2	
Colored	17	[5]	[5]	3	2	
Dayton	46	13.0	13.0	4	3	63
Denver	65	11.6	12.4	6	9	58
Des Moines	34	11.7	9.3	3	4	54
Detroit	291	11.0	11.0	37	45	59
Duluth	27	12.1	9.0	3	1	72
El Paso	43	19.1	14.6	13	13	
Erie	23			4	4	82
Fall River [4]	21	8.2	10.5	2	3	38
Flint	26	9.1	10.9	3	4	36
Fort Worth	36	11.0	8.6	3	5	
White	31			2	5	
Colored	5	[5]	[5]	1	0	
Grand Rapids	42	13.4	6.1	6	2	91
Houston	83			6	9	
White	54			4	5	
Colored	29	[5]	[5]	2	4	
Indianapolis	108	14.8	13.4	8	7	64
White	87			7	7	65
Colored	21	[5]	[5]	1	0	60
Jersey City	62	10.0	10.6	8	9	62

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 71 cities.
[4] Deaths for week ended Friday.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended June 22, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, June 26, 1929, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended June 22, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate week ended June 22, 1929
	Total deaths	Death rate		Week ended June 22, 1929	Corresponding week, 1928	
Kansas City, Kans.	25	11.0	9.7	3	0	66
White	20			1	0	25
Colored	5	(5)	(5)	2	0	358
Kansas City, Mo.	86	11.5	11.1	6	10	51
Knoxville	18	8.9	12.4	5	3	109
White	15			4	3	98
Colored	3	(5)	(5)	1	0	211
Los Angeles	281			27	19	79
Louisville	55	8.7	14.8	3	7	24
White	36			1	5	9
Colored	19	(5)	(5)	2	2	126
Lowell	28			4	2	91
Lynn	20	9.9	7.4	3	2	82
Memphis	67	18.4	17.0	6	3	71
White	34			4	0	76
Colored	33	(5)	(5)	2	3	63
Milwaukee	87	8.4	10.7	11	22	48
Minneapolis	90	10.3	9.3	8	6	49
Nashville	59	22.1	16.1	7	3	113
White	40			6	2	130
Colored	19	(5)	(5)	1	1	63
New Bedford	22			2	6	43
New Haven	38	10.6	12.8	1	3	15
New Orleans	166	20.2	21.8	19	21	94
White	89			10	10	70
Colored	77	(5)	(5)	9	11	151
New York	1,390	12.1	11.7	108	150	44
Bronx Borough	183	10.1	9.3	9	10	27
Brooklyn Borough	445	10.1	10.6	48	59	49
Manhattan Borough	593	17.7	15.7	43	60	53
Queens Borough	130	8.0	8.9	5	18	20
Richmond Borough	39	13.5	11.8	3	3	54
Newark, N. J.	108	11.9	9.6	8	6	42
Oakland	66	12.6	10.1	5	1	55
Omaha	51	12.0	10.8	3	2	35
Paterson	37	13.4	15.9	3	4	53
Philadelphia	455	11.5	11.4	33	40	47
Pittsburgh	195	15.1	12.3	15	13	52
Portland, Oreg.	58			6	2	69
Providence	52	9.5	11.3	7	7	62
Richmond	53	14.3	15.3	7	6	98
White	30			5	2	106
Colored	23	(5)	(5)	2	4	82
Rochester	67	10.7	13.7	8	12	68
St. Louis	203	12.5	12.0	25	13	84
St. Paul	68			4	8	41
Salt Lake City [4]	21	8.0	13.6	4	5	62
San Antonio	52	12.5	17.7	13	23	
San Diego	44			2	3	38
San Francisco	123	11.0	13.4	12	5	76
Schenectady	29	16.3	10.6	4	5	127
Seattle	59	8.1	10.5	6	11	64
Somerville	11	5.6	4.1	2	1	72
Spokane	27	12.9	12.9	1	4	26
Springfield, Mass.	37	12.9	8.7	1	2	17
Syracuse	38	10.0	14.4	4	1	48
Tacoma	27	12.8	14.2	2	2	51
Toledo	85	14.2	12.5	7	11	65
Trenton	35	13.2	13.5	4	2	72
Washington, D. C.	133	12.6	13.1	7	17	41
White	77			3	6	25
Colored	56	(5)	(5)	4	11	76
Waterbury	19			1	3	25
Wilmington, Del.	24	9.8	13.4	2	3	52
Worcester	45	11.9	12.4	6	1	75
Yonkers	15	6.5	9.1	1	3	23
Youngstown	29	8.7	10.8	4	2	57

[4] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population; Atlanta, 31: Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15: Louisville, 17: Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended June 22, 1929, and June 23, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 22, 1929, and June 23, 1928

Division of State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928
New England States:								
Maine	1	3	2	31	54	51	2	0
New Hampshire	1				60	45	0	0
Vermont					2	34	0	0
Massachusetts	64	51	4	7	374	614	4	3
Rhode Island	3	9			42	195	0	0
Connecticut	20	15	1	2	152	293	1	1
Middle Atlantic States:								
New York	233	299	[1] 1	[1] 18	723	2,509	15	17
New Jersey	81	148	1		173	989	6	4
Pennsylvania	125	114			929	2,280	9	9
East North Central States:								
Ohio	32	27	8	23	442	700	16	2
Indiana	11	20		5	196	230	2	0
Illinois	207	140	22	21	1,058	186	10	3
Michigan	102	108	1	3	564	770	60	7
Wisconsin	21	18		56	914	64	5	1
West North Central States:								
Minnesota	13	44	2		144	32	2	1
Iowa	2	3			74		3	1
Missouri	37	27		4	73	197	8	6
North Dakota	11	1		2	78	8	1	0
South Dakota	4				9	6	0	0
Nebraska	6	3			154	28	0	0
Kansas	6	9		1	316	50	6	0
South Atlantic States:								
Delaware	1				10	18	0	0
Maryland [2]	24	31	12	5	26	207	2	0
District of Columbia	10	7	1	1	13	130	0	0
West Virginia	6	5		42	134	39	1	0
North Carolina	24	12			9	235	1	0
South Carolina	8	7	124	231		75	0	0
Georgia	8	3	14	22	27		0	0
Florida	5	2	1	3	23	92	1	0
East South Central States:								
Kentucky		5			25	90	2	1
Tennessee	2	3	4	27	13	53	2	0
Alabama	17	4	13	75	38	127	2	0
Mississippi	13	2						

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 22, 1929, and June 23, 1928—Continued

Division of State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928
West South Central States:								
Arkansas	4		6	63	1	34	2	0
Louisiana	12	9	7	25	37	36	2	0
Oklahoma [3]	5	4	23	17	21	55	3	1
Texas	30	3	18	17	91	86	0	0
Mountain States:								
Montana		8			57	2	5	3
Idaho	1	1			31	6	0	0
Wyoming	1			1	18	2	0	0
Colorado	9		1		19	59	1	1
New Mexico	10				12	5	0	0
Arizona	4	5			1		3	2
Utah [2]		3			2		2	1
Pacific States:								
Washington	2	8			91	65	4	1
Oregon	11	8	2		92	40	4	0
California	58	72	21	23	152	38	12	2

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928
New England States:								
Maine	0	0	10	25	0	0	3	2
New Hampshire	0	0	4	12	0	0	0	0
Vermont	0	0	1	8	1	0	0	0
Massachusetts	1	3	148	135	0	0	7	4
Rhode Island	1	0	3	9	0	0	0	2
Connecticut	0	1	25	30	0	0	3	1
Middle Atlantic States:								
New York	2	2	236	326	0	5	12	17
New Jersey	1	0	69	104	0	0	4	3
Pennsylvania	2	3	240	248	0	0	15	15
East North Central States:								
Ohio	0	2	98	74	84	16	0	4
Indiana	0	2	89	42	43	54	1	5
Illinois	0	0	269	173	4	25	11	11
Michigan	1	1	335	191	52	45	2	7
Wisconsin	1	0	78	110	8	9	2	1
West North Central States:								
Minnesota	0	1	43	73	6	3	3	1
Iowa	0	0	38	23	36	20	3	5
Missouri	1	0	34	58	16	22	14	10
North Dakota	1	1	20	18	10	1	0	0
South Dakota	0	1	4	7	17	5	1	0
Nebraska	0	0	22	33	12	20	2	0
Kansas	1	0	20	37	34	43	4	2
South Atlantic States:								
Delaware	0	0	0	1	0	0	1	0
Maryland [2]	0	2	46	36	0	0	7	7
District of Columbia	0	0	7	22	0	0	0	0
West Virginia	0	1	15	18	11	12	8	4
North Carolina	2	0	18	10	11	29	21	14
South Carolina	0	4	3	1	1	1	45	72
Georgia	0	0	3	7		0	33	29
Florida	0	0	6	1		2	2	7
East South Central States:								
Kentucky	0	1	75	23	25	8	5	5
Tennessee	1	1	5	10	1	11	28	18
Alabama	2	0	15	4	0	2	21	21
Mississippi	0	0	3	4	2	0	25	26

[2] Week ended Friday.

[3] Figures for 1929 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 22, 1929, and June 23, 1928—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928	Week ended June 22, 1929	Week ended June 23, 1928
West South Central States:								
Arkansas	0	0	12	5	2	1	9	13
Louisiana	0	1	13	4	11	10	16	29
Oklahoma [2]	0	0	11	29	70	29	17	18
Texas	0	0	21	25	66	16	27	5
Mountain States:								
Montana	0	1	20	3	4	20	5	2
Idaho	0	1	2	2	7	5	0	2
Wyoming	0	0	1	9	5	1	7	5
Colorado	0	0	21	12	10	5	3	0
New Mexico	0	0	6	11	4	4	1	12
Arizona	0	0	0	0	1	2	4	2
Utah [2]	0	0	4	5	7	3	0	0
Pacific States:								
Washington	0	0	17	23	21	16	2	3
Oregon	1	1	5	11	23	39	1	0
California	4	3	259	102	24	19	16	13

[2] Week ended Friday. [3] Figures for 1929 are exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
May, 1929										
Alabama	3	34	92	299	479	121	2	38	7	44
Georgia	11	31	78	290	116	93	0	49	11	49
Illinois	91	810	209	5	8,745	2	6	1,707	437	38
Iowa	3	28	------	------	319	------	1	499	182	1
Maryland	3	62	58	------	211	------	1	546	0	23
Michigan	367	398	27	8	4,266	1	4	2,037	215	20
Minnesota	12	63	3	------	2,305	------	2	436	19	13
Missouri	66	185	47	26	870	------	0	290	136	114
New York	132	1,404	------	5	4,914	------	5	2,109	11	69
North Carolina	14	78	------	------	110	44	6	115	44	36
Oklahoma [1]	4	17	97	169	163	50	1	87	194	15
Oregon	4	17	62	------	921	------	1	73	114	5
Porto Rico	------	74	45	870	916	19	0	------	0	116
Rhode Island	3	49	------	------	445	------	1	90	0	4
South Carolina	------	130	1,063	1,331	64	946	7	31	17	64
West Virginia	------	33	33	------	1,188	------	0	56	61	38

May, 1929	Cases
Actinomycosis:	
Georgia	1
Minnesota	2
Anthrax:	
Georgia	1
New York	2
Porto Rico	1
Chicken pox:	
Alabama	219
Georgia	80
Illinois	1,437
Iowa	217
Maryland	314
Michigan	1,138
Minnesota	436
Missouri	243
New York	2,961
North Carolina	496
Oklahoma [1]	24
Oregon	175
Rhode Island	53
South Carolina	275
West Virginia	105

[1] Exclusive of Oklahoma City and Tulsa.

	Cases
Colibacillosis:	
Porto Rico	3
Colitis:	
South Carolina	1
Dengue:	
Alabama	1
Georgia	8
Porto Rico	1
South Carolina	6
Dysentery:	
Georgia	158
Illinois	20
Maryland	7
Minnesota (amebic)	2
New York	2
Oklahoma [1]	2
Porto Rico	125
Filariasis:	
Porto Rico	2
German measles:	
Illinois	330
Iowa	13
Maryland	44
New York	893
North Carolina	177
Rhode Island	3
Hookworm disease:	
Georgia	12
South Carolina	158
Impetigo contagiosa:	
Oregon	12
Lead poisoning:	
Illinois	2
Leprosy:	
Porto Rico	1
Lethargic encephalitis:	
Alabama	5
Illinois	15
Maryland	2
Michigan	5
Minnesota	1
New York	19
Oregon	1
Mumps:	
Alabama	49
Georgia	92
Illinois	633
Iowa	265
Maryland	929
Michigan	815
Missouri	135
New York	2,565
Oklahoma [1]	21
Oregon	113
Porto Rico	12
Rhode Island	3
South Carolina	152
Ophthalmia neonatorum:	
Illinois	50
Maryland	1
Missouri	2
New York	2
North Carolina	1
Oklahoma [1]	1
Porto Rico	1
South Carolina	19

	Cases
Paratyphoid fever:	
Georgia	1
Illinois	1
Minnesota	1
New York	5
North Carolina	1
Oregon	1
South Carolina	7
Puerperal fever:	
Illinois	7
New York	16
Porto Rico	27
South Carolina	7
Rabies in animals:	
Illinois	15
Iowa	11
Maryland	7
Missouri	13
New York	28
Rhode Island	13
South Carolina	28
Rabies in man:	
Illinois	2
Michigan	3
New York	1
Rocky Mountain spotted or tick fever:	
Oregon	29
Scabies:	
Oregon	6
Septic sore throat:	
Georgia	27
Illinois	15
Maryland	26
Michigan	26
Missouri	4
New York	27
North Carolina	11
Oklahoma [1]	10
Oregon	1
Rhode Island	1
South Carolina	1
Tetanus:	
Georgia	2
Illinois	7
Maryland	2
New York	9
Oklahoma [1]	2
Porto Rico	29
South Carolina	1
Tetanus (infantile):	
Porto Rico	23
Trachoma:	
Illinois	12
Minnesota	3
Missouri	26
New York	9
North Carolina	1
Oklahoma [1]	1
Trichinosis:	
Georgia	2
Illinois	1
Tularaemia:	
Alabama	3
Oklahoma [1]	2
Rhode Island	1
South Carolina	1

[1] Exclusive of Oklahoma City and Tulsa.

	Cases
Typhus fever:	
Alabama	4
Georgia	2
Undulant fever:	
Alabama	1
Illinois	2
Iowa	13
Maryland	4
Minnesota	2
Missouri	1
New York	5
South Carolina	1
Vincent's angina:	
Iowa	1
Maryland	13
New York	73
Oklahoma [1]	2
Oregon	7
Whooping cough:	
Alabama	156
Georgia	305
Illinois	829
Iowa	116
Maryland	583
Michigan	1,165
Minnesota	412
Missouri	362
New York	1,567
North Carolina	1,672
Oklahoma [1]	74
Oregon	56
Porto Rico	65
Rhode Island	36
West Virginia	230

ADMISSIONS TO HOSPITALS FOR THE INSANE, AUGUST, 1928

Reports for the month of August, 1928, showing new admissions to hospitals for the care and treatment of the insane, have been received by the Public Health Service from 100 institutions located in 34 States, the District of Columbia, and the Territory of Hawaii. These hospitals reported a total of 151,373 patients on August 31, 1928, including those on parole.

The following table shows the new admissions for the month of August, 1928, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses	6	1	7
2. Senile psychoses	125	112	237
3. Psychoses with cerebral arteriosclerosis	144	94	238
4. General paralysis	191	47	238
5. Psychoses with cerebral syphilis	32	11	43
6. Psychoses with Huntington's chorea	1	1	2
7. Psychoses with brain tumor	0	0	0
8. Psychoses with other brain or nervous disease	31	14	45
9. Alcoholic psychoses	161	13	174
10. Psychoses due to drugs and other exogenous toxins	47	10	57
11. Psychoses with pellagra	8	19	27
12. Psychoses with other somatic diseases	26	31	57
13. Manic-depressive psychoses	167	230	397
14. Involution melancholia	13	47	60
15. Dementia præcox (schizophrenia)	275	214	489
16. Paranoia and paranoid conditions	29	31	60
17. Epileptic psychoses	33	28	61
18. Psychoneuroses and neuroses	21	36	57
19. Psychoses with psychopathic personality	18	10	28
20. Psychoses with mental deficiency	47	52	99
21. Undiagnosed psychoses	91	71	162
22. Without psychosis	111	49	160
	1,577	1,121	2,698

The 100 institutions on August 31, 1928, had 80,698 male patients and 70,675 female patients, giving a ratio of 114 males per 100 females.

At the end of the month 9.0 per cent of the total patients were on parole, 9.4 per cent of the male patients and 8.5 per cent of the female patients.

Fifty-eight and five-tenths per cent of the new admissions were males and 41.5 per cent were females, giving a ratio of 141 males per 100 females.

Cases of dementia præcox constituted 18.1 per cent of the first admissions; manic-depressive psychoses, 14.7 per cent; senile psychoses, psychoses with cerebral arteriosclerosis, and general paralysis, 8.8 per cent each; alcoholic psychoses, 6.4 per cent; undiagnosed psychoses, 6.0 per cent; and 5.9 per cent were recorded as without psychosis.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,520,000. The estimated population of the 89 cities reporting deaths is more than 29,945,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics:

Weeks ended June 15, 1929, and June 16, 1928

	1929	1928	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	1,186	1,429	----
96 cities	647	868	751
Measles:			
45 States	10,213	13,504	----
96 cities	2,931	5,135	----
Meningococcus meningitis:			
45 States	201	95	----
96 cities	90	71	----
Poliomyelitis:			
46 States	30	28	----
Scarlet fever:			
46 States	2,875	2,586	----
96 cities	1,142	991	827
Smallpox:			
45 States	819	571	----
96 cities	95	60	63
Typhoid fever:			
46 States	458	281	----
96 cities	52	44	62
Deaths reported			
Influenza and pneumonia:			
89 cities	532	714	----
Smallpox:			
89 cities	0	0	----

City reports for week ended June 15, 1929

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1920 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	78,600	0	1	0		0	7	0	1
New Hampshire:									
Concord	(1)	0	0	1		0	13	0	0
Nashua	(1)	0	0	0		0	0	0	0
Vermont:									
Barre	(1)	0	0	0		0	0	0	0
Massachusetts:									
Boston	799,200	79	40	17	1	1	37	65	22
Fall River	134,300	5	3	1		0	0	0	2
Springfield	149,800	18	2	1		0	1	2	2
Worcester	197,600	10	2	0		0	31	2	1
Rhode Island:									
Pawtucket	73,100	0	0	1		0	1	0	2
Providence	286,300	0	4	7		2	24	0	2
Connecticut:									
Bridgeport	(1)	1	5	3		0	5	0	2
Hartford	172,300	4	4	4		0	6	3	3
New Haven	187,900	28	1	0		0	25	0	1
MIDDLE ATLANTIC									
New York:									
Buffalo	555,800	25	11	7		0	57	0	19
New York	6,017,500	283	239	188	2	3	83	299	120
Rochester	328,200	9	9	0		1	14	15	3
Syracuse	199,300	34	4	0		0	3	15	4
New Jersey:									
Camden	135,400	4	6	5		0	11	2	1
Newark	473,600	85	11	40		0	5	66	7
Trenton	139,000	0	3	0		0	9	0	1
Pennsylvania:									
Philadelphia	2,064,200	130	58	16	4	3	41	25	26
Pittsburgh	673,800	27	15	14		1	69	16	11
Reading	115,400	8	2	1		1	4	1	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	413,700	3	6	4		0	8	0	9
Cleveland	1,010,300	144	23	19	1	0	262	9	13
Columbus	299,000	12	2	0	3	1	59	2	4
Toledo	313,200	32	4	1		0	82	5	1
Indiana:									
Fort Wayne	105,300	1	2	2		1	19	0	4
Indianapolis	382,100	12	3	2		0	109	6	8
South Bend	86,100	0	1	0		0	0	0	2
Terre Haute	73,500	0	1	0		0	1	0	1
Illinois:									
Chicago	3,157,400	103	67	127	4	8	655	9	45
Springfield	67,200	0	0	0		0	18	0	1
Michigan:									
Detroit	1,378,900	76	40	67	1	1	186	53	24
Flint	148,800	23	2	1		2	8	0	4
Grand Rapids	164,200	6	1	0		0	11	0	1

[1] No estimate of population made.

City reports for week ended June 15, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Wisconsin:									
Kenosha	56,500	9	0	0		0	91	3	0
Milwaukee	544,200	113	11	5		0	376	20	9
Racine	74,400	20	1	0		0	1	0	2
Superior	(1)	3	0	0		0	2	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	116,800	8	12	1		0	9	11	2
Minneapolis	455,900	100	7	3		3	41	11	1
St. Paul	(1)	5	0	2		0	36	24	3
Iowa:									
Davenport	(1)	0	1	0			5	2	
Des Moines	151,900	1	1	0			4	0	
Sioux City	80,000	1	0	0			0	1	
Waterloo	37,100	3	3	0			2	10	
Missouri:									
Kansas City	391,000	1	0	1		0	7	0	8
St. Joseph	78,500	1	0	0		0	10	0	1
St. Louis	848,100	15	29	25			17	12	
North Dakota:									
Fargo	(1)	0	0	0		0	2	1	0
Grand Forks	(1)	1	0	0			6	0	
South Dakota:									
Aberdeen	(1)	1	0	0			0	6	
Nebraska:									
Omaha	222,800	3	2	1		0	45	0	3
Kansas:									
Topeka	62,800	3	0	1		0	35	9	0
Wichita	99,300	3	1	0		0	98	8	0
SOUTH ATLANTIC									
Delaware:									
Wilmington	128,500	1	1	1		0	12	0	1
Maryland:									
Baltimore	830,400	55	17	15	4	0	4	145	19
Cumberland	(1)	0	0	0		0	0	0	0
Frederick	(1)	0	0	0		0	0	0	0
District of Columbia:									
Washington	552,000	14	7	9		0	22	0	9
Virginia:									
Lynchburg	38,600	13	1	1		0	4	53	0
Norfolk	184,200	1	1	0		0	1	2	3
Richmond	194,400	2	1	2		0	20	3	3
Roanoke	64,600	1	0	0		0	1	0	1
West Virginia:									
Charleston	55,200	2	0	0		0	8	0	2
Wheeling	(1)	9	0	0		0	51	0	2
North Carolina:									
Raleigh	(1)		0						
Wilmington	39,100	3	0	0		0	0	0	0
Winston-Salem	80,000	2	0	0		0	0	0	2
South Carolina:									
Charleston	75,900	0	0	0	17	0	0	0	2
Columbia	50,600	1	0	0		0	0	1	3
Greenville	(1)	0	0	0		1	0	0	0
Georgia:									
Atlanta	255,100	1	1	2	8	1	4	0	2
Brunswick	(1)	0	0	0		0	0	0	0
Savannah	99,900	2	0	2		0	0	0	1
Florida:									
Miami	156,700	1	1	0		0	12	0	1
St. Petersburg	53,300		0			0			0
Tampa	113,400	0	1	2		0	1	0	0

[1] No estimate of population made.

City reports for week ended June 15, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	59,000	0	1	2		0	0	0	2
Tennessee:									
Memphis	190,200	1	1	1		0	0	0	2
Nashville	139,600	0	0	1		0	5	0	4
Alabama:									
Birmingham	222,400	2	1	0	2	0	0	0	5
Mobile	69,600	0	0	0		1	1	0	1
Montgomery	63,100	4	0	2			0	0	
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	(1)	1	1	1			0	3	
Little Rock	79,200	0	0	0		0	0	0	0
Louisiana:									
New Orleans	429,400	0	4	6	4	3	6	0	9
Shreveport	81,300	1	1	1		0	1	0	1
Oklahoma:									
Oklahoma City	(1)	4	1	0		0	2	0	4
Texas:									
Dallas	217,800	5	3	6		0	46	0	1
Fort Worth	170,600	2	1	6		1	14	0	2
Galveston	50,600	0	0	2		0	0	0	1
Houston	(1)	2	2	3		0	1	0	1
San Antonio	218,100	0	2	3		0	1	0	3
MOUNTAIN									
Montana:									
Billings	(1)	2	0	0		0	0	0	2
Great Falls	(1)	2	1	0		0	2	6	0
Helena	(1)	0	0	0		0	0	0	1
Missoula	(1)	0	0	0		0	0	0	1
Idaho:									
Boise	(1)	0	0	0		0	18	0	0
Colorado:									
Denver	294,200	42	8	4		0	5	10	7
Pueblo	44,200	16	1	0		0	3	0	0
New Mexico:									
Albuquerque	(1)	0	0	0		0	0	1	0
Utah:									
Salt Lake City	138,000	34	3	0		0	2	60	2
Nevada:									
Reno	(1)		0						
PACIFIC									
Washington:									
Seattle	383,200	15	3	0			25	28	
Spokane	109,100	4	2	0			81	0	
Tacoma	110,500	11	1	1		0	3	12	0
Oregon:									
Salem	(1)	1	0	0		0	5	3	0
California:									
Los Angeles	(1)	84	37	8	7	0	20	17	16
Sacramento	75,700	5	2	0	1	1	10		0
San Francisco	585,300	30	14	5	5	1	20	23	3

1 No estimate of population made.

City reports for week ended June 15, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	3	0	0	0	1	1	0	0	6	24
New Hampshire:											
Concord	0	9	0	0	0	1	0	0	0	0	5
Nashua	1	0	0	0	0	0	0	0	0	0	9
Vermont:											
Barre	0	0	0	0	0	3	0	0	0	0	6
Massachusetts:											
Boston	50	44	0	0	0	13	2	2	0	30	207
Fall River	3	2	0	0	0	2	0	1	0	10	24
Springfield	4	12	0	0	0	2	0	1	0	1	32
Worcester	7	6	0	0	0	3	0	0	0	14	35
Rhode Island:											
Pawtucket	1	3	0	0	0	2	0	0	0	0	16
Providence	7	2	0	0	0	3	1	0	0	13	55
Connecticut:											
Bridgeport	7	3	0	0	0	0	0	0	0	0	28
Hartford	3	4	0	0	0	1	0	1	0	2	43
New Haven	3	3	0	0	0	1	0	0	0	0	29
MIDDLE ATLANTIC											
New York:											
Buffalo	19	34	0	0	0	8	0	0	0	23	127
New York	174	151	0	0	0	118	12	6	1	81	1,400
Rochester	10	4	0	0	0	1	0	0	0	10	75
Syracuse	5	4	0	0	0	1	0	0	0	5	52
New Jersey:											
Camden	5	6	0	0	0	1	0	0	0	4	19
Newark	19	5	0	0	0	8	0	0	0	42	121
Trenton	2	2	0	0	0	1	0	0	0	12	38
Pennsylvania:											
Philadelphia	63	36	0	0	0	33	3	1	1	59	441
Pittsburgh	24	21	0	0	0	9	0	0	0	41	148
Reading	2	5	0	0	0	0	0	0	0	0	18
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	9	36	2	3	0	13	1	0	0	4	141
Cleveland	24	30	0	0	0	18	1	1	0	54	207
Columbus	5	4	1	0	0	4	0	0	0	37	79
Toledo	10	4	0	0	0	1	0	1	0	54	59
Indiana:											
Fort Wayne	2	5	1	1	0	0	1	0	0	0	23
Indianapolis	6	35	8	6	0	8	0	0	0	18	78
South Bend	1	1	1	0	0	0	0	0	0	0	14
Terre Haute	2	3	0	0	0	0	0	2	0	4	13
Illinois:											
Chicago	83	179	2	2	0	35	3	2	0	49	666
Springfield	2	5	0	3	0	1	0	0	0	4	14
Michigan:											
Detroit	63	132	1	1	0	21	2	1	0	95	303
Flint	5	36	1	27	0	0	0	0	0	1	36
Grand Rapids	5	5	0	1	0	4	1	0	0	16	33
Wisconsin:											
Kenosha	0	1	0	0	0	1	0	0	0	7	8
Milwaukee	18	31	3	0	0	11	0	1	0	76	132
Racine	3	1	0	0	0	0	0	0	0	2	16
Superior	3	0	1	0	0	0	0	0	0	0	10
WEST NORTH CENTRAL											
Minnesota:											
Duluth	6	7	1	0	0	1	0	0	0	2	17
Minneapolis	24	17	2	0	0	4	0	0	0	13	86
St. Paul	14	8	0	0	0	6	0	0	0	29	56
Iowa:											
Davenport	0	0	1	19	----	----	0	0	----	10	----
Des Moines	3	18	3	0	----	----	0	0	----	0	26
Sioux City	1	0	1	0	----	----	0	0	----	13	----
Waterloo	1	0	0	2	----	----	0	1	----	10	----

City reports for week ended June 15, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.											
Missouri:											
Kansas City	5	7	1	0	0	9	0	1	1	8	84
St. Joseph	0	1	2	2	0	4	0	0	1	1	34
St. Louis	18	9	2	0	0	10	2	7	1	50	226
North Dakota:											
Fargo	1	0	0	0	0	1	0	0	0	0	7
Grand Forks	1	0	0	0	---	---	0	0	---	0	---
South Dakota:											
Aberdeen	1	1	0	0	---	---	0	0	---	0	---
Nebraska:											
Omaha	2	2	3	1	0	3	0	0	0	1	---
Kansas:											
Topeka	1	1	0	0	0	1	0	0	0	12	16
Wichita	1	5	0	1	0	1	0	0	0	18	35
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	2	0	0	0	2	0	0	0	2	20
Maryland:											
Baltimore	18	53	0	0	0	17	2	2	0	100	189
Cumberland	0	0	0	0	0	0	0	0	0	0	8
Frederick	0	0	0	0	0	0	0	0	0	0	3
Dist. of Columbia:											
Washington	15	9	0	0	0	8	1	1	1	20	110
Virginia:											
Lynchburg	0	2	0	0	0	0	0	0	0	16	14
Norfolk	1	1	0	0	0	2	0	0	0	25	---
Richmond	1	0	0	0	0	2	1	0	1	0	40
Roanoke	0	0	0	0	0	2	0	0	0	6	16
West Virginia:											
Charleston	0	1	0	2	0	1	0	0	0	4	18
Wheeling	2	0	0	0	0	0	0	0	0	6	14
North Carolina:											
Raleigh	0	---	0	---	---	---	0	---	---	---	---
Wilmington	0	0	0	0	0	0	0	0	0	1	9
Winston-Salem	1	0	0	0	0	1	1	0	0	32	17
South Carolina:											
Charleston	0	0	2	0	0	1	1	0	0	10	21
Columbia	0	1	0	0	0	0	1	2	0	16	27
Greenville	0	0	0	0	0	0	0	0	0	2	5
Georgia:											
Atlanta	3	2	2	0	0	4	4	0	0	21	76
Brunswick	0	0	0	0	0	0	0	0	0	0	1
Savannah	1	1	0	0	0	0	1	0	0	2	29
Florida:											
Miami	0	0	0	0	0	2	0	0	0	0	16
St. Petersburg	0	---	0	---	0	0	0	---	0	---	12
Tampa	0	0	0	0	0	0	0	0	0	6	---
EAST SOUTH CENTRAL											
Kentucky:											
Covington	0	1	0	7	0	5	0	0	0	0	32
Tennessee:											
Memphis	2	7	1	0	0	7	2	1	0	10	54
Nashville	1	3	1	1	0	6	2	0	0	4	55
Alabama:											
Birmingham	1	0	4	0	0	1	2	3	0	4	54
Mobile	0	0	0	0	0	2	0	0	1	0	31
Montgomery	0	0	0	0	---	---	0	1	---	0	---
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0	---	---	0	0	---	0	---
Little Rock	1	0	0	0	0	1	0	1	0	0	---
Louisiana:											
New Orleans	2	21	0	0	0	10	3	2	1	14	157
Shreveport	0	1	1	0	0	1	1	0	0	2	23

City reports for week ended June 15, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL—contd.											
Oklahoma:											
Oklahoma City	1	6	2	2	0	2	0	2	1	1	43
Texas:											
Dallas	2	2	1	11	0	3	1	0	0	11	53
Fort Worth	0	5	2	12	0	3	2	1	0	0	39
Galveston	0	1	0	0	0	0	0	0	0	0	18
Houston	1	2	1	0	0	5	1	2	0	0	64
San Antonio	1	1	0	0	0	15	1	0	0	0	84
MOUNTAIN											
Montana:											
Billings	0	0	0	0	0	0	0	0	0	0	8
Great Falls	1	0	0	0	0	0	0	0	0	2	8
Helena	0	0	0	0	0	0	0	0	0	0	4
Missoula	0	0	0	1	0	0	0	0	0	2	9
Idaho:											
Boise	0	1	0	0	0	0	0	0	0	0	7
Colorado:											
Denver	7	5	0	0	0	5	0	0	0	7	72
Pueblo	1	0	0	0	0	1	0	1	0	0	7
New Mexico:											
Albuquerque	0	0	0	0	0	2	0	0	0	3	10
Utah:											
Salt Lake City	2	2	2	4	0	1	1	0	0	20	33
Nevada:											
Reno	0	-------	0	-------	-------	-------	0	-------	-------	-------	-------
PACIFIC											
Washington:											
Seattle	7	2	2	2	-------	-------	1	3	-------	33	-------
Spokane	4	1	3	0	-------	-------	1	0	-------	10	-------
Tacoma	2	1	3	13	0	0	0	0	0	5	26
Oregon:											
Salem	1	0	0	0	0	0	0	0	0	0	-------
California:											
Los Angeles	21	50	5	2	0	25	2	4	1	26	229
Sacramento	1	17	1	2	0	0	1	0	0	1	18
San Francisco	12	33	1	0	0	14	1	1	0	12	142

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Maine:									
Portland	0	1	0	0	0	0	0	0	0
Massachusetts:									
Boston	1	0	0	0	0	0	0	0	0
Worcester	1	0	0	0	0	0	0	0	0
Rhode Island:									
Providence	0	0	0	1	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	0	1	0	0	0	0	0	0	0
New York	22	5	3	5	0	0	2	5	0
Syracuse	1	1	0	0	0	0	0	0	0
New Jersey:									
Newark	1	1	0	0	0	0	1	0	0

City reports for week ended June 15, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC—continued									
Pennsylvania:									
Philadelphia	3	2	1	1	0	0	0	0	0
Pittsburgh	0	1	0	0	0	0	0	1	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	0	0	1	1	0	0	0	0	0
Columbus	1	0	1	1	0	0	0	0	0
Toledo	2	0	0	1	0	0	0	0	0
Indiana:									
Indianapolis	2	2	0	0	0	0	0	0	0
Illinois:									
Chicago	9	4	1	0	1	0	1	0	0
Michigan:									
Detroit	21	13	1	1	0	0	0	0	0
Flint	1	2	0	0	0	0	0	0	0
Grand Rapids	1	0	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee	3	2	0	0	0	0	0	0	0
Superior	1	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	0	0	1	1	0	0	0	0	0
Iowa:									
Waterloo	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	3	3	0	0	0	0	0	0	0
St. Joseph	2	0	0	0	0	0	0	0	0
St. Louis	4	2	0	0	0	0	0	0	0
SOUTH ATLANTIC									
District of Columbia:									
Washington	0	0	0	0	0	0	0	1	0
Virginia:									
Lynchburg	0	0	0	0	0	1	0	0	0
Norfolk	0	0	0	1	0	0	0	0	0
Richmond	1	1	0	0	0	1	0	0	0
North Carolina:									
Wilmington	1	1	0	0	0	0	0	0	0
Winston-Salem	0	0	0	0	2	1	0	1	0
South Carolina:									
Charleston	0	0	0	0	4	1	0	0	0
Columbia	0	0	0	0	0	3	0	0	0
Georgia:									
Atlanta	2	1	0	0	0	0	0	0	0
Savannah	0	0	0	0	2	1	0	0	0
Florida:									
St. Petersburg	1	1	0	0	0	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	2	0	0	0	1	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	2	0	1	0	0
Mobile	0	0	0	0	0	0	0	1	0
Montgomery	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	0	0	0	1	0	0	0	0
Shreveport	0	0	0	0	0	1	0	0	0
Oklahoma:									
Oklahoma City	0	0	1	1	0	0	0	0	0
Texas:									
Dallas	0	0	0	0	1	1	0	0	0
Fort Worth	0	0	0	0	0	1	0	0	0

City reports for week ended June 15, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MOUNTAIN									
Montana:									
Billings	0	1	0	0	0	0	0	0	0
Great Falls	1	1	0	0	0	0	0	0	0
Idaho:									
Boise	1	0	0	0	0	0	0	0	0
Utah:									
Salt Lake City	1	2	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	1	0	0	0	0	0	0	0	0
California:									
Los Angeles	1	1	0	0	0	0	0	0	0
Sacramento	1	1	0	0	0	0	0	0	0
San Francisco	0	0	0	0	1	0	0	0	0

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended June 15, 1929, compared with those for a like period ended June 16, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have estimated aggregate populations of more than 31,000,000. The 91 cities reporting deaths have nearly 30,000,000 estimated population. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, May 12 to June 15, 1929—Annual rate per 100,000 population, compared with rates for the corresponding period of 1928 [1]

DIPHTHERIA CASE RATE

	Week ended—									
	May 18, 1929	May 19, 1928	May 25, 1929	May 26, 1928	June 1, 1929	June 2, 1928	June 8, 1929	June 9, 1928	June 15, 1929	June 16, 1928
98 cities	124	139	136	131	[2] 125	124	110	136	[3] 107	146
New England	95	110	109	64	[4] 91	99	72	97	79	115
Middle Atlantic	159	205	188	213	168	178	148	221	131	242
East North Central	143	114	165	102	155	105	123	108	145	123
West North Central	123	96	100	72	110	84	96	53	65	98
South Atlantic	62	111	49	117	41	101	54	107	[5] 64	67
East South Central	27	21	14	42	7	63	20	28	41	28
West South Central	115	65	47	28	59	57	91	61	87	53
Mountain	26	97	61	71	[6] 38	71	61	35	[7] 36	44
Pacific	57	129	62	92	60	107	57	115	35	110

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1929 and 1928, respectively.
[2] Pawtucket, R. I., and Pueblo, Colo., not included.
[3] Raleigh, N. C., and Reno, Nev., not included.
[4] Pawtucket, R. I., not included.
[5] Raleigh, N. C., not included.
[6] Pueblo, Colo., not included.
[7] Reno, Nev., not included.

Summary of weekly reports from cities, May 12 to June 15, 1929—Annual rate per 100,000 population, compared with rates for the corresponding period of 1928—Continued

MEASLES CASE RATES

	Week ended—									
	May 18, 1929	May 19, 1928	May 25, 1929	May 26, 1928	June 1, 1929	June 2, 1928	June 8, 1929	June 9, 1928	June 15, 1929	June 16, 1928
98 cities	893	1,351	906	1,309	[2] 663	1,218	737	1,026	[2] 485	866
New England	434	1,159	556	1,290	[4] 369	1,129	606	952	339	996
Middle Atlantic	196	2,281	194	2,192	183	2,170	169	1,771	143	1,403
East North Central	2,135	680	2,283	772	1,595	660	1,825	687	1,151	677
West North Central	1,751	1,121	1,440	943	1,032	755	1,059	597	581	534
South Atlantic	474	1,536	242	1,320	298	1,112	238	892	[5] 241	606
East South Central	68	968	27	743	54	596	41	435	41	442
West South Central	344	272	447	263	245	178	415	61	217	113
Mountain	183	1,152	313	833	[6] 254	992	192	735	[7] 267	682
Pacific	439	264	546	304	412	217	422	174	397	110

SCARLET FEVER CASE RATES

98 cities	291	253	269	233	[2] 271	209	209	193	[2] 189	167
New England	249	292	283	306	[4] 276	248	192	290	206	223
Middle Atlantic	219	279	196	268	196	201	135	191	129	162
East North Central	472	272	448	254	446	227	321	237	321	220
West North Central	281	280	208	207	179	233	165	164	110	155
South Atlantic	210	207	159	176	274	191	300	157	[5] 135	109
East South Central	102	77	136	84	122	365	95	49	75	77
West South Central	186	219	122	207	166	146	79	93	111	45
Mountain	104	133	113	18	[6] 103	71	78	106	[7] 71	71
Pacific	307	143	347	130	254	148	279	156	259	156

SMALLPOX CASE RATES

98 cities	11	24	14	17	[2] 9	12	8	11	[2] 16	10
New England	0	0	7	9	[4] 0	0	0	0	0	0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	14	22	20	16	15	10	17	9	28	11
West North Central	15	65	15	27	15	29	12	22	12	23
South Atlantic	2	33	4	29	0	10	2	31	[5] 4	13
East South Central	14	42	27	63	7	56	14	35	54	56
West South Central	51	61	16	24	20	24	8	24	43	20
Mountain	148	159	35	133	[6] 56	53	52	71	[7] 45	44
Pacific	15	54	77	38	27	49	15	13	47	18

TYPHOID FEVER CASE RATES

98 cities	9	6	8	8	[2] 7	12	8	9	[2] 9	7
New England	9	7	7	11	[4] 2	57	7	2	11	2
Middle Atlantic	6	4	5	6	3	1	5	10	3	2
East North Central	3	2	3	5	3	3	3	7	4	3
West North Central	6	2	8	4	17	4	8	4	17	4
South Atlantic	17	6	15	6	19	17	17	11	[5] 9	17
East South Central	0	28	75	14	34	91	27	14	34	42
West South Central	67	4	12	12	20	32	28	32	20	36
Mountain	0	0	17	0	[6] 0	0	0	9	[7] 9	9
Pacific	7	23	10	36	2	18.	12	10	20	20

[2] Pawtucket, R. I., and Pueblo, Colo., not included.
[4] Raleigh, N. C., and Reno, Nev., not included.
[4] Pawtucket, R. I., not included.
[5] Raleigh, N. C., not included.
[6] Pueblo, Colo., not included.
[7] Reno, Nev., not included.

Summary of weekly reports from cities, May 12 to June 15, 1929—Annual rate per 100,000 population, compared with rates for the corresponding period of 1928—Continued

INFLUENZA DEATH RATES

	Week ended—									
	May 18, 1929	May 19, 1928	May 25, 1929	May 26, 1928	June 1, 1929	June 2, 1928	June 8, 1929	June 9, 1928	June 15, 1929	June 16, 1928
91 cities	8	30	10	26	[2]7	21	7	18	[2]6	12
New England	2	41	7	18	[4]7	16	2	14	7	14
Middle Atlantic	8	28	8	21	4	24	5	19	4	11
East North Central	7	36	8	33	9	21	6	17	8	14
West North Central	0	28	15	18	3	21	3	21	9	6
South Atlantic	7	17	6	11	6	10	7	10	[5]2	8
East South Central	30	84	44	130	0	38	22	77	7	31
West South Central	4	17	28	33	12	25	16	33	12	17
Mountain	17	27	9	53	[6]19	44	35	0	[7]0	9
Pacific	23	10	7	7	16	7	16	7	7	7

PNEUMONIA DEATH RATES

91 cities	106	196	116	181	[2]106	147	91	130	[3]87	115
New England	88	207	122	253	[4]108	172	66	168	86	136
Middle Atlantic	114	219	129	212	113	183	105	148	98	132
East North Central	115	222	118	174	101	129	96	115	82	111
West North Central	75	132	123	126	120	89	81	95	54	129
South Atlantic	120	155	94	119	112	136	67	132	[5]89	80
East South Central	89	261	104	253	111	153	59	161	104	115
West South Central	114	125	69	146	69	129	93	108	65	75
Mountain	113	97	139	124	[6]122	106	61	89	[7]116	53
Pacific	49	104	85	91	66	71	72	81	62	88

[2] Pawtucket, R. I., and Pueblo, Colo., not included.
[3] Raleigh, N. C., and Reno, Nev., not included.
[4] Pawtucket, R. I., not included.
[5] Raleigh, N. C., not included.
[6] Pueblo, Colo., not included.
[7] Reno, Nev., not included.

Number of cities included in summary of weekly reports and aggregate population of cities of each group, approximated as of July 1, 1929 and 1928, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1929	1928	1929	1928
Total	98	91	31,568,400	31,052,700	29,995,100	29,498,600
New England	12	12	2,305,100	2,273,900	2,305,100	2,273,900
Middle Atlantic	10	10	10,809,700	10,702,200	10,809,700	10,702,200
East North Central	16	16	8,181,900	8,001,300	8,181,900	8,001,300
West North Central	12	9	2,712,100	2,673,300	1,736,900	1,708,100
South Atlantic	19	19	2,783,200	2,732,900	2,783,200	2,732,900
East South Central	6	5	767,900	745,500	704,200	682,400
West South Central	8	7	1,319,100	1,289,900	1,285,000	1,256,400
Mountain	9	9	598,800	590,200	598,800	590,200
Pacific	6	4	2,090,600	2,043,500	1,590,300	1,551,200

FOREIGN AND INSULAR

ANGOLA

Communicable diseases—February, 1929.—During the month of February, 1929, cases of communicable diseases were reported in Angola, as follows:

Disease	Cases	Disease	Cases
Ancylostomiasis	80	Pneumonia and broncho-pneumonia	53
Beriberi	6	Puerperal fever	4
Bilharzia	56	Rabies	1
Chicken pox	13	Relapsing fever	8
Dysentery	120	Scabies	214
Erysipelas	1	Syphilis	118
Gonorrhea	131	Tetanus	4
Influenza	524	Trypanosomiasis	703
Leprosy	3	Tuberculosis	23
Malaria	1,336	Typhoid fever	1
Malarial hemoglobinuria	16	Venereal disease	212
Measles	59	Whooping cough	82
Mumps	1	Yaws	313

CANADA

Provinces—Communicable diseases—Week ended June 15, 1929.—The Department of Pensions and National Health reports cases of certain communicable diseases from eight Provinces of Canada for the week ended June 15, 1929, as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Total
Cerebrospinal fever							2		2
Influenza					1				1
Lethargic encephalitis						1			1
Poliomyelitis					1	1			2
Smallpox				3	39	3	3	6	54
Typhoid fever			2	4	17		3	1	27

Quebec Province—Communicable diseases—Week ended June 15, 1929.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended June 15, 1929, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	2	Scarlet fever	98
Chicken pox	39	Smallpox	3
Diphtheria	49	Tuberculosis	53
German measles	24	Typhoid fever	4
Measles	89	Whooping cough	7
Mumps	56		

Vancouver, British Columbia—Communicable diseases—Year 1928.—During the year 1928, cases of certain communicable diseases, with deaths, were reported at Vancouver, British Columbia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	13	8	Poliomyelitis	20	4
Chicken pox	781		Scarlet fever	87	1
Diphtheria	559	22	Smallpox	232	
Lethargic encephalitis	1		Tuberculosis, all forms	192	178
Measles	81		Typhoid fever	24	1
Mumps	627		Whooping cough	96	2

Vancouver, British Columbia—Communicable diseases—January-April, 1929.—During the first four months of the year 1929, cases of certain communicable diseases, with deaths, were reported in Vancouver, British Columbia, as follows:

Disease	January		February		March		April	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	1		2	1			1	1
Chicken pox	94		45		158		50	
Diphtheria	80	4	63	1	26	4	38	1
Measles	6		19		99		496	
Mumps	116		138		195		297	
Scarlet fever	19		22		29		15	
Smallpox	79		53		71		42	
Tuberculosis, all forms		16		15		17		17
Typhoid fever					4	1	5	
Whooping cough	3		1		8		9	

CHINA

Meningitis.—During the week ended June 15, 1929, 17 cases of meningitis, with 15 deaths, were reported at Canton, China. Two cases of meningitis, with 2 deaths, were reported at Hong Kong during the same week.

MADAGASCAR

Plague—Year 1928 and January 1–March 15, 1929.—During the year 1928 forms of plague were reported in Madagascar as follows:

Forms of plague reported in Madagascar during 1928

	Cases	Deaths
Bubonic	1,098	935
Pulmonary	585	577
Septicemic	416	416
Total, all forms	2,099	1,928

The following table shows the different forms of plague reported in Madagascar from January 1 to March 15, 1929:

Forms of plague reported in Madagascar from January 1 to March 15, 1929

	Cases	Deaths
Bubonic	478	436
Pulmonary	210	209
Septicemic	235	235
Total, all forms	923	880

PHILIPPINE ISLANDS

Meningitis.—During the week ended June 15, 1929, 1 case of meningitis, with 1 death, occurred at Manila.

YUGOSLAVIA

Communicable diseases—May, 1929.—During the month of May, 1929, communicable diseases were reported in Yugoslavia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	23	3	Measles	1,711	26
Cerebrospinal meningitis	19	14	Scarlet fever	739	113
Diphtheria	213	43	Tetanus	32	17
Dysentery	28	1	Typhoid fever	93	15
Glanders	1	2	Typhus fever	19	----

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or fina las regards either the list of countries included or the figures for the particular countries for which reports are given:

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Week ended— March, 1929			April, 1929				May, 1929				June, 1929		
					16	23	30	6	13	20	27	4	11	18	25	1	8	15
Ceylon	C	7		4									2	1				
	D	4		4									2	1				
Colombo	C	3	2									1						
	D	1											1					
China: Canton	C	3			1	1	1		1		1	1	1			1		
	D	1							1		1	1	1					
India	C	17,038	12,566	7,627	1,905	2,130	2,036	2,975	3,110	4,231	5,107							
	D	10,507	7,912	4,425	993	1,165	1,135	1,704	1,886	2,362	2,966							
Bassein	D		6	6	1	3	12	29	26	47	23	22	23	13	1			
Bombay	C		1		1		4	1		2	1							
	D			1			1	1					1	1				
Calcutta	C	103	129	261	108	155	154	135	154	184	172	278	274					P
	D	61	85	144	56	83	79	89	96	97	109	159	175	156	171	103		
Madras	C	16	4	9									1					
	D	17	5	4														
Moulmein	D			1	4	1	1	1		4	1	1		6	11			
Negapatam	C	6	18	3														
Rangoon	C	6	15	13	3	6	5	1	5	1	2							
	D	5	9	6	2	6	28	1	4	2	2	2	2	3	1	1		
Tuticorin	C	115	85	6														44
	D	61	52	4														12
India (French):																		
Chandernagor	C	4			1	1	1		1		2		1		1		1	
	D	4			1	1	1		1				1		1		1	
Karikal	C	54	150	88	14	6			3									
	D	41	128	71	12	3			3									
Pondicherry Province	C	92	129	86	30	12	4							1	1	1		
	D	55	104	74	24	10	4							1	1	1		
Indo-China (see also table below):																		
Pnompenh	C	6	2	42	7	2	3	1	3	8	3	1	5	3		6	2	
	D	1	1	36	5	1	3	1	1	5	2	1	5	1		4		
Saigon	C	6	6		2	5	5		3	3	3	4	17	15	20	19	43	P
	D	4	3			1		1	2	1	3	2	15	9	9	4	29	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		Dec. 16 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Week ended— March, 1929 16	23	30	April, 1929 6	13	20	27	May, 1929 4	11	18	25	June, 1929 1	8	15
Siam	C	224	195	165	50	74	117	156	175	85	114	245	310	196	.....	113	121	.....
	D	150	138	117	33	59	73	104	119	61	86	138	193	136	.....	107	78	.....
Anthoang	C	4	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	D	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ayudhaya	C	16	4	4	.....	.....	1	.....	2	.....	3	24	2	.....	.....	.....	14	.....
	D	14	4	4	.....	.....	1	.....	2	1	3	13	.....	.....	.....	.....	8	.....
Bangkok	C	22	50	61	10	14	3	11	15	16	41	39	66	36	20	9	7	.....
	D	6	43	36	7	9	1	4	10	13	31	20	34	22	17	4	2	.....
Chaxoengsao	C	.....	9	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
	D	.....	9	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Dhannapuri	C	16	3	3	.....	.....	.....	.....	2	.....	.....	15	.....	.....	.....	.....	.....	.....
	D	10	2	1	.....	.....	.....	.....	1	.....	.....	6	.....	.....	.....	.....	.....	.....
Lobpuri	C	74	.....	3	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	D	61	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nagara Pathom	C	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	36	.....	13	.....	.....	.....	.....
	D	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	20	.....	10	.....	.....	.....	.....
Nondpuri	C	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	D	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pradhumdham	C	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	D	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Singhapuri	C	17	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	D	12	7	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Smud Prakar	C	30	10	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	D	10	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
On vessel:																		
S. S. Ekma, at Penang from Singapore	C	.....	.....	P	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
S. S. Erinpura, at Madras	C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
S. S. Media, at Colombo from Calcutta	C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
S. S. Saka Maru, at Calcutta	C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....
S. S. Tilawa, at Penang from Singapore	C	.....	.....	.....	P	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
S. S. Elephanta, at Penang from Calcutta	C	.....	.....	.....	.....	P	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Place		December, 1928	January, 1929	February, 1929			March, 1929			April, 1929			May, 1929	
				1-10	11-20	21-28	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20
Indo-China (French) (see also table above):														
Annam	C							3	3		13	7	15	5
Cambodia	C	25	79	29	40			26	3		40	44	27	188
Cochin-China	C	697	660	107	115			13	170		51	37	81	42
Tonkin	C												3	2

PLAGUE

Place		Dec. 16, 1928-Jan. 12, 1929	Jan. 13-Feb. 9, 1929	Feb. 10-Mar. 9, 1929	Week ended— March, 1929			April, 1929				May, 1929				June, 1929			
					16	23	30	6	13	20	27	4	11	18	25	1	8	15	22
Argentina:																			
Buenos Aires [1]	C						1	1				1							
	D						1	1											
Cordoba Province—Laborde	C	1																	
Jujuy Province—Perico	C	1	3																
Rosario	C	2	1			[2] 20	11			3		2							
Azores: St. Michaels Island	C	2	1			1													
Belgian Congo:																			
Djugu	C		1	4									2						
	D		1	1									3						
Lenza	C	1																	
Brazil:																			
Para	C		1																
Porto Alegre	C										1								
British East Africa (see also table below):																			
Uganda	C	155	152	112	18	20	34	58	59		90	82							
	D	152	149	108	17	19	31	57	57		80	82							
Canary Islands:																			
Teneriffe—Laguna	C		1													1			

[1] 18 plague-infected rats were reported at Buenos Aires, Argentina, from July 1 to Dec. 31, 1928.

[2] Unofficial report.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Week ended— March, 1929			April, 1929				May, 1929				June, 1929			
					16	23	30	6	13	20	27	4	11	18	25	1	8	15	22
Ceylon:																			
Colombo	C	8	6	4		2	2		2	2	1		2	1	1	3			
	D	8	5	3				1	1	2	1		2	1	1	2		1	
Plague-infected rats			2	2	2				1										
China:																			
Hainan	C		P	1															
Suyuan Province	C		P	1															
Dutch East Indies:																			
Celebes—Makassar	D	1																	
Plague-infected rats			1																
Java—																			
Batavia and West Java	C	54	74	70	21	17	13	13	14	20	14	15			5				
	D	53	73	69	21	16	14	14	14	20	14	15							
Plague-infected rats				4		2		3	5	3									
East Java and Madura	C				1	1		1											
	D				1	1		1											
Surabaya	C		6																
	D		6																
Kediri Residency	C		P																
Ecuador (see table below).																			
Egypt:																			
Alexandria	C		3										1						
	D		1															1	
Beni-Suef	C	9	3	4	2				1	5		1					3		
	D	2	3	1	1	1				1		1					1		
Daqahliya	C													3	4	2	1		
	D															1			
Port Said	C										1	1	1		1	1			1
Suez	C			1		1	1					1	1		1		1		
Greece (see table below).																			
Hawaii:																			
Hamakau—Kukuihaele—Plague-infected rats																		1	

India	C	7,841	12,600	16,570	4,259	3,682	3,833	4,237	2,434	2,069	1,425								
	D	5,234	9,815	12,064	3,021	3,247	2,835	3,489	1,915	1,646	1,213								
Bassein	D	1	4	3	1	2	2	1		2		1		2					
Bombay	C		2	4	1	3	2	2	3	2	1	2		1					
	D		4	4	1	3	1	1	3	1	1	1			1				
Plague-infected rats		35	38	38	9	17	18	13	18	20	26	17		23	9	12			
Cochin	D	10																	
Madras Presidency	C	500	434	333	50	43	32	7	13	8	5	12							
	D	231	235	189	32	27	18	3	3	2	3	6							
Rangoon	C	1	4	4		3	5	4	5	4	2								
	D	2	5	4		3	3	3	6	4	2	3		2		2			
Plague-infected rats			5	11	2	2	6	5	3	1	2	4		2	2	1			
Indo-China (see also table below):																			
Pnompenh	C	8	10	5	3	2	4	1		3	5		1	4			1		
	D	6	9	3	3	2	4	1		3	5		1	2			1		
Saigon	C			1															
Tourane	C			5															
Iraq:																			
Baghdad	C	9	6	10	4	5	2		1	1	2	4	5	4	1	4	2		7
	D	8	3	3		2	1		1	1	2	3	2	3					2
Plague-infected rats			6	22	3	2	2	7	2					1					
Diyalah Liwa	C								5	2							P		
	D								4	3									
Naudham	C		2														1		
	D		1																
Plague-infected rats			1																
Japan: Osaka—Plague-infected rats														2					
Madagascar (see also table below):																			
Tamatave	C	2	1													P			
	D			2				1		1									
Morocco	C					22	59	25		19		12	4	6	29	3			
	D					14	43	16		12		4	1	3					
Nigeria:																			
Lagos	C	12	14	11	1	1	1	1	4	1	1	2	1	2		1			
	D	11	12	11	1	1	1	1	4	1	1	2	1	2		1			
Plague-infected rats		28	48	50	13		3	2		3	3								
Peru (see table below).																			
Senegal (see table below).																			
Siam	C	4	45	9		2	4	3	5	2	1	2	4	1		4			
	D	3	17	9		2	4	2	3	3	1	1	3			2			
Bangkok	C	4	1	1									1						
	D	1	2	1									1						
Nagara Pathom	C			3			4		1		1		3						
	D			2			4		1		1		2						
Straits Settlements: Singapore	C			1							1								
	D			1							1								
Turkey: Constantinople	C																		P
Union of Socialist Soviet Republics: Ural—Kirghiz	C																P	P	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Week ended— March, 1929			April, 1929				May, 1929				June, 1929			
					16	23	30	6	13	20	27	4	11	18	25	1	8	15	22
Union of South Africa:																			
Cape Province	C	4					1		1			1							
Orange Free State	C	1	6	2	P	1	2		3	1									
	D		1				2			1									
Transvaal	C	8				5	3												
	D					5	3												
Uruguay:																			
Montevideo	C						4												
Rivera	C	1																	
On vessel:																			
S. S. Chenonceaux, at Singapore, from Colombo	C					1													
	D					1													
S. S. Ganzan Maru, at Osaka, from Haipong	C												1						
S. S. Halydan, at Bangkok, from Singapore	C	1																	
S. S. Seiyo Maru, at Osaka, from Bombay—Plague-infected rats													1						
S. S. Soudades, at Hamburg, from Rosario, Argentina—Plague-infected rats									2										
S. S. Sjomand, at Alexandria, from Batoum	C		1																
S. S. Sumatra, at Osaka, from Bombay	C									1			1						

Place		December, 1928	January, 1929	February, 1929	March, 1929	April, 1929	May, 1929
British East Africa (see also table above):							
Kenya	C	15	7	4	10	4	
Uganda	C				121		
	D				113		
Ecuador: Guayaquil	C	20	25	54	26	19	2
	D	7	12	22	4	5	1
Plague-infected rats		75	29	27	14	13	3
Greece	C	2	3	1		1	
	D	1	1				
Indo-China (see also table above)	C		11		3	13	
Madagascar (see also tab e above)	C	282	233	348	196		
	D	263	224	335	194		
Ambositra Province	C	79	169	164			
	D	74	159	164			
Antisirabe Province	C	4	15	21			
	D	4	15	21			
Itasy Province	C	11	3	10			
	D	11	3	10			
Moramanga Province	C	28	22	7			
	D	27	21	4			

Place		December, 1928	January, 1929	February, 1929	March, 1929	April, 1929	May, 1929
Madagascar—Continued.							
Tamatava	C	2	4				
	D	2	4				
Tananarive Province	C	158	208	146			
	D	144	192	136			
Peru	C	26	37	16	35		
	D	6	9	13	13		
Senegal:							
Baol [1]	C	4			6	1	21
	D	2			3	1	6
Cayor [1]	C	14					
	D	10					
Dakar [1]	C					6	17
	D					4	11
Thies [1]	C			8	4	20	6
	D			7	3	20	3
Tivaouane [1]	C			12			22
	D			2			10

SMALLPOX

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Week ended— April, 1929			May, 1929				June, 1929			
						13	20	27	4	11	18	25	1	8	15	22
Algeria:																
Algiers	C				3		4		1	4			1			
Cherchell	C			21	42	1										
Oran	C			1	1	1	1				5					
Arabia: Aden	C	1	2		30	28	17	19	5	3	10	20	7			
	D				8	6	4	6	4	3	1	9	7			
Bermuda: Hamilton	C													1		
Brazil (see also table below): Rio de Janeiro	C										1					

[1] Reports incomplete.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Week ended—										
						April, 1929			May, 1929				June, 1929			
						13	20	27	4	11	18	25	1	8	15	22
British East Africa (see also table below): Kenya—Mombasa	C	3														
British South Africa:																
Northern Rhodesia	C	173														
	D	23														
Southern Rhodesia	C		1	17	69		13									
Tanganyika	C		13	3				1	2	3						
Canada:																
Alberta	C	3	3	5	7		5		3							
Calgary	C			1					2							
Edmonton	C	14	2	2	12		4		1						3	
British Columbia—Vancouver	C	51	66	70	64	12	19	8	7		6	7	2			
Manitoba	C	23	21	15	3			1	1		2		4	6		
Winnipeg and vicinity	C	2													2	
New Brunswick	C				3											
Nova Scotia	C	5	2			1										
Ontario	C	36	83	83	57	15	37	21	40		30	7	3			
Niagara Falls	C				1								3			
North Bay	C			4				2	1	1		7			2	
Ottawa	C			1												1
Toronto	C		1		2	1									1	4
Windsor	C							3		3				1		
Prince Edward Island	C		2	2												
Quebec	C	37	24	28	14	11	8	11	4	3	3	3	3	5	3	
Montreal	C	8	10	16	4			3	1			1				
Quebec	C	4	8		3	1					1			2		
Riviere du Loup	C					1										
Saskatchewan	C	14	35	70	13		9	3	1		7		7			
Moose Jaw	C				1											
Regina	C	1	6													
Saskatoon	C		4		1											
China:																
Amoy	C	5	P	5	3			2	2	1						
Canton	C	18	87	86	135	29	21	19	16	25		13	8	5		
	D	2	2	15	15	2	3	5	2	2		1	1	1		
Chefoo	C						P									

Foochow	C	P	P	P	P				P								
Hong Kong	C	319	307	189	92	21	16	11	5	8	10	5	6	2			
	D	152	286	246	137	39	36	15	7	6	8	4	7	2			
Manchuria—																	
Changshun	C		3	2		1											
Fushun	C		5														
Harbin	C	2	5		1	1	2	1									
Kwantung—Dairen	C		2	9	1	6	2	2	1	8	4	4	5	2			
	D		2	3		3		1			1	3	4	2			
Mukden	C	1	3		1												
	D		1														
Shanghai—																	
Foreigners only	C	23	23	11	4	1				2	2		2		2		
Including natives	D	64	60	41	25	7	2	5	2	8	6	2		1			
Swatow	C			9	33	22	32	20	19	23	14	13					
Tientsin	C	6	3	2	8	2	1	2	1	8	4						
Tsingtao	C			P	P	P	P	P	P	P	P	P					
Yunnanfu	C				P	P											
Colombia: Cartagena	D			7													
Curacao (alastrim)	C						1										
Dominican Republic	C		1														
Dutch East Indies:																	
Balikpapan	C			1	5			3			1	2					
Belawan Deli	C	7	26	9	7	1		3									
	D	3	6	6	2												
Borneo	C		30	26													
Samarinda	C	11	4	47	2		1										
	D	3		4	3												
Celebes—Makassar	C				6	6	9	10	14	16	11	9	7				
	D				2	5	4	7	9	9	10	8	6				
Sumatra—																	
Baros	C	96	106	36	16												
	D	30	26	5	2												
Medan	C	9	11	9	7	1			1	1							
	D	5	5	6	3					1							
Palembang	C			9													
	D			2													
Ecuador (see table below).																	
Egypt:																	
Gharbieh	C			1													
Port Said	C		1				1										
Suez	C						1	4									
France (see table below).																	
Great Britain:																	
England and Wales	C	733	890	1,083	1,156	339	374	354	356	277	362	298	242	272			
Birmingham	C						1					1					
Bradford	C		1	2	3		1				2	2		2			
Bristol	C		1														
Cardiff	C		4		1	1							4				
Castleford	C	16	48	85	56	5	14	5	7		5	5	2	2			
Hull	C		2														
Leeds	C	1	3	6	8	1	1	1									

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Week ended— April, 1929 13	20	27	May, 1929 4	11	18	25	June, 1929 1	8	15	22
Great Britain—Continued.																
England and Wales—Continued.																
Liverpool	C		1													
London	C	36	40	54	58	29	49	56	67	50	52	53	38	69		
London and Great Towns	C		433	425	598	206	250	203	229	159	198	171	128	166		
	D	1			3	1	2	2	1	1	1	1				
Newcastle-on-Tyne	C		6	6	16	1			2	1	10	14	12			
Nottingham	C	3	1		2											
Stoke-on-Trent	C	4	14	18	72	42	30	27	34	12	41	18	15	24		
Scotland—																
Aberdeen	C						1	1								
Glasgow	C				1	12	6	1		1						
Greece (see table below).																
Hedjaz	C	48	153	108	84	23	22	13	9	23		7	10	23	19	
	D	15	56	40	52	16	14	10	12	13		4	7	11	12	
Honduras: Puerto Castilla	C										1					
India	C	7,877	12,531	14,890	19,120	5,694	5,169	6,194								
	D	2,143	3,045	3,285	3,983	1,291	1,106	1,359								
Bombay	C	34	158	397	441	104	57	85	69	54	70	34	50			
	D	21	78	188	206	46	30	48	51	30	46	22	33			
Calcutta	C	10	32	104	127	34	24	25	18	5	16		13			
	D	6	16	29	77	26	16	16	16	5	16		10			
Karachi	C	6	5	147	206	29	57	33	25	23	22	17	22			
	D		223	14	70	8	22	17	12	15	11	12	21			
Madras	C	94	35	260	392	107	87	70	63	60	53	37	24			
	D	25	6	61	83	20	26	22	16	14	23	11	13			
Moulmein	C	3	2	14	18		1	3	3		3	2				
	D	1		4	4		1	3	2		2	2				
Negapatam	C	3	26	5	9	1		3	3		1		1			
	D		6	4	1											
Rangoon	C	1	3	17	13	3	2	1	1							
	D		1	6	6	1		1	1		1					
Tuticorin	C		2	1				1								
Vizagapatam	C	2	3	52	26	9	4	11	4		1	1				
	D			9	5	1	4		3							

India (French):																
Karikal	C				2			1	1	2		1				
	CD				2			1	1	2		1				
Pondicherry Province	C	75	59	79	70	21	11	12	16	15	8	6	8			
	D	62	51	61	60	19	8	11	13	13	6	4	7			
Indo-China (see also table below):																
Pnompenh	C	38	77	62	68	9	19	9	3	6	8	7	1	1		
	D	21	42	36	33	5	13	4	2	4	4	4		1		
Saigon	C	12	5	2	2	1			1		1					
	D	6	1								1					
Iraq:																
Baghdad	C	20	17	7	6	2	1	1	2			1	2		1	
	D	29	3	5	1											
Basra	C	11	18	7	9	2	1	3	2	2	1	3	2	8		1
	D	7	10	5	2		1	3	2	1		4	3	1		
Diyalah Liwa	C									48						
	D									13						
Hillah Liwa	C	54	20													
	D	14	9													
Kirkuk Liwa	C	86		18												
	D	17		4												
Mossoul	C	55	30	28											12	
	D	39	17	4												
Sinjar	C	53	61													
	D	5	15													
Italy:																
Palermo	C	3														
Rome and vicinity	C	1	2													
Turin	C			1												
Ivory Coast (see table below).																
Jamaica (outside Kingston) (alastrim)	C	1					1			1						
Japan:																
Kobe	C			1												
Nagasaki	C		3													
	D		2													
Niigata	C										12					
Osaka	C			1							1					
Shimane Province	C				16		3									
Tokyo	C									1						
Macao	D	9	24	75	32	9	6	3	2	2	2		1			
Mexico:																
Acapulco	C								1		1					
	D								1		1					
Aguascalientes	D	1	3	3	5	1	6		2		2	1	3	5	4	
Chiapas Province	C				P											
Chihuahua	D		1													
Jalisco (State): Guadalajara	D	1	8	8	13	3	1	5	3	3	3	3	6	3	3	
Juarez	D	5	1	1	3											
Mexico City and surrounding territory	C	7	2	2	1											
Oaxaca—Zacatepec	C						P									
Palomas	C			1												
Tampico	C			1	2											
Vera Cruz	D				2											

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Week ended— April, 1929			May, 1929				June, 1929			
						13	20	27	4	11	18	25	1	8	15	22
Morocco (see table below).																
Nicaragua: Managua	C					P										
Nigeria:																
Lagos	C				1		1									
Southern Provinces	C		162													
	D		31													
Norway: Stavanger	C					2										
Palestine	C												1			
Panama Canal Zone	C				P											
Poland	C	1	41			2		4			1					
	D		3													
Portugal:																
Lisbon	C	2	4		3	2		2					1	1		
Oporto	C				1		1		1							
Senegal (see table below).																
Siam	C	19	2	4			1	7	47	10						
	D	2						2	6	5						
Somaliland, British: Boales	C														5	
Spain: Valencia	C			2	5											
Straits Settlements: Singapore	C	1	5	3	1											
Sudan (Anglo-Egyptian)	C	491	265	188	245	127	138	12	100	162	264	309	835	228	243	38
	D	57	34	54	29	17	3	3	3	5	48	28	51	40	60	47
Sudan (French) (see table below).																
Syria (see table below).																
Tunisia: Tunis	C	14		5			2									
Union of Socialist Soviet Republics: Vladivostok	C												• 2			
Union of South Africa:																
Cape Province	C						P	P	P	P						
Natal	C	1														
Transvaal	C				P	P	P	P	P	P						
Upper Volta	C		3	4	4	7		8		2						

On vessel:																	
S. S. Assyria, at Suez, from Bombay	C									1							
S. S. City of Venice, at Suez, from Calcutta	C										1						
S. S. Fern, at Port Said, from Abadan	C											P					
S. S. Le Panto, at Suez, Egypt	C								4								
S. S. Lopez-Lopez, at Suez	C					1											
S. S. Malwa, at Suez	C						1										
S. S. Mancar, at Suez, from Calcutta	C					1											
Tantalus (motor ship), at Amsterdam	C			3													
S. S. Tuscania, at Glasgow, from Bombay	C				P												

Place		November, 1928	December, 1928	January, 1929	February, 1929			March, 1929			April, 1929			May, 1929	
					1-10	11-20	21-28	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20
Indo-China (see also table above)	C	144	243	311	128	236			200	361	500	100	155	348	97
Ivory Coast	C									4					
Senegal	C				80			17	3	45	50	7			1
	D				8			1	3	7	15				
Sudan (French)	C		2						26		10	9	64	3	
	D								3						
Syria: Beirut	C	2	1	1	21	24	3		10	2	2	16		4	

Place		November, 1928	December, 1928	January, 1929	February, 1929	March, 1929	April, 1929
Angola	C			1			
Brazil: Porto Alegre	C	3					
British East Africa (see also table above):							
Kenya	C	37	31			23	1
Chosen: Chinampo	C			1			
Ecuador: Guayaquil	C	6	13	12	4	2	2
	D	1	1	1	1		

Place		November, 1928	December, 1928	January, 1929	February, 1929	March, 1929	April, 1929
France	C		18	9	9	5	
Greece	C	6	6	8	5	2	4
	D			1	1		
Morocco	C	2		7	11	8	13
Persia	D		119	68	23	8	
Turkey	C			16	7		1
	D			6			

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Week ended— March, 1929			April, 1929				May, 1929				June, 1929	
						16	23	30	6	13	20	27	4	11	18	25	1	8
Algeria:																		
Algiers	C					3	1		2	4	2	3	2	1				
Constantine Department	C			2	13	P	2										2	
Oran	C			5	2						2	1	5		12		2	
Bulgaria	C	9	5	7	39	7	18	10	5	5	16	7		10	7		4	
	D				2	1	3		1	1	1			1				
Sofia	C			1														
Chile: Valparaiso	C	1																
China:																		
Canton	C			2														
	D			2														
Hong Kong	C			1														
Manchuria—																		
Harbin	C	2					1											
Kwantung	C				1													
Chosen (see table below).																		
Czechoslovakia (see table below).																		
Egypt:																		
Alexandria	C					1						1						
	D					1								1				
Assouan Province	C				2													
	D				2													
Beheira Province	C				13				67	50				23	84	52		13
	D								9	9					18	6		6
Cairo	C																2	
Daqahliya Province	C	15	11			34												
	D	1	2															
Gharbieh	C			1	2													
	D				1													
Menoufieh Province	C										35							
Port Said	C														1	1		
Greece (see table below).																		
Ireland (Irish Free State):																		
Cavan County—Carrickmacross	C													1				
Cork County	C				1													

Donegal County—Inishower	C												1					
Dublin	C			1														
	D			1														
Kerry County—																		
Dingle	C					2						1	1					
Killarney	C				1					2								
Lithuania (see table below).																		
Mexico (see also table below):																		
Aguascalientes	D	2				3		2										
Chihuahua	D		1															
Mexico City, including municipalities in Federal District	C	12	9	11	7	1	1	2		3			1			5		
	D	1	2	3	2					1						1		
San Luis Potosi	D		1															
Morocco	C	16	4	20	17	7		6	6		8	8	12		1		4	
	D												4					
Norway: Oslo	C													2				
Palestine	C	12	2	3				2		1					2			
Poland	C	117	203	222	202	91	55	69	80	67	79	88	80	85	80	56		
	D	11	16	15	18	5	3	7	5	2	3	7	13	7	6	6		
Portugal: Oporto	C	1																
Rumania	C	42	167	173	211	62	60	49	49		27	52	56	55				
	D	1	11	23	28	7	5	9	9		3	2	11	10				
Tunisia	C	6		2	3	9		9	2	7	2	8	2	1	1	1	19	
Turkey (see table below).																		
Union of South Africa:																		
Cape Province	C	P	P	P	P	P	P	P	P	P	P	P	P					
Natal	C	P	2		2	P	P		P		P	P	P					
Orange Free State	C	P	P	P	P						P	P	P	P	P			
Transvaal	C		P	1					P	P	P							
Yugoslavia (see table below).																		

Place		December, 1928	January, 1929	February, 1929	March, 1929	April, 1929	May, 1929
Chosen: Seoul	C	3			3		
Czechoslovakia	C		6	7	41	25	
	D			1	1		
Greece: Athens	C	1	13	4	4		
	D		5				
Indo-China: Tonkin	C					2	
Latvia	C				1		
Lithuania	C	11	32	24	62	101	63
	D		3	3	1	7	5

Place		December, 1928	January, 1929	February, 1929	March, 1929	April, 1929	May, 1929
Mexico (see also table above):							
Sonora	D		1				
Turkey	C	19	1	3	11	3	
	D			1			
Yugoslavia	C	7	15	13	7		
	D			2			

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Week ended— March, 1929			April, 1929				May, 1929				June, 1929		
					16	23	30	6	13	20	27	4	11	18	25	1	8	15
Belgian Congo: Tumba	C										1							
Brazil:																		
Bahia	C	2					1											
	D	1					1											
Guaratingueta	C			[1] 1														
	D			[1] 1														
Para	D	2	1					5										
Pernambuco	C							4										
Porto Alegre	D												[1] 1					
Rio de Janeiro [2]	C	2	16	92	66	59	61	66	57	51	39	33	24	22	17	7	[3] 5	2
	D	2	17	67	32	30	38	32	34	23	20	17	18	11	6	3	3	
Sao Paulo	C		1															
	D		1															
Liberia: Monrovia	C		3	7	1	3	3	3	2									
	D		2	4	1		2	1										
On vessel:																		
S. S. Skogland, at Porto Alegre, from Rio de Janeiro	C												1					
S. S. Victoria, at Manaos, from Para, Brazil	C	1																
	D	1																

[1] Imported.
[2] 29 cases of yellow fever with 14 deaths were reported at Rio de Janeiro during January, 1929, mostly suburban.
[3] Erroneously reported in Public Health Reports of June 21, 1929, p. 1536, as 8 cases.