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EXAMINATION OF EXCRETA FOR TYPHOID BACILLI.

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It is now well known that some persons recovered from typhoid fever continue to discharge typhoid bacilli in their urine or feces, or both, for weeks, months, or even years. Numerous outbreaks of typhoid fever in recent years have been definitely attributed to infection derived from typhoid bacillus carriers. The importance of keeping under observation persons recovering or recovered from clinical typhoid fever until their excreta have been examined bacteriologically with negative results is obvious. As there may be some intermittency in the discharge of typhoid bacilli in the excreta at least two specimens, and preferably four specimens, of the excreta collected on occasions several days or a week apart should be examined and found negative for typhoid bacilli before the convalescent is discharged from observation.

Numerous methods for the isolation of typhoid bacilli from excreta are in use. None can be regarded as perfect. Believing that it will be of interest to health officers, hospital authorities, and others having charge of typhoid convalescents, the following description of the technique now employed as a routine at the Hygienic Laboratory is presented:

METHOD OF EXAMINING FECES FOR TYPHOID BACILLI.

Place about 5 grams of the feces in a conical glass or other suitable vessel, add 15 or 20 cubic centimeters of sterile physiological salt solution or bouillon and agitate. Let stand one-half to one hour either at room temperature or, preferably, at incubator temperature (37° C.) in order to permit the heavy particles to settle. Deposit one or two drops of the supernatant fluid in the center of an Endo plate. With a right-angled glass rod distribute the drop over the entire surface of the plate and then rub the rod over the surface of a second, third, fourth, and fifth Endo plate. By carrying the spreader over the surfaces of several plates in this way, one or two of the plates will furnish abundant but sufficiently isolated colonies to permit "fishing."

After inoculation place the plates inverted in the incubator, leave there for 20 to 24 hours, and then examine. On the plates colonies of typhoid and paratyphoid bacilli will be transparent, colorless, dewdrop-like and usually from 1 to 2 millimeters in diameter; while

colonies of colon bacilli will be deep red, showing sometimes on the surface a sheen from precipitation of the fuchsin, and measure usually from 3 to 4 millimeters in diameter. If typhoid-like colonies appear on the plates fish 5 or 6 of them, and inoculate tubes of Russell's medium in the following manner:

Touch the colony with a sterilized platinum needle, make two streaks along the slanted surface of the medium in the tube and then stab the needle down through the center of the block of medium to the bottom of the tube. Incubate the inoculated tubes of Russell's medium for 20 to 24 hours and then examine.

On Russell's medium inoculated in this way typhoid bacilli leave the surface of the medium blue but change the medium in the butt of the tube to a bright red; colon bacilli redden both the surface and the depths of the medium and cause the formation of gas bubbles throughout the depths of the medium; paratyphoid bacilli leave the surface blue, but produce redness and gas bubbles in the butt of the tube; dysentery bacilli leave the surface blue and change the medium in the butt of the tube to claret color quite readily distinguishable from the brighter and more pronounced redness produced by typhoid bacilli.

If any of the tubes of Russell's medium inoculated with suspected colonies from Endo plates show a typhoid-like growth, suspend some of the surface growth in physiological salt solution and test with typhoid agglutinative serum of a known titre for stock cultures of typhoid bacilli. Since typhoid bacilli just isolated from excreta may not agglutinate in as high dilutions of agglutinative serum as will stock cultures,¹ the test for agglutination should be made with several comparatively low dilutions of serum before deciding that it is negative. If the culture responds positively to the agglutination test, plate out some of the growth from the tube of Russell's medium, in order to obtain the organism in pure culture and then carry the organism through the various cultural and other tests required to establish positively its identity. If the colonies on Endo medium and the growth on Russell's medium suggest paratyphoid, the growth should be tested with paratyphoid agglutinative serum.

METHOD OF EXAMINING URINE FOR TYPHOID BACILLI.

Deposit 3 drops of the urine on an Endo plate spread with a right-angled glass rod; then rub the rod over the surface of a second and third Endo plate. For the remaining steps in the examination proceed as described above for the examination of feces.

DIRECTIONS FOR MAKING ENDO PLATES.²

Make stock agar of the following formula:

Water.....	cubic centimeters..	1,000
Agar, powdered.....	grams..	40
Sodium chloride.....	do.....	5
Liebig's extract of meat.....	do.....	10
Peptone, Witte's.....	do.....	10

¹ Sawyer, A. W., Journal American Med. Assn., Vol. LVIII, No. 18, May 4, 1912, p. 1336.

² Endo, S.: Cent. f. Bakt., vol. 35, No. 1, 1903-4, p. 109. Klinger: Arb. a. d. Kais. Ges.-Amt., 1906, p. 521 (see also Herford). Willson: Journ. Hyg., 1905, p. 429. Clauditz: Hyg. Rundsch., 1904, vol. 14, p. 718. Herford: Arb. a. d. Kais. Ges.-Amt., 1906, p. 62. Kayser: Munch. Med. Woch., 1906, p. 823. Kendall: Journ. Med. Research, 1911, vol. 25, No. 1, p. 95.

Cook in Arnold sterilizer for three hours. Clear by vacuum filtration or by cooling in a smooth cylindrical or conical container, turning out the solid agar, and cutting off the part containing sediment. It is sometimes necessary to repeat the clearing process.

Neutralize to litmus paper with sodium carbonate solution. Add 3.7 cubic centimeters sterile 10 per cent anhydrous sodium carbonate (Na_2CO_3) solution. Put up the medium in quantities of 100 cubic centimeters and 200 cubic centimeters in flasks having a capacity of at least 150 cubic centimeters and 250 cubic centimeters, respectively. Plug mouths of flasks with cotton, tie paper caps over mouths of flasks to prevent evaporation, sterilize and keep these flasks of medium in stock ready for use.

The remaining steps in the making of the plates should be postponed until a specimen is to be examined. One hundred cubic centimeters of the medium will make about 5 plates. If 10 or 12 plates are desired for use, proceed as follows: Place one of the flasks containing 200 cubic centimeters of the medium in the Arnold sterilizer and let boil until the medium is completely melted. This usually takes about 1 hour. Add 2 grams of powdered lactose (C. P.) to 20 cubic centimeters of water in a test tube and dissolve by boiling in sterilizer for about 15 minutes. To 10 cubic centimeters of water in another test tube add 0.25 gram of anhydrous sodium sulphite (C. P.), and 0.7 cubic centimeter of a saturated solution of basic fuchsin in 95 per cent alcohol¹ and heat in Arnold sterilizer for about 15 minutes. Add to the flask of melted agar the lactose solution and the sodium sulphite fuchsin solution. Gently agitate the flask to secure thorough mixing of the contents and heat in the sterilizer for about 5 minutes. Pour the medium into the plates while it is steaming hot. Leave the Petri dishes in the incubator with covers off for about one-half hour to get rid of surface moisture.

The plates, after hardening, should be nearly colorless to transmitted light, and rose or flesh colored to reflected light. In a cold, dark place they will keep for several days.

DIRECTIONS FOR MAKING RUSSELL'S MEDIUM.²

Add to 2 per cent nutrient agar, such as is used for routine bacteriological culturing, enough of a 5 per cent aqueous solution of litmus to give the medium a distinct purple-violet color. Adjust the reaction of the medium by adding normal sodium hydrate solution until the mixture is neutral to litmus. Add 1 per cent of lactose and one-tenth of 1 per cent of glucose dissolved in a small amount of hot water and tube the medium for slants. Place tubes loosely in sterilizer basket and cook in the Arnold sterilizer for 10 minutes on the first day and for 15 minutes on the second day. The heating of the medium must not be carried too far, on account of the danger of breaking down the lactose. After the final sterilization, slant the tubes until the medium has become solid and store in a dark, cool place, such as ice chest or laboratory cold room.

¹ The saturated solution of fuchsin (about 4 per cent) may be kept in tightly stoppered bottles as a stock solution, but should be filtered immediately before use.

² Russell, F. F., Jour. Medical Research, Vol. XXV, 1911, p. 217.

SANITARY ADVICE FOR SUMMER TOURISTS.

By W. C. RUCKER, Assistant Surgeon General, Public Health and Marine-Hospital Service.

With the advent of warm weather and the consequent closing of schools comes the thought of leaving the city for the cool country. The tired teacher and the over-worked clerk, the restive school boy, anxious to leave his books for the great out of doors, the society matron, bored by the constant round of social duties, all long to get away from the city and to spend the summer in some shady rural retreat. Too frequently the realization of this happy anticipation is a hasty return to the city and a long stay in the hospital, to be followed, perhaps, by the death of some loved one. Much of this may be avoided if reasonable care is exercised in the choice of the place to spend the summer.

Ordinarily the questions which are asked when one is seeking for such a place include the character of the food and beds, the extent and nature of the social life, the temperature of the air, and the opportunities for bathing. All of these are important, but they are of secondary consideration as compared with the question of the healthfulness of the locality in which it is intended to spend the warm months. Therefore, in choosing a summer residence the first thing to have in mind is the sanitary environment in which this time is to be spent.

Every autumn there is a rise in the number of typhoid cases in the cities, and when this is investigated it is frequently found that they are simply cases which have been imported from the country. Persons have left the city in search of health, and, as they are accustomed to think that health may be obtained and maintained best in the country, they accept it without question as the place to get health.

Typhoid fever is a disease which summer tourists frequently contract; therefore it is always well to bear the avoidance of this disease in mind in choosing a summer residence. Typhoid fever is a disease of man. The germ which causes it leaves the body of the person sick with the disease in his discharges, and when these are taken by a well person a secondary case of the disease is caused. The germs of typhoid fever are carried from the sick to the well in water and food and by flies and the fingers. If one does not take into his system the discharges of another person having typhoid fever he does not get typhoid fever. At the present time typhoid fever is essentially a disease of the country, because in the country the opportunities for the transference of the germs of the disease from the sick to the well are greater than they are in the city. Therefore in the choice of a place to spend the summer one should inquire into the occurrence of typhoid fever in the community in which it is intended to stay, and one should determine the opportunities which exist there for the carrying of the germs of typhoid fever from the sick to the well visitor.

Since the germ is carried in the discharges of persons sick with typhoid fever, a careful inspection should be made of the facilities for disposing of human excrement. A place which has a surface privy to which the domestic animals and fowls have free access should not be chosen. Places which have a pit privy or a cesspool situated only a short distance from a well should be avoided. Places which take their drinking water from streams which receive the drainage of outhouses

or from buildings should likewise be regarded with suspicion. Other things being equal, places having a water supply from artesian or deep-driven wells should be given the preference. Unscreened toilets, because of the flies which they breed, and because of the chance which these insects have to pick up the germs of typhoid fever therein and carry them to the boarder's food, are particularly dangerous. It is equally important, both for the comfort and the health of the guest, that the house also be screened.

It has been shown in the foregoing paragraphs how the fly may carry the germs of typhoid fever from the toilet to the kitchen and there infect the food which people eat. There is another way in which it may infect food, and this is particularly important from the standpoint of the child. The source of the milk supply should always be investigated in choosing a place of summer residence, and if it is found, as is too frequently the case, to be from dirty, fly-infested stables, in which dirty cows are milked by dirty hands, it is best to give the place a wide berth.

Another insect to be avoided is the mosquito. It used to be thought that malaria was caused by night air, but nowadays it is known that the only bad thing about night air is the mosquito which it contains. This insect infects people with malaria by biting them and injecting the germ as it bites. Therefore when a place of summer residence is chosen it should not be an unscreened house, nor should it be in a swampy region, nor in a locality in which there are small pools of water well adapted to the breeding of mosquitoes.

Finally, if there is any doubt in the mind of the summer tourist let him consult the local health officer of the locality under consideration.

REPORT ON AN OUTBREAK OF TYPHOID FEVER AT LINCOLN, NEBR., IN 1911.

By L. L. Lumsden, Passed Assistant Surgeon, Public Health and Marine-Hospital Service.

On the request of the governor of Nebraska the writer was detailed by the Surgeon General of the Public Health and Marine-Hospital Service to proceed to Lincoln, Nebr., and to make an investigation of an outbreak of typhoid fever in that city, with a view to determining the sources of the infection and the measures necessary for the control of the disease.

The investigation was begun on November 4 and terminated on November 17, 1911. It comprised an epidemiological study of cases reported from July 1 to November 1, a sanitary survey of the city and its immediate environs, bacteriological examinations of the water supply, and inspections of dairies and other places where foods were sold or prepared for sale.

In conducting the investigation the writer had the active cooperation of Dr. H. W. Waite, professor of bacteriology and pathology in the University of Nebraska, who was engaged by the city council to assist in the investigation; the city health officer; the city engineer; and the water commissioner. The bacteriological examinations were made in the bacteriological laboratory of the University of Nebraska. The media used in the examination of the water supply were prepared with especial care by Mr. John J. Putnam, technical assistant in the laboratory.

TIME OF OCCURRENCE AND EXTENT OF OUTBREAK.

In the four months, July, August, September, and October, 1911, 161 cases were reported in the city. Of these 141 were investigated. No definite information was obtainable in about 20 of the reported cases, but during the course of the investigation of the reported cases 9 others were learned of and investigated, making a total of 150 cases investigated. Of these 150 cases 6 were in persons who had become infected while away from Lincoln, leaving 144 for detailed consideration.

The occurrence of the cases, according to dates of definite onset of symptoms, is shown in the following table:

Dates of onset of symptoms.

Day of month.	June.	July.	August.	Sep-tember.	Octo-ber.	Day of month.	June.	July.	August.	Sep-tember.	Octo-ber.
1.....		1	1	3	1	18.....		1	3		
2.....				1		19.....			4	1	1
3.....				3		20.....		2	6		
4.....		1	3	4		21.....			2	2	
5.....				1		22.....			3		
6.....				1		23.....			6	1	1
7.....		1				24.....			9		
8.....					1	25.....		1	7		
9.....		1	2			26.....		1	4	2	
10.....			3	1		27.....			3		
11.....			3	3		28.....	1		6		1
12.....			3		1	29.....		1	6	1	1
13.....						30.....		2			
14.....			4	1		31.....		1	1		
15.....		1	8	2							
16.....			3			Total....	1	16	93	27	7
17.....		1	3								

CHART, I.

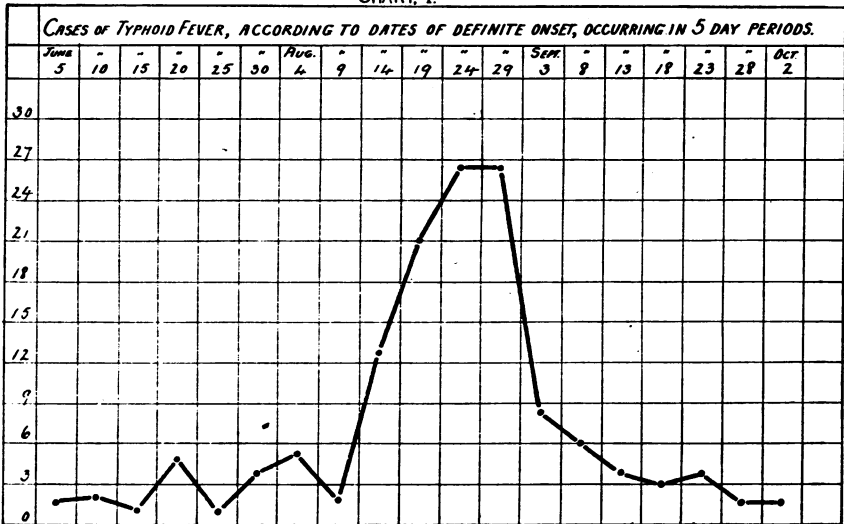


Chart 1 shows the chronological progress of the disease according to occurrence of cases in five-day periods. The curve shows a sharp rise for August. Prior to July, 1911, reporting of cases of typhoid fever

in Lincoln was not required, and consequently a comparison of the number of cases reported in 1911 with the numbers for previous years can not be given.

On the evening of November 6 a public meeting was held under the auspices of the city council for the purpose of discussing the typhoid-fever situation. Some of the physicians present expressed the opinion that typhoid had been no more prevalent in the city during the summer of 1911 than in the several previous summers. Others were of the contrary opinion.

There was an agreement among the majority of the physicians and others at the meeting that the disease had been unusually prevalent in the northeast section of the city during the summer of 1911.

The following table gives the number of deaths from typhoid fever, by months, recorded at the city health office from January 1, 1890, to November 1, 1911:

Reported deaths from typhoid fever, by months, from Jan. 1, 1890, to Nov. 1, 1911.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1890.....	1			4	1			1	3	4	6	3	23
1891.....	1			3	2		1		1	2	2	3	15
1892.....			1		1	1		1	3	2	7	4	20
1893.....	2				1	2		3	2	7	4	4	27
1894.....	1	1			1	1	2	2	3	1	3		15
1895.....	1	1		2				3	3	7	2		19
1896.....			1	1	1	1		1	1	2	1	3	12
1897.....					2	1	1	2	2			1	10
1898.....		1	1	1		1	2		4	1	1		13
1899.....	1		1					2	1	3	1	2	11
1900.....				1	1				2				4
1901.....	1	1				2	1	1	2	2			14
1902.....		1		1				5	4	4	2	2	15
1903.....						1	1	1	2	2			7
1904.....	1								2	1	5		9
1905.....								1	5	2	1		9
1906.....				1	1	1			3	3		3	9
1907.....	1					1		4	4	1	1	1	13
1908.....	1					1	1		1	1			5
1909.....			2					1	1		1		4
1910.....								2	3	1		1	8
1911.....		1				1		2	4	1			9

Judging by the face of the death returns, the disease for the city as a whole did not seem to be much, if any, more prevalent in the summer of 1911 than it had been in that season of a number of previous years. Thus, at the outset there seemed to be some uncertainty as to whether there had been in the summer of 1911 an unusual prevalence or an outbreak of the disease.

GEOGRAPHICAL DISTRIBUTION.

Upon investigating the cases it was determined that the disease had been much more prevalent in the section of the city north of J Street and east of Fourteenth Street than in other sections of the city. That section contains about one-fourth of the city's population and furnished about 84 per cent of all the cases reported and investigated which occurred in July, August, September, and October, 1911. Of the 23 cases occurring in persons who lived outside the especially affected section, 11 were in persons who, during the 30 days prior to illness, had gone into the affected section from time to time and

drunk water from the taps while there. In the especially affected section the general sanitary conditions were better than those for some of the other sections of the city and somewhat better than those for the average section of the city.

AGE DISTRIBUTION.

The persons affected were according to age and sex as follows:

Age and sex of patient.

Age in years.	Male.	Female.	Total.	Age in years.	Male.	Female.	Total.
0 to 4.....				40 to 44.....	3	4	7
5 to 9.....	9	9	18	45 to 49.....		3	3
10 to 14.....	4	5	9	50 to 54.....	1	2	3
15 to 19.....	15	14	29	55 to 59.....	1	1	2
20 to 24.....	16	16	32	60 to 64.....			
25 to 29.....	8	11	19	65 to 69.....	1		1
30 to 34.....	8	6	14				
35 to 39.....	6	1	7	Total.....	72	72	144

The disease appeared to be distributed generally throughout the population in the affected section without any strikingly disproportionate number of cases in either one of the sexes or in any particular age groups. The age distribution was not suggestive of a milk outbreak.

POSSIBLE SOURCES OF THE INFECTION RESPONSIBLE FOR THE OUTBREAK.

The season of occurrence of the outbreak suggested the possibility of flies, personal contact, milk, ice cream, green vegetables, fruits, and other foods having been important factors in the spread of the infection. The epidemiological evidence collected strongly suggested that some of these were operative to some extent, but pointed beyond reasonable doubt to the conclusion that some factor other than these had been predominant in the distribution of the infection.

Flies were no more abundant and their chances to spread infection from human excreta to foods appeared to be no greater in the section especially affected than in other sections of the city. Eight per cent of the cases investigated were reasonably attributable to infection through contact with previous cases, but the hypothesis that personal contact was the predominant factor would not be reconcilable with the geographical distribution of the disease.

There was no disproportionately large number of cases among the customers of any of the dairymen, the number of cases along the different milk routes in the affected section being roughly proportionate to the amount of milk distributed. The larger milk dealers among whose customers any considerable number of cases occurred distributed milk also in sections of the city in which the disease was not unusually prevalent. By similar tokens ice cream, vegetables, fruits, and baking products were eliminated as predominant factors. It was suggested by some of the citizens that many of the cases had been caused by infection contracted at camp-meeting grounds and summer resorts outside but near the city, but the investigation de-

terminated that about 50 per cent of the cases were in persons who during the 30 days immediately before onset of illness had not been to such places nor elsewhere outside the city limits.

WATER.

The epidemiological data pointed definitely to the city water supply as the principal source of the infection responsible for the outbreak.

There are some private wells in use, but the vast bulk of the water used in the city is obtained from the public supply. The sources of water used for drinking during the 30 days prior to illness by the persons affected are given in the following table:

Source of drinking water of patients during 30 days prior to illness.

Water used for drinking.	Number of cases developing in—			
	July.	August.	Septem-ber.	October.
Raw city:				
Solely.....	8	70	19	2
Principally.....	5	19	4	4
Occasionally.....	3	3	4	1
Total.....	16	92	27	7
Boiled city:				
Solely.....				
Principally.....		1		1
Occasionally.....				
Total.....		1		1
Private wells:				
Solely.....				
Principally.....	3	3	4	1
Occasionally.....		8	3	1
Total.....	3	11	7	1
Out of town:				
Solely.....				
Principally.....				
Occasionally.....	6	12	3	3
Total.....	6	12	3	3
Total cases investigated.....	16	93	27	7

The public water supply was obtained from three artesian wells, known as the A Street well, the F Street well, and the Rice well. These wells furnished about 3,274,000 gallons of water per day. The largest source of supply was the A Street well, which furnished about 100,000 gallons per hour. The F Street well furnished about 33,000 gallons per hour, and the Rice well about 30,000 gallons per hour.

During the spring and summer of 1911 the pump at the Rice well was run on an average of about 20 hours per day, that at the F Street well about 6 or 8 hours per day, and that at the A Street well 24 hours per day. When the F Street and the Rice well pumps were not running, the mains in the sections receiving water from these two wells would be supplied entirely with water from the A Street well. Thus the water from the A Street well was distributed over the entire city, but the distribution of water from the Rice well was largely confined

to the section of the city north of J Street and east of Fourteenth Street, and the distribution from the F Street well was largely confined to the section north of J Street and west of Fourteenth Street. The distribution of the typhoid outbreak corresponded very strikingly with the distribution of water from the Rice well. This fact, along with the evidence obtained by the epidemiological investigation of cases, pointed strongly to the Rice well as the source of infection.

Bacteriological examinations were made of samples of water from each of the three wells and from taps and fire hydrants in different parts of the city. The results of the examinations are presented in the following table:

Results of examinations of city water.

Source.	Date of examination.	Number of bacteria per c. c., as determined by colonies on agar plates after 48 hours' incubation at 37° C.	Gas in lactose bouillon from—		B. coli in—	
			1 c. c.	10 c. c.	1 c. c.	10 c. c.
Rice well:						
Sample No.—						
1.....	Nov. 6	1	—	—	—	—
2.....	Nov. 7	1	—	—	—	—
3.....	Nov. 8	33	—	—	—	—
4.....	Nov. 9	3	—	—	—	—
5.....	Nov. 10	0	—	—	—	—
6.....	Nov. 11	0	—	—	—	—
7.....	Nov. 13	1	—	—	—	—
Average.....		5				
Percentage positive.....			0	0	0	0
F Street well:						
Sample No.—						
1.....	Nov. 8	2	—	—	—	—
2.....	Nov. 9	0	—	—	—	—
3.....	Nov. 10	0	—	—	—	—
4.....	Nov. 11	1	—	—	—	—
Average.....		0.7				
Percentage positive.....			0	0	0	0
A Street well:						
Sample No.—						
1.....	Nov. 9	0	—	—	—	—
2.....	Nov. 10	5	—	+	—	+
3.....	Nov. 11	6	—	+	—	+
4.....	Nov. 13	4	—	—	—	—
5.....	Nov. 14	8	—	+	—	+
6.....	do.	3	—	—	—	—
Average.....		4				
Percentage positive.....			0	50	0	50
House tap at—						
2332 N Street ¹	Nov. 6	2	—	—	—	—
2332 N Street ²	do.	0	—	—	—	—
2400 N Street ¹	do.		—	—	—	—
2400 N Street ²	do.		—	—	—	—
2314 Randolph Street.....	do.		—	+	—	+
2540 Randolph Street.....	do.		—	+	—	+
744 South Twenty-eighth Street.....	do.		—	+	—	+
305 South Twenty-seventh Street.....	do.		+	—	+	—
338 South Twenty-seventh Street.....	do.		—	+	—	+
2138 G Street.....	do.		—	+	—	+
2725 Randolph Street.....	do.		+	+	+	—
Fourteenth and G Streets.....	Nov. 7	4	—	+	—	+
2228 Q Street.....	do.	2	—	—	—	—
1645 G Street.....	do.		—	+	—	+
2032 N Street.....	do.		—	+	—	+
307 South Fourteenth Street.....	do.		—	—	—	—
1802 N Street.....	do.		—	—	—	—
2232 O Street.....	do.		—	—	—	—
2541 N Street.....	do.		—	—	—	—
2636 Q Street.....	do.		—	+	—	+
2524 O Street.....	do.		—	—	—	—

¹ Sample taken after pump at Rice well had been stopped for several hours.

² Sample taken a few minutes after starting pump at Rice well.

Results of examinations of city water—Continued.

Source.	Date of examination.	Number of bacteria per c. c., as determined by colonies on agar plates after 48 hours incubation at 37° C.	Gas in lactose bouillon from—		B. coli in—	
			1 c. c.	10 c. c.	1 c. c.	10 c. c.
House tap at—Continued.						
2400 N Street.....	Nov. 7		—	—	—	—
2330 P Street.....	do.		—	—	—	—
Fourteenth and K Streets.....	do.		—	—	—	—
330 North Fourteenth Street.....	do.		—	+	—	+
2127 N Street.....	do.		—	—	—	—
1400 O Street.....	do.		—	—	—	—
2208 P Street.....	do.		—	—	—	—
2322 N Street.....	do.		—	—	—	—
1624 Vine Street.....	Nov. 8		—	—	—	—
2213 Vine Street.....	do.	520	—	+	—	—
1903 Vine Street.....	do.		+	+	+	+
512 North Twenty-sixth Street.....	do.		—	+	—	—
633 North Twenty-sixth Street.....	do.		—	—	—	—
2420 Vine Street.....	do.		+	+	+	+
333 North Twenty-fourth Street.....	do.		—	—	—	—
226 North Twenty-fourth Street.....	do.		—	—	—	—
816 H Street.....	Nov. 10		—	+	—	+
628 South Twelfth Street.....	do.		—	—	—	—
615 G Street.....	do.		—	—	—	—
1204 G Street.....	do.	1	—	—	—	—
1144 E Street.....	do.		—	+	—	+
2741 Randolph Street.....	Nov. 11	1	—	+	—	+
2703 Randolph Street.....	do.	3	—	—	—	—
2534 Randolph Street.....	do.	0	—	—	—	—
State University.....	Nov. 12		—	+	—	+
Do.....	do.		—	—	—	—
821 South Fourteenth Street.....	Nov. 13	2	—	+	—	+
1900 J Street.....	do.		—	—	—	—
1441 Rose Street.....	do.	2	—	—	—	—
1620 South Twenty-third Street.....	do.	2	—	—	—	—
930 South Fourteenth Street.....	do.	3	—	+	—	+
728 South Fourteenth Street.....	do.	1	—	+	—	+
148 South Twenty-seventh Street.....	do.		—	—	—	—
1444 A Street.....	do.	2	—	+	—	+
2540 Randolph Street.....	do.	4	—	—	—	—
2120 Sumner Street.....	do.	4	—	—	—	—
325 South Twenty-seventh Street.....	do.	2	—	—	—	—
1429 South Fourteenth Street.....	do.		—	—	—	—
1927 J Street.....	do.	1	—	—	—	—
State University.....	do.	2	—	—	—	—
1920 J Street.....	Nov. 14	1	—	+	—	+
1936 J Street.....	do.	2	—	—	—	—
State University.....	do.	1	—	—	—	—
Do.....	Nov. 15	4	—	+	—	—
Average.....		21				
Percentage, positive.....			6	40	6	35
Fire hydrant at—						
Ninth and H Streets.....	Nov. 9		—	—	—	—
Twenty-fourth and J Streets.....	do.		—	—	—	—
Thirtieth and Potter Streets.....	do.		+	+	+	+
Eleventh and K Streets.....	do.		+	—	+	—
Eleventh and A Streets.....	do.		—	+	—	+
Thirtieth and Oak Streets.....	do.		+	+	+	+
Twenty-fifth and L Streets.....	do.		—	+	—	+
Twenty-second and W Streets.....	do.		+	+	+	+
Sevanteenth and C Streets.....	do.		—	+	—	+
Twenty-second and Q Streets.....	do.		—	—	—	—
Twenty-second and T Streets.....	do.		+	+	+	+
Twenty-third and F Streets.....	do.		+	+	+	+
Twenty-second and Dudley Streets.....	do.		+	+	+	+
Positive, percentage.....			46	69	46	75

The examinations of the water from the Rice well and the F Street well gave no evidence whatever of contamination of these two sources. The examinations of the water from the A Street well and from the taps and hydrants, however, gave evidence of contamination. The

colon bacillus content of the water from the A Street well and the taps when considered along with the low total bacterial content strongly suggested pollution with sewage.

The fact that gas-forming organisms were more abundant in the samples of water collected from the fire hydrants than in those from the taps probably was due largely to the leaky condition of the fire hydrants distal to the valves, permitting dirt to enter the hydrants and to be washed through when the water was turned on.

Extreme care was exercised in collecting the samples to preclude the likelihood of accidental contamination. The mouths of the taps and hydrants were flamed with an alcohol lamp and the water was permitted to run for 5 to 10 minutes before the samples were taken.

The results of the examinations of the water from the Rice and the F Street wells were in accord with those obtained by Dr. Waite in his examinations of five samples of water from the Rice well and three from the F Street well during the month immediately preceding the beginning of the investigations by the writer.

Contamination of the A Street well could not have been responsible for the typhoid outbreak, as was shown by the lack of relation between the distribution of the water from that well and the distribution of the disease.

Water of the character which was shown consistently during the period of the investigation by that of the Rice well could not be reasonably implicated as an important source of typhoid infection. Therefore it appeared certain that if contamination of the Rice well had been responsible for the typhoid outbreak such contamination had ceased to occur before the beginning of the investigation.

Consideration was given to the possibility of the outbreak having been caused by contamination of the water in the city mains after the water had left the wells. In a number of places water mains and sewers were close together. In one or two places where the water main and sewer lay close together slight leaks in both water main and sewer had been found. Some of the citizens stated that at times during the month prior to the outbreak there had been practically no pressure in the taps in the basements of houses in the affected section, but both the city engineer and city water commissioner stated that in their opinion the pressure in the mains in no section of the city had been so low that there would have been a likelihood of seepage into the mains through leaks in the pipes.

A water main was found to pass through a sewer well at Nineteenth and J Streets. Sewage flowed over this water main. There was a slight leak in the joint of the main which was fixed in the cement on the edge of the semicylindrical sewer. When the sewage rose in the well, as it was liable to do in times of heavy rains, there was certainly a chance for sewage to enter the water main at this point, provided the pressure within the main was not greater than that outside the main.

Samples of water for bacteriological examination were taken from many different taps with a view particularly to determining at what points, if any, there was pollution of the water as it coursed through the mains, but with negative results. All evidence of contamination found in the water taken from the taps could be attributed, for the most part certainly, to the contamination of the water of the A Street well. Therefore it appeared that if contamination of the water as it

coursed through the mains had been responsible for the typhoid outbreak such contamination had ceased to occur.

According to all information obtained from the city officials there had been done since the period of causation of the outbreak no work on the wells, water mains, or sewers which could have been reasonably expected to have changed the situation.

All three of the wells which were in use are of the same general type. The Rice well has been in use for over 20 years. It is about 60 feet in depth and about 24 feet in diameter. Sunk from the bottom of the well are several iron pipes which bring the artesian water from the water bearing stratum about 100 feet below the bottom of the well proper and about 160 feet below the surface of the ground immediately around the well. The wall of the well is made of brick and concrete. The wall was found to be cracked in places and the staining of the wall about some of these cracks gave evidence that at times there had been seepage of surface or "ground" water into the well. There were observed a number of old pipes passing through the wall within a distance of 15 or 20 feet below the ground surface, which had been used as drains, blow-offs, etc., when the old steam pump, some of the machinery of which is still in the well, was in operation.

The writer was informed by the city water commissioner that all of these old pipes had been securely stopped up when, some years before, the pumping machinery located in a pit about 50 feet southeast of the well had been installed, and that there was no chance for anything to enter the well through any of these old pipes. On the frequent inspections of the well by the writer these pipes were closely scrutinized, but at no time was any one of them found to be discharging into the well. Furthermore, had there been at that time any considerable drainage into the well through either the old pipes or cracks in the wall it would have been evidenced in the results of the bacteriological examination of the water. A sewer passed within about 37 feet of the well and there were a number of grossly insanitary surface privies within a few hundred feet of the well, so that pollution of the ground water in the immediate vicinity of the well was certain.

The bulk of evidence pointed to the Rice well as the source of infection which had caused the typhoid outbreak, but the findings in the investigation did not justify a dogmatic conclusion that the Rice well had been the source of the infection. It was conceivable that during the period of causation of the outbreak the soil about the well lacked its usual filtering, or some other qualities, to prevent contaminating matter in the surroundings of the well from entering the well. The relation of the period of causation of the outbreak to rainfall was noted. Judging by the dates of onset of cases the period of causation of the outbreak proper began about August 1 and terminated about August 20. May, June, and July were unusually dry months. Toward the end of the long dry spell, it was said, the ground in the vicinity was generally fissured, some of the fissures being observed to extend to a depth of 4 or 5 feet below the surface. On August 2, 3, and 4 light rains occurred, but they were said not to have been sufficient to have had much apparent effect in changing the very dry condition of the soil. On August 17 there was quite a heavy rain, the first for several months, the fall amounting to 2.31 inches. Through the remainder of August and through September the rainfall was somewhat in excess of the normal. Thus the time of the first heavy

rain after the long drought about corresponded with the end of the period of causation of the typhoid outbreak.

At the A Street well the water as it came up into the well proper through the pipes from the deep water-bearing stratum was found to be free from contamination, but some of the samples of water as it was pumped from the well and reservoir showed the presence of colon bacilli. It appeared, therefore, that the contamination of the water of the A Street well was taking place in the well and not in the deep water-bearing stratum. A small stream of water was found trickling through a crack in the wall of the well about 20 feet below the ground level. Examination of the water trickling through the leak showed it to be highly polluted, colon bacilli being found in 0.1 cubic centimeter. Furthermore, there was some chance for contamination of the A Street well water to occur from dust and surface drainage finding their way through the poorly fitting covers to the manholes leading to the underground reservoirs into which the water from the A Street well was pumped before being distributed.

At the F Street well whatever "ground" water found its way through the wall of the well was excluded from the water obtained from the deep stratum by an inner cement basin which had been constructed so as to have a space of about 3 feet between the outer surface of the basin and the wall of the well.

CONCLUSIONS AND RECOMMENDATIONS.

Upon terminating the investigation on November 17, a verbal report was made to the city council. The meeting of the council for the purpose of receiving the report was public and was attended by a number of interested citizens. The findings of the investigation were discussed and the following conclusions and recommendations submitted:

CONCLUSIONS.

1. That a distinct outbreak of typhoid fever had occurred during August, 1911, in that section of the city bounded on the south by J Street and on the west by Fourteenth Street.
2. That insanitary conditions in respect to faulty privies and water closets, personal contact, flies and foods, probably had operated to some extent in the spread of the infection, but that the chief source of the infection immediately responsible for the outbreak was the public water supply.
3. That the infection responsible for the outbreak reached the water supply either at the Rice well or at some place or places in the water mains distributing water especially to the section north of J Street and east of Fourteenth Street.
4. That it was highly advisable to engage the services of an expert sanitary engineer with a view to having determined as exactly as possible all dangerous relations of sewers to water mains and wells.
5. That the water of the Rice well and the F Street well during the period of investigation was free from contamination, but that this finding did not prove that the Rice well had not been dangerously polluted during the period of causation of the outbreak and offered no assurance whatever that this well might not become dangerously contaminated at any time in the future.

6. That the water of the A Street well was found during the investigation to show evidence of pollution of such character as to suggest sewage as its source and that the water from that well should be regarded as potentially dangerous.

7. That all three of the public wells were of a grossly faulty type from a sanitary standpoint and should be reconstructed as soon as practicable, so as to have tubular water-tight casings extend from the deep-water bearing stratum to the surface.

RECOMMENDATIONS.

1. Have bacteriological examinations of the water from each of the three wells and physical examinations of the wells continued practically daily until corrections of faulty conditions in and about the wells have been made, so that if any pronounced pollution should occur it could be discovered promptly and precautions taken accordingly.

2. Engage an expert sanitary engineer to make a complete survey of the water and sewage systems.

3. Have cement basins constructed in Rice and A Street wells to receive the water coming up through the pipes from the deep water-bearing stratum and to exclude absolutely from the water supply all water which might find its way through the walls of the wells.

4. Have doors over manholes leading to the reservoir at the A Street well made tight so as to prevent contamination of the water by dust and surface washings.

5. Have all insanitary conditions, particularly in respect to faulty privies, in the vicinity of the wells corrected.

6. Have done away with, as soon as practicable, the obviously needless superstructures over and around the wells and have any additional wells in contemplation constructed in accordance with well-recognized modern sanitary principles for artesian wells.

None of these recommendations was carried out.

A SECOND OUTBREAK OF TYPHOID FEVER WHICH OCCURRED DURING THE WINTER OF 1911-12.

In December an extensive outbreak of enteritis ("winter cholera") occurred. The outbreak was largely confined to the section of the city north of J Street and east of Fourteenth Street. Several thousand cases are said to have developed. Suspicion fell on the Rice well, and on inspection Dr. Waite found a stream of water running into the well through an old pipe which passed through the wall about 15 feet below the road level. Dr. Waite found, on examining the water which entered through the pipe, a bacterial content much resembling that of diluted sewage.

Following the outbreak of "winter cholera" there was in the same section of the city an outbreak of typhoid fever.

Cases of typhoid were reported by months as follows:

	Cases.
December, 1911.....	4
January, 1912.....	272
February, 1912.....	28

The Rice well was closed on December 20. Treatment of the A Street well water with hypochlorite of lime was begun on January 17.

On excavating around the Rice well a near-by sewer was found to be in leaky condition, and the evidence is said to have been strong that the entrance into the Rice well of sewage from this sewer was responsible for the winter outbreak.¹

In view of these developments it seems highly probable that the summer outbreak resulted from a combination of circumstances somewhat similar to those responsible for the winter outbreak.

¹ Westerfield, William: Municipal Journal and Engineer, Feb. 22, 1912, Vol. XXXII, No. 8, p. 280.

UNITED STATES.

MUNICIPAL ORDINANCES, RULES, AND REGULATIONS PERTAINING TO PUBLIC HYGIENE.

[Adopted since July 1, 1911.]

EAST PROVIDENCE (TOWN), R. I.

GARBAGE AND REFUSE—CARE AND DISPOSAL.

SEC. 10. Every tenement house, dwelling house, or other building where swill and garbage shall accumulate shall be provided with a suitable receptacle for such swill or garbage, and no ashes or other rubbish of any kind shall be placed in any such receptacle, nor shall any swill, garbage, or offal be placed in any receptacle for ashes or rubbish or deposited in any yard or vault or any other place than its proper receptacle.

SEC. 11. No owner, lessee, or occupant of any building or premises within the town shall deposit or allow to be deposited, or allow to remain upon or in said building or premises, any dirt, offal, decaying animal or vegetable matter, or solid or liquid filth of any kind, which, in the opinion of the town council, is any way offensive or a nuisance.

[From chap. 4 of an ordinance adopted Aug. 2, 1911.]

SEC. 1. The occupant of every tenement house, dwelling house or other building where swill or garbage shall accumulate shall provide a suitable receptacle, properly covered, for such swill or garbage, and no dishwasher, ashes, house sweepings, bottles, crockery, earthen, glass, tin, or iron ware, or other rubbish of any kind shall be placed in any such receptacle, nor shall any swill, garbage, or offal be placed in any receptacle for ashes or rubbish or deposited in any yard or vault or in any other place than its proper receptacle.

SEC. 2. All swill and house offal shall be removed from each house within the parts of the town covered by any contract or contracts that may be made with such town by any person or persons for such removal at least three times each week during the months of May, June, July, August, September, and October, and twice each week during the months of November, December, January, February, March, and April of each and every year, and as much oftener as may be necessary to prevent nuisance and decomposition of such swill and house offal.

SEC. 3. All swill and house offal shall be removed from the town in water-tight closely covered vehicles, drawn by one or more horses or mules, or in water-tight tubs or casks with covers securely fastened, so as to make the tubs or casks air tight, and all such vehicles, tubs, or casks so used shall be kept clean and well painted on the outside. No vehicle, tub, or cask shall be used, or continued in use, for the removal of swill and house offal from the town unless first examined and approved by the health officer; and the covers of all vehicles, tubs, and casks containing swill or house offal shall be kept tightly closed when they are driven through the streets of the town.

SEC. 4. All vehicles used to remove swill and house offal, or to transport tubs or casks containing swill and house offal, shall be duly licensed and numbered, and all such vehicles, tubs, and casks shall have upon them such other marks as may be required by the health officer.

SEC. 5. Whenever any person shall be designated and appointed to remove swill and house offal from the town, the designation and appointment shall state definitely the houses, buildings, or districts from which such person so designated is to remove the swill and house offal, and he shall not remove the swill and house offal from any other house, building, or district than that from which he is designated and appointed to remove it.

SEC. 6. All designations and appointments of persons to remove swill and house offal shall be for the current municipal year, and may be revoked at any time by the town council.

SEC. 7. No person, unless appointed and designated so to do by the town council, shall remove, carry, or transport any swill or house offal from any house, market, building, or premises within the town over, upon, or through any street or highway in said town; nor shall any person, unless licensed so to do by the town council; carry or transport any swill or house offal, removed from any building or premises without the town, over, upon, or through any street or highway in said town.

SEC. 8. Every application for a license to remove, carry, or transport any swill or house offal over, upon, or through any street or highway in said town shall state whether said swill or house offal is to be removed to some place without or within the limits of the said town, and, if within the limits of the said town, shall designate the particular place to which such swill or house offal is to be removed.

SEC. 9. For every license to remove, carry, or transport swill or house offal over, upon, or through any street or highway in said town, the licensee shall pay such sums as may be fixed and determined from time to time by the town council.

SEC. 10. Every person violating any of the provisions of this ordinance shall be fined not less than \$2 nor more than \$20 for each day's continuance of such violation.

[Chap. 30 of an ordinance adopted Aug. 2, 1911.]

MARQUETTE, MICH.

GARBAGE AND REFUSE—COLLECTION AND DISPOSAL.

SEC. 1. As used in this ordinance the words and phrases shall be construed as follows: (1) "Garbage" shall include every refuse of animal, fruit, or vegetable matter that attends the preparation, use, cooking, dealing in, transporting, or storing of meat, fish, fowl, fruit, or vegetables, and dead animals under 6 pounds each in weight not killed for food; (2) "carcass" shall include any dead animal over 6 pounds in weight, not slaughtered for food, in which the process of decay has commenced or is about to commence; (3) "rubbish" shall include all refuse of housekeeping, other than garbage, ashes, cinders, old or refuse cans, bottles, jugs, crocks, crockery, metals, utensils, shoes, hats, rags, and paper, and other like refuse articles and materials; leaves, grass, weeds, sawdust, shavings, chips, and other like articles and substances; and earth, sand, gravel, stone, mortar, and other like substances; (4) "garbage tank" shall mean a water-tight can, jar, cask, box, or other vessel used for the reception of garbage, with a tightly fitting cover thereon; (5) "garbage wagon" shall mean a vehicle for the transportation of garbage, night soil, or other putrid substances, the tank or receptacle of which shall be water tight and entirely closed with tightly fitting covers to all openings therein; (6) "city scavenger" shall mean such person, firm, or corporation as shall be duly licensed and authorized in pursuance of this ordinance to collect, receive, and transport garbage and carcasses in this city; (7) "garbage collector" shall mean a city scavenger or the authorized agent or employee of a city scavenger, or of the board of health, while engaged in the work of gathering and disposing of garbage and other refuse substances; (8) "city garbage dump" shall mean any grounds provided by the city for the dumping or other disposition of garbage, carcasses, and other putrid or offensive substances; (9) "public rubbish dump" shall mean any grounds or waters provided by the city for the dumping or other disposition of rubbish, or any private premises the owner of which, or his agent, has authorized to be used by the public, or by the city scavenger, for the dumping or disposition of rubbish thereon.

SEC. 2. The health officer, subject to the approval of the committee on public health of the common council, is hereby authorized and empowered in behalf of the city, from time to time, to enter into a contract in writing, upon such terms and conditions as may be agreed upon, for a period of not exceeding three years, with any suitable person, firm, or corporation, to become city scavenger, for the purpose of furnishing all necessary labor, teams, garbage wagons, and other vehicles, garbage tanks, tools, implements, and other things necessary for the collection, removal, and disposition of garbage, carcasses, and other refuse matter, in the manner required by such contract and by the ordinances of the city and the rules, regulations, and requirements of the board of health and of the health officer applicable thereto as may be from time to time adopted or prescribed.

SEC. 3. The health officer shall have power, by written order filed with the recorder, to establish in the city convenient garbage-collection districts, and may change the same from time to time in like manner. The health officer, by like order, shall have power to make such rules, regulations, and requirements to be observed in the performance of the duties of the city scavenger as he may from time to time deem best for the interests of the city, not in conflict with the ordinances of the city or any rules, regulations, and requirements made by the board of health; and all such rules, regu-

lations, and requirements made by the board of health, or the health officer, shall be observed and complied with by the city scavenger and by every person employed by him in the performance of his contract.

SEC. 4. Before being licensed as city scavenger the contractor shall file with the recorder a bond to the city of Marquette, or its assigns, for the use and benefit of whomsoever may be concerned, in such penal sum as the contract shall require, not less than \$2,000, with at least two such sureties thereon as possess the property qualifications required of sureties upon bonds of retail liquor dealers under the laws of this State, who shall qualify concerning such qualifications in the same manner required by law of such sureties, or with an authorized surety company as such surety, which bond shall be subject to the approval of the controller and city attorney, and shall be conditioned that such contractor, as city scavenger, shall faithfully carry out and perform all the terms and conditions of such contract and comply with all the ordinances of the city and the rules and regulations of the board of health and the health officer applicable thereto, and pay for all labor, materials, teams, vehicles, and other property procured for the performance of such contract, or any renewal thereof.

SEC. 5. No license shall be issued to any person, firm, or corporation as city scavenger until a duplicate original of the contract in relation thereto, provided for in this ordinance, shall have been filed with the recorder; whereupon and upon the payment to the city treasurer of a license fee of \$1 the recorder shall issue to the contractor a license as city scavenger, which license shall authorize said city scavenger to collect, receive, transport, and dispose of garbage, carcasses, rubbish, and other refuse materials in this city; which license, upon the payment of a like fee, shall be renewed by the issue of a new license from time to time as may be necessary during the term of the contract under which the same was issued; and no license shall be issued to any other person, firm, or corporation as city scavenger, or for the collection, transportation, or disposition of garbage, carcasses, or other putrid substances, during the life of any such contract: *Provided*, That the termination of any such contract by abandonment, lapse of time, or otherwise, shall operate to revoke any such license then in force.

SEC. 6. Each city scavenger shall have the exclusive right to and shall, except as herein otherwise provided, collect, transport, and dispose of all garbage and carcasses from all of the garbage districts of this city, for the period of his contract; and during the same period shall have the exclusive right to and shall collect, transport, and dispose of abandoned dead animals and carcasses found upon the streets or other public places of the city. He shall provide, at his own expense, all the necessary force of men, teams, garbage tanks, garbage wagons, vehicles, tools, implements, fuel, disinfectants, and other things necessary for the performance of his contract in a manner satisfactory to the health officer and the board of health.

SEC. 7. The city scavenger shall cause all garbage, dead animals, and putrid substances collected by him or his employees to be forthwith deposited upon a city garbage dump, at such place or places thereon as may be required by the health officer or ground keeper; or shall make such other disposition thereof as shall be permitted in writing by the health officer. He shall receive no compensation from the city for anything required by his contract except for the gathering, removal, and disposition of dead animals found in the streets or other public places of the city, for which he shall be paid the prices fixed in his contract, not exceeding the sums permitted by this ordinance. Keepers of city dump grounds shall be employed by and shall serve during the pleasure of the health officer and the committee on public health of the common council, and shall perform such duties as may be required by the health officer and said committee and shall receive such compensation from the city as the common council shall fix or allow.

SEC. 8. The city scavenger shall be permitted to, and shall upon request therefor, make contracts and arrangements with the inhabitants of the city, respectively, in the various garbage collection districts established therein, for the removal of garbage, carcasses, night soil, and other putrid refuse matter, from the premises of the owner or occupant of any premises in any such district, to a city garbage dump. Upon being paid or tendered the proper charges therefor, the city scavenger shall remove from any premises in any such garbage district all garbage, carcasses, night soil, or other putrid refuse matter and dead animals to a city garbage dump. Upon being paid or tendered such sums therefor as may be agreed upon by the parties, or as shall be fixed by the health officer, the city scavenger shall remove from any premises in the city outside of an established garbage district, all garbage, carcasses, night soil, or other putrid refuse matter and dead animals, and dispose of the same in such manner as may be permitted in writing by the health officer.

SEC. 9. All rates and charges to be paid to the city scavenger for the collection, removal, and disposition of garbage from any of the following places in any garbage district shall be payable on demand weekly in advance, and shall not exceed the fol-

lowing sums, except upon written approval of the health officer under exceptional circumstances warranting larger sums, viz:

Each household and boarding house—for weekly collections of 15 gallons or less, 12½ cents for each week, or 50 cents per month; for weekly collections of 15 to 30 gallons, 25 cents each week, or \$1 per month.

Each hotel or restaurant, and each store or place where fresh meat, fish, fruit, or vegetables are kept or sold, and each other place where garbage is produced—for semi-weekly collections, 25 cents for each collection of not exceeding 30 gallons.

SEC. 10. All rates and charges to be paid to the city scavenger for the collection, removal, and disposition of dead animals, carcasses, and other putrid or offensive refuse materials and substances, except when done at the expense of the city, shall be payable in advance; and such charges shall not, except upon written approval of the health officer, under circumstances warranting larger sums, exceed the following sums, viz:

Dogs, 50 cents to 75 cents, according to size; horses or cows, \$2.50 each; all other dead animals and carcasses, from 50 cents to \$2.50 each, according to size.

Night soil and other putrid or offensive refuse, such reasonable sums as the health officer may fix or approve.

SEC. 11. The city scavenger shall, upon the request of any occupant or person in control of any premises within any garbage district of the city, and upon payment or tender of the proper charge therefor, remove from such premises, as soon as practicable, all such rubbish as shall be conveniently piled or contained in boxes, barrels, or other suitable receptacles convenient of access for loading on vehicles; and all such rubbish shall be deposited upon some rubbish dump, in such place and manner thereon as may be required by the health officer; and the city scavenger shall be entitled to charge and collect in advance for such services for each cubic yard of rubbish the sum of 50 cents, and for rubbish to be removed from any basement, cellar, or other equally inaccessible place, 75 cents per cubic yard.

SEC. 12. The health officer shall investigate all complaints made to him in writing by any person concerning the performance of his duties by the city scavenger and concerning the duties of all other persons under this ordinance or under any of the rules and regulations made in pursuance thereof; and shall, when deemed necessary by him, make complaints for violations of this ordinance or of such rules and regulations. In case of dispute as to his duties or charges for services between the city scavenger and any person requiring his services, such controversy may be referred by either party thereto to the health officer for settlement; and his determination shall be binding upon all parties who have submitted to or participated in any such controversy before him.

SEC. 13. In case any contractor as city scavenger shall in any respect fail to perform to the satisfaction of the health officer any of the terms of his contract as city scavenger, or shall neglect to put and keep on the work a sufficient force of men, teams, vehicles, and other things necessary to the proper performance of the work, then the health officer shall be empowered, at the expense of the contractor, to supply any such deficiencies in the equipment and force of the contractor and to perform, so far as may be necessary, the duties of such contractor; in which event such contractor shall forfeit and pay to the city, in addition to the actual cost and expense of supplying such deficiencies and performing such duties, an amount equal to one-half such cost and expense, the same to be determined by arbitration in case of disagreement as to the amount thereof.

SEC. 14. The city shall have the right to terminate the contract of any city scavenger and to purchase from the contractor all his outfit and equipment of personal property necessarily used by him in carrying out such contract, at a price to be fixed by arbitration, and to deduct from such purchase price the amount of any claims or liens against any of such property and any claims of the city against the contractor. In case of any arbitration under such contract, three disinterested freeholders of the city shall be selected as arbitrators, one by the health officer, one by the contractor, and one by the two so chosen; and the award in writing of any two of them shall be binding on the parties.

SEC. 15. Upon the expiration of the contract of any city scavenger, the city, at its option, shall either buy from the contractor his entire outfit and equipment of personal property necessarily used by him in the carrying out of such contract at a valuation to be placed thereon and fixed by arbitration, or, if cause does not exist warranting the refusal so to do, shall extend such contract for a period of not less than one year, with such reasonable conditions and requirements as to such extended period as the health officer or the board of health may prescribe.

SEC. 16. No person shall place, have, or keep on any premises in this city any carcass; nor shall any person place, have, or keep on any premises in any garbage-collection district of this city any garbage, unless the same be thoroughly drained of

all fluid substances and placed and kept in a tightly covered garbage tank; nor shall any person keep any garbage in any garbage tank in the city for a period longer than eight days: *Provided*, That this section shall not apply to any city garbage dump.

SEC. 17. It is hereby made the duty of the occupant or occupants of every dwelling house, store, hotel, or other building or place in this city within any garbage-collection district where garbage is produced, to provide and keep on the premises a suitable garbage tank, of such size and weight as to be conveniently handled by a garbage collector, and to keep the same in the rear or in the basement, area, or passageway of the house or building on such premises and in a place readily accessible for collection by a garbage collector.

SEC. 18. No person shall place or cause or permit to be placed or kept any garbage tank on any sidewalk, street, alley, or public place in this city; nor on any private premises in this city in proximity to any public street, alley, or place; nor unnecessarily near any building on adjoining premises occupied by any person.

SEC. 19. No person shall remove the cover from any garbage tank containing any garbage, except when necessary and only so long as necessary to place garbage in such tank or to empty or cleanse the same, and shall immediately replace such cover; nor shall any person, other than a garbage collector in the performance of his duties, in any manner interfere with any garbage tank or with the contents thereof, except for the purpose of placing garbage therein or of cleansing the same.

SEC. 20. No person who is not a garbage collector shall, in any garbage-collection district of this city, collect, gather, or receive for transportation any garbage or carcass, or carry or transport or have in his possession in any public street, alley, or public place in any such district any garbage or carcass: *Provided*, That this section shall not apply to persons transporting garbage under permission granted in pursuance of section 21 of this ordinance.

SEC. 21. Every occupant of any premises in this city whereon any garbage tank is kept shall permit any garbage collector at any time, for the purpose of disposing of the garbage therein, to remove from such premises each such tank, or the contents thereof as such collector may prefer; and all such tanks shall be promptly and within one hour returned to such premises, unless other suitable garbage tank or tanks are left in lieu thereof; but in all cases the garbage tanks belonging to any premises or the occupants thereof shall be returned to such premises within four hours after any such removal thereof: *Provided*, That this section shall not apply to any person who at least daily destroys by cremation all garbage produced upon the premises occupied by such person, or disposes of all such garbage in such manner as may be permitted by the common council, or by the written permission of the health officer filed with the recorder of the city; and any such permission may be revoked by the common council; but such garbage shall not be permitted to be or be by any person buried in the earth or fed to swine on any premises in the business or residence portions of the city, or in any garbage collection district of the city; or be permitted to be or be by any person transported upon any of the streets or alleys of the city, except in garbage tanks tightly covered and cleansed so as not to give off or emit any offensive odor.

SEC. 22. All garbage, carcasses, and other putrid substances while being removed or transported in this city shall be so covered, inclosed, and protected as not to give off any offensive odors. All garbage tanks, garbage wagons, and other vehicles in which putrid substances are transported in this city shall be kept thoroughly cleaned and disinfected. No person shall allow or permit any garbage or other putrid or offensive substance or fluid to spill, drop, or leak from any garbage tank, garbage wagon, or other vehicle upon any private premises or upon any street or alley in this city. All vehicles used by the city scavenger for the transportation of garbage shall have attached thereto, upon each side thereof, a sign with the words "garbage wagon" conspicuously painted thereon, together with the number of the wagon, in letters not less than 4 inches in height. No person other than the city scavenger or person in his employ shall drive or use any vehicle in this city with the words "garbage wagon" displayed thereon.

SEC. 23. Any person violating any of the provisions of this ordinance shall, upon conviction thereof, be punished by a fine of not less than \$5 nor more than \$100, or by imprisonment in the city lockup or jail of the county of Marquette for a term not to exceed 90 days, or by both such fine and imprisonment, in the discretion of the court before whom a conviction may be had.

[Ordinance adopted July 17, 1911, and amended Oct. 2, 1911.]

PLAGUE-PREVENTION WORK.

PLAGUE-INFECTED SQUIRRELS FOUND.

During the week ended April 13, 1912, plague infection was found in seven ground squirrels collected in Alameda County, Cal.

DISTRIBUTION OF POISON.

In connection with the making and maintenance of a squirrel-free zone around the cities of California on San Francisco Bay, 4,490 acres of land in Alameda County were covered with poison during the week ended April 13, 1912.

RECORD OF PLAGUE INFECTION.

Places.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number of rodents found infected since May, 1907.
California:				
Cities—				
San Francisco.....	Jan. 30, 1908.....	Oct. 23, 1908.....	None.....	398 rats.
Oakland.....	Aug. 9, 1911.....	Dec. 1, 1908.....	do.....	126 rats.
Berkeley.....	Aug. 27, 1907.....	None.....	do.....	None.
Los Angeles.....	Aug. 11, 1908.....	do.....	Aug. 21, 1908.....	1 squirrel.
Counties—				
Alameda (exclusive of Oakland and Berkeley).	Sept. 26, 1909.....	Wood rat, Oct. 17, 1909.	Apr. 5, 1912.....	121 squirrels and 1 wood rat.
Contra Costa.....	July 21, 1911.....	None.....	Sept. 23, 1911.....	364 squirrels.
Fresno.....	None.....	do.....	Oct. 27, 1911.....	1 squirrel.
Merced.....	do.....	do.....	July 13, 1911.....	5 squirrels.
Monterey.....	do.....	do.....	Aug. 6, 1911.....	Do.
San Benito.....	June 5, 1910.....	do.....	June 8, 1911.....	22 squirrels.
San Joaquin.....	Sept. 18, 1911.....	do.....	Aug. 26, 1911.....	18 squirrels.
San Luis Obispo.....	None.....	do.....	Jan. 29, 1910.....	1 squirrel.
Santa Clara.....	Aug. 23, 1910.....	do.....	Oct. 5, 1910.....	23 squirrels.
Santa Cruz.....	None.....	do.....	May 17, 1910.....	3 squirrels.
Stanislaus.....	do.....	do.....	June 2, 1911.....	13 squirrels.
Washington:				
City—				
Seattle.....	Oct. 30, 1907.....	Sept. 21, 1911.....	None.....	25 rats.

RATS COLLECTED AND EXAMINED FOR PLAGUE INFECTION.

Places.	Week ended—	Total collected.	Found dead.	Examined.	Found infected.
California:					
Cities—					
Berkeley.....	Apr. 13, 1912	¹ 132	4	99	.....
Oakland.....	do.....	² 842	12	657	.....
San Francisco.....	do.....	³ 1,853	3	1,395	.....
Washington:					
City—					
Seattle.....	do.....	994	.....	957	.....

¹ Identified: *Mus norvegicus*, 103; *Mus musculus*, 29.

² Identified: *Mus norvegicus*, 668; *Mus rattus*, 1; *Mus musculus*, 173.

³ Identified: *Mus norvegicus*, 1,035; *Mus rattus*, 199; *Mus alexandrinus*, 240; *Mus musculus*, 379.

SQUIRRELS COLLECTED AND EXAMINED FOR PLAGUE INFECTION.

During the week ended April 13, 1912, 185 ground squirrels from Alameda County, Cal., were examined for plague infection. Seven were found plague-infected.

CEREBROSPINAL MENINGITIS.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES
FOR THE WEEK ENDED MAY 4, 1912.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Boston, Mass.	1		New Orleans, La.	2	1
Chicago, Ill.	1	2	Newport, Ky.	1	
Cincinnati, Ohio.	3	1	New York, N. Y.	7	4
Cleveland, Ohio.	1	1	Niagara Falls, N. Y.		1
Columbus, Ohio.	1	1	Oklahoma, Okla.		1
Dayton, Ohio.		2	Omaha, Nebr.	2	
El Paso, Tex.	3	1	Philadelphia, Pa.	1	
Galesburg, Ill.	1	1	Pittsburgh, Pa.	1	1
Haverhill, Mass.		4	St. Louis, Mo.	2	2
Kansas City, Kans.	8		San Francisco, Cal.		2
Kansas City, Mo.	6	7	South Omaha, Nebr.		1
Lexington, Ky.		1	Springfield, Ill.		2
Lowell, Mass.	1	2	Springfield, Mass.	1	1
Melrose, Mass.		1	Yonkers, N. Y.	1	1
Nashville, Tenn.	1				

ERYSIPELAS.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES
FOR THE WEEK ENDED MAY 4, 1912.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Baltimore, Md.		1	Philadelphia, Pa.	16	3
Cincinnati, Ohio.		1	Pittsburgh, Pa.	5	2
Cleveland, Ohio.	5		St. Louis, Mo.	19	1
Harrisburg, Pa.	1		San Francisco, Cal.	3	
Hartford, Conn.	1		Springfield, Ill.	1	
Jersey City, N. J.		1	Springfield, Mass.		1
Milwaukee, Wis.	4		West Hoboken, N. J.	1	
New York, N. Y.	45	8	Wilkes-Barre, Pa.	1	
Passaic, N. J.	2		Williamsport, Pa.	1	

PELLAGRA.

During the week ended May 4, 1912, one death from pellagra was reported at Chicago, Ill., and one death at Northampton, Mass.

PNEUMONIA.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES
FOR THE WEEK ENDED MAY 4, 1912.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Altoona, Pa.		2	Evansville, Ind.		2
Auburn, N. Y.	2	1	Fall River, Mass.		4
Baltimore, Md.		14	Fort Wayne, Ind.		1
Binghamton, N. Y.	1	1	Galesburg, Ill.	1	1
Boston, Mass.		32	Harrisburg, Pa.		1
Braddock, Pa.	2	1	Hartford, Conn.		1
Bridgeport, Conn.		2	Kalamazoo, Mich.		1
Cambridge, Mass.		3	Kansas City, Mo.	4	5
Chelsea, Mass.		2	Knoxville, Tenn.		1
Chicago, Ill.	30	103	Lancaster, Pa.	1	
Cincinnati, Ohio.		5	Lawrence, Mass.		4
Cleveland, Ohio.	36	8	Lexington, Ky.		1
Clinton, Mass.		2	Lowell, Mass.		4
Coffeyville, Kans.	1		Lynchburg, Va.		1
Cumberland, Md.		2	Lynn, Mass.		6
Danville, Ill.		1	Malden, Mass.		1
Dayton, Ohio.		3	Manchester, N. H.	3	3
El Paso, Tex.		5	Medford, Mass.		1

PNEUMONIA—Continued.

Cases and deaths reported by city health authorities for the week ended May 4, 1912.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Montgomery, Ala.		1	Saginaw, Mich.		2
Nashville, Tenn.		4	San Antonio, Tex.		4
Newark, N. J.		9	San Diego, Cal.	1	1
New Bedford, Mass.		6	San Francisco, Cal.	13	
New Castle, Pa.	1		Saratoga Springs, N. Y.	1	2
New Orleans, La.		2	Schenectady, N. Y.	6	3
Newton, Mass.		1	South Bethlehem, Pa.	1	
Newport, Ky.	1	1	South Omaha, Nebr.		3
New York, N. Y.		112	Spokane, Wash.		3
Oakland, Cal.		3	Springfield, Ill.		1
Oklahoma, Okla.		2	Springfield, Mass.		1
Omaha, Nebr.		4	Taunton, Mass.		2
Pasadena, Cal.		1	Toledo, Ohio.		6
Passaic, N. J.		3	Washington, D. C.		10
Philadelphia, Pa.	20	36	Wilkes-Barre, Pa.		2
Pittsburgh, Pa.	26	26	Wilkinsburg, Pa.		1
Pittsfield, Mass.		1	Williamsport, Pa.		1
Providence, R. I.		5	Wilmington, Del.		1
Roanoke, Va.		2	Wilmington, N. C.	6	
Rockford, Ill.		2	Yonkers, N. Y.		1

POLIOMYELITIS.

During the week ended May 4, 1912, one case of poliomyelitis was reported in Boston, Mass., and one case in New York, N. Y.

INDIANA.

During the month of March, 1912, 4 cases of poliomyelitis, with 1 death, were reported, occurring as follows: Adams County, 1 case; Hancock County, 1 case; Lawrence County, 1 case; Spencer County, 1 case, with 1 death.

RABIES.

INDIANA.

During the month of March, 1912, 8 cases of rabies, with 1 death, were reported in Indiana. The cases occurred in five counties. The death occurred in Marion County.

TETANUS.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED MAY 4, 1912.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Baltimore, Md.		1	New York, N. Y.	1	
Chicago, Ill.		1	Philadelphia, Pa.	1	
Nashville, Tenn.		1	Pittsburgh, Pa.	1	
Newark, N. J.		1	Schenectady, N. Y.	1	
New Orleans, La.		2	Wilmington, N. C.		2

SMALLPOX IN THE UNITED STATES.

In the following table the States indicated by an asterisk are those from which reports of smallpox are received only from certain city, and in some cases county, boards of health. In these States, therefore, the recorded cases and deaths should not be taken as showing the general prevalence of the disease. In the States not marked by an asterisk the reports are received monthly from the State boards of health and include all cases reported to the State authorities.

REPORTS RECEIVED DURING WEEK ENDED MAY 24, 1912.

Places.	Date.	Cases.	Deaths.	Remarks.
California:				
Counties—				
Alameda.....	Mar. 1-31.....	2		
Eldorado.....	do.....	1		
Fresno.....	do.....	8		
Kern.....	do.....	5		
Los Angeles.....	do.....	9		
Nevada.....	do.....	5		
Riverside.....	do.....	3		
Sacramento.....	do.....	2		
San Bernardino.....	do.....	13		
San Diego.....	do.....	1		
San Joaquin.....	do.....	3		
Santa Clara.....	do.....	5		
Santa Cruz.....	do.....	1		
Shasta.....	do.....	1		
Siskiyou.....	do.....	1		
Tulare.....	do.....	7		
Total for State.....		67		
Alameda.....	Apr. 1-30.....	1		
Butte.....	do.....	32		
Contra Costa.....	do.....	1		
Fresno.....	do.....	7		
Los Angeles.....	do.....	8		
Marin.....	do.....	2		
Orange.....	do.....	1		
Sacramento.....	do.....	6		
San Bernardino.....	do.....	5	1	
San Diego.....	do.....	8		
San Luis Obispo.....	do.....	1		
Tulare.....	do.....	4		
Total for State.....		76	1	
*Louisiana:				
New Orleans.....	May 5-11.....	6		
Maine:				
Counties—				
Androscoggin.....	Apr. 1-30.....	32	3	
Franklin.....	do.....	6		
Kennebec.....	do.....	3		
Penobscot.....	do.....	2		
Piscataquis.....	do.....	7		
Sagadahoc.....	do.....	4		
Somerset.....	do.....	15		
Total for State.....		69	3	
Michigan:				
Counties—				
Allegan.....	Apr. 1-30.....	2		
Barry.....	do.....	7		
Berien.....	do.....	3		
Cass.....	do.....	1		
Chippewa.....	do.....	1		
Hillsdale.....	do.....	3		
Jackson.....	do.....	1		
Kalamazoo.....	do.....	16		
Mackinac.....	do.....	1		
Montcalm.....	do.....	3		
St. Clair.....	do.....	4		
Wayne.....	do.....	4		
Total for State.....		46		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received during Week ended May 24, 1912.

Places.	Date.	Cases.	Deaths.	Remarks.
Nebraska:				
Lincoln.....	Apr. 1-30.....	4		
Oregon:				
Counties—				
Baker.....	Feb. 1-29.....	20	1	
Benton.....	do.....	10		
Clackamas.....	do.....	1		
Grant.....	do.....	1		
Jackson.....	do.....	2		
Lane.....	do.....	1		
Linn.....	do.....	2		
Malheur.....	do.....	1		
Marion.....	do.....	6		
Multnomah.....	do.....	34		
Umatilla.....	do.....	6		
Union.....	do.....	1		
Washington.....	do.....	1		
Total for State.....		86	1	
Baker.....	Mar. 1-31.....	8		
Benton.....	do.....	4		
Columbia.....	do.....	4		
Marion.....	do.....	9		
Multnomah.....	do.....	25		
Umatilla.....	do.....	3		
Union.....	do.....	5		
Washington.....	do.....	3		
Total for State.....		61		
Virginia:				
Counties—				
Appomatox.....	Apr. 1-30.....	2		
Chesterfield.....	do.....	2		
Dunwiddie.....	do.....	4		
Greene.....	do.....	1		
Henrico.....	do.....	3		
Lee.....	do.....	1		
Mecklenburg.....	do.....	13		
Norfolk.....	do.....	15		
Russell.....	do.....	4		
Scott.....	do.....	6		
Southampton.....	do.....	2		
Wise.....	do.....	41		
Total for State.....		94		
Grand total for the United States.....		509	5	

McCULLOCH COUNTY, TEX.

Dr. G. P. Gallan, health officer, McCulloch County, Tex., reports, regarding the 10 cases of smallpox with 4 deaths¹ which occurred in McCulloch County during the month of March, 1912, as follows:

None of the persons developing smallpox had ever been vaccinated. The four deaths occurred in a woman and three children, the latter being a 3-month old infant, a 3-year old child, and a 5-year old child. These four persons had come from Fort Worth, Tex. Of the six cases that recovered, one had confluent smallpox and the other five a discrete form of the disease.

UVALDE COUNTY, TEX.

Dr. B. M. Hines, health officer Uvalde County, Tex., reports, regarding the four cases of virulent smallpox² which occurred in Uvalde County during February, 1912, as follows:

¹ Public Health Reports, May 10, 1912, p. 712.

² Public Health Reports, May 3, 1912, p. 655.

The first case originated in a Mexican who went from Uvalde County to Ciudad Porfirio Diaz, Mexico, and there came in contact with cases of smallpox. On his return he developed a severe case of the confluent type of the disease. His wife, who had never been vaccinated, contracted smallpox from her husband, had the confluent type, and died on the seventh or eighth day. Her sister, who had had varioloid about 15 years before, sickened next and had a severe case, with less eruption, however, than her sister had had. The fourth case developed in a man who stated that he had had smallpox when a boy 14 or 15 years of age, since which time he had nursed many different smallpox cases and had apparently been immune. He developed the confluent type and was very ill. All other contacts were successfully vaccinated and no further cases developed.

MORBIDITY AND MORTALITY.

MORBIDITY AND MORTALITY TABLE, CITIES OF THE UNITED STATES, FOR WEEK ENDED MAY 4, 1912.

Cities.	Population, United States Census 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Small-pox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having over 500,000 inhabitants.</i>														
Baltimore, Md.	558,485	192	7	2	9	8	1			45	24	5	3	
Boston, Mass.	670,585	224	36	3	142	4	27	1	1	90	24	4		
Chicago, Ill.	2,185,283	639	109	20	243	2	113	12	9	3	149	79	10	2
Cleveland, Ohio.	560,663	148	27	3	81		31	4			25	15	3	
New York, N. Y.	4,766,883	1,542	297	28	1,702	25	409	20			480	188	29	2
Philadelphia, Pa.	1,549,008	467	58	8	37	2	79	2			100	63	12	1
Pittsburgh, Pa.	533,905	147	10	1	99		53	1			17	15	8	1
St. Louis, Mo.	687,029	200	22	3	59	1	29		2		38	16	2	1
<i>Cities having from 300,000 to 500,000 inhabitants.</i>														
Cincinnati, Ohio.	364,463	115	6		19		22	2			24	23		2
Detroit, Mich.	465,766	115	21				44	4	1					
Milwaukee, Wis.	373,857	122	10		123		27	2			16	7	8	2
New Orleans, La.	339,075	117	5	1	6		10	1	6		15	14	7	1
San Francisco, Cal.	416,912	134	5		30	1	4				25	5		
Washington, D. C.	331,069	112	5		101		6				22	16	4	
<i>Cities having from 200,000 to 300,000 inhabitants.</i>														
Jersey City, N. J.	267,779	79										12		1
Kansas City, Mo.	248,381	19	4		4		5				2	7	2	
Providence, R. I.	224,326	70	11		23	6	28				16	6		1
<i>Cities having from 100,000 to 200,000 inhabitants.</i>														
Bridgeport, Conn.	102,054	20	2	1	2		7				2	2		
Cambridge, Mass.	104,839	32	9		78	1	4				9	9		
Columbus, Ohio.	181,548	64	4		45		11				2	11	4	2
Dayton, Ohio.	116,577	1	1		43	1			1			5	1	
Fall River, Mass.	119,295	35	5	1	3		1				14	4	1	1
Lowell, Mass.	106,294	27			34	1	7				3	3		
Nashville, Tenn.	110,364	38					1				4	6	2	
Oakland, Cal.	150,174	49	2		10		2		1		10	10	1	
Omaha, Nebr.	124,096	44	4				4	1						
Spokane, Wash.	104,402	104	2		39		2		3			2		
Toledo, Ohio.	168,497	54	2	1	80		2		1			6	2	1
Worcester, Mass.	145,986	40	6		30		3				5	7	1	

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended May 4, 1912—Continued.

Cities.	Population, United States Census 1910.	Total deaths from all causes.		Diphtheria.		Measles.		Scarlet fever.		Small-pox.		Tuberculosis.		Typhoid fever.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having from 50,000 to 100,000 inhabitants.</i>															
Altoona, Pa.	52,127	20	3	1			1								
Bayonne, N. J.	55,545		3			8		5				2			
Brockton, Mass.	56,878	10	1			40	1					3			
Camden, N. J.	94,538		1			1		5				11		1	
Duluth, Minn.	78,466	13						14				2	2	1	1
Evansville, Ind.	69,647	13	1			2						14		1	
Fort Wayne, Ind.	63,933	10	1			11		1				1		1	
Harrisburg, Pa.	64,186	15	3			61						5	1		1
Hartford, Conn.	98,915	22	3			43		5	1			6	1		
Hoboken, N. J.	70,324		4			2		1				4			
Johnstown, Pa.	55,482	22	2			4		4							
Kansas City, Kans.	82,331					2		2		1		5			
Lawrence, Mass.	85,892	23	2	1		1		1				6	3		
Lynn, Mass.	89,336	27	4			5		5				3	2	1	
Manchester, N. H.	70,063	27				5									
New Bedford, Mass.	96,652	28	2	1		11		5				5			
Oklahoma City, Okla.	64,205	10				1						1	2		
Passaic, N. J.	54,773	18	1			49		2				3	2		
Saginaw, Mich.	50,510	14										1	1		1
San Antonio, Tex.	96,614	68						3				12			
Schenectady, N. Y.	72,826	12	1			55		4				1			
South Bend, Ind.	53,684	16				2		2		1		1	1		
Springfield, Ill.	51,678	18										1	1		1
Springfield, Mass.	88,926	27	1			5		2				2	2	1	
Trenton, N. J.	96,815	41	1			3	1	6				7	4	2	
Wilkes-Barre, Pa.	67,105	21	1			2		1				8	2		
Wilmington, Del.	87,411	19										3	3		
Yonkers, N. Y.	79,803	22	3			12		7				3	4		
<i>Cities having from 25,000 to 50,000 inhabitants.</i>															
Atlantic City, N. J.	46,150	12				1		1				1			
Auburn, N. Y.	34,668	9				1						2	1		
Aurora, Ill.	29,807	9	1					1				1	1		
Binghamton, N. Y.	48,443	17				1		1				1	1	3	1
Brookline, Mass.	27,792	5				21		3				1		1	
Chattanooga, Tenn.	44,604									1		2			
Chelsea, Mass.	32,452	14	1			40						4	1		
Chicopee, Mass.	25,401	3				5									
Danville, Ill.	27,871	4				1						1			
East Orange, N. J.	34,371	5	5			23		1				1		1	
Elmira, N. Y.	37,176	13	1			27						1	1		
El Paso, Tex.	39,279	35						6		1			6		
Everett, Mass.	33,484	12	2			24						3	2		
Fitchburg, Mass.	37,826	5											1		
Haverhill, Mass.	44,115		1			13	1	5				2	4		
Kalamazoo, Mich.	39,437	19						7							
Knoxville, Tenn.	36,346	9						3		2			1		
La Crosse, Wis.	30,417	8						2		2					
Lancaster, Pa.	47,227					47						1			
Lexington, Ky.	35,099	10	2			1		1							
Lima, Ohio.	30,508	8	1	1		3							3		
Lynchburg, Va.	29,494	8				25		1				1	2		
Malden, Mass.	44,404					13		1				1			
Montgomery, Ala.	38,136	18	1					1					2		
Mount Vernon, N. Y.	30,919		4			27		4							
Newark, Ohio.	25,404	119	15			60	4	24				35	12	4	
Newcastle, Pa.	36,280		3									7		2	
Newport, Ky.	30,309	8						3				2	2		
Newton, Mass.	39,806	13	1			40		1				1			
Niagara Falls, N. Y.	30,445	6	2			1				3				1	1
Norristown, Pa.	27,875	5	1			2						2	1	2	
Orange, N. J.	29,630	17				11		1				4	4	2	
Pasadena, Cal.	30,291	11	2									1			
Pittsfield, Mass.	32,121	7	7	1				1				2	1		
Portsmouth, Va.	33,190	7								2			1		
Racine, Wis.	38,002	16	3					4							

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended May 4, 1912—
Continued.

Cities.	Popula- tion, United States Census 1910.	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Small- pox.		Tuber- culosis.		Ty- phoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having from 25,000 to 50,000 inhabitants—Contd.</i>														
Roanoke, Va.	34,874	13	1		18	1					1	2		1
Rockford, Ill.	45,401	14	1				5						4	2
San Diego, Cal.	39,578	4			4				1		3	3		
South Omaha, Nebr.	26,259	5	1											
Taunton, Mass.	34,259	14			5						1	1		
Waltham, Mass.	27,834	9			68		1				1	1		
West Hoboken, N. J.	35,403	11	2		6		3					2		
Williamsport, Pa.	31,860	14	1		71							1		
Wilmington, N. C.	25,748	6			3							1		1
Woonsocket, R. I.	38,125													1
York, Pa.	44,750		1		1						4			7
Zanesville, Ohio.	28,026	9	2				1							
<i>Cities having less than 25,000 inhabitants.</i>														
Alameda, Cal.	23,833	5	1		36						1			
Bennington, Vt.		2			4									
Biddeford, Me.	17,079	4			1	1								
Braddock, Pa.	17,759	7	1	1	1									
Cambridge, Ohio.	11,327	3												
Camden, S. C.		2												
Carbondale, Pa.	17,040	5	2		12		2							
Clinton, Mass.	13,075	6										1		
Coffeyville, Kans.	12,687										2			
Columbus, Ga.	20,554	4												1
Columbus, Ind.		3							1					
Concord, N. H.	21,497	9			11									
Cumberland, Md.	21,839	8			35						1		5	
Dunkirk, N. Y.		1												
Galesburg, Ill.	20,089	6												
Harrison, N. J.	14,498	3	1				2				1			
Kearney, N. J.	18,659	4			3						1		3	
La Fayette, Ind.	20,081	6												
Lebanon, Pa.	19,240	4			2									
Logansport, Ind.	19,050	6							2			1	15	1
Marinette, Wis.	14,610	3					1					1	1	
Marlboro, Mass.	14,577	4	1								1			
Massillon, Ohio.							1							
Medford, Mass.	23,156	2	1		28									
Melrose, Mass.	15,715	3			15		1				2			
Moline, Ill.	24,199	5					1					1		
Montclair, N. J.	21,150	3			8		1				3			
Nanticoke, Pa.	18,509	3												
Newburyport, Mass.	19,240	4					1							
North Adams, Mass.	22,012	4			5		1					1		
Northampton, Mass.	19,431	7	2		5						1	1		
Ottumwa, Iowa.	22,012	9												
Plainfield, N. J.	22,050	1			17									
Pottstown, Pa.		2										1		
Rutland, Vt.	13,546										1			
Saratoga Springs, N. Y.		6			1						1	1	1	
South Bethlehem, Pa.	19,973	6	1		6						1	1		
Steelton, Pa.	14,246	4	1		6				1		1			
Warren, Pa.	11,080	3			1		1				2			
Wilkesburg, Pa.	18,294	7					1				3		1	
Woburn, Mass.	15,308	4			12		1							

**STATISTICAL REPORTS OF MORBIDITY AND MORTALITY, STATES
OF THE UNITED STATES (Untabulated).**

CONNECTICUT.—Month of April, 1912. Population of reporting towns, 1,129,499. Total number of deaths from all causes 1,417, including diphtheria 19, measles 28, scarlet fever 6, tuberculosis, pulmonary, 118, typhoid fever 6. Cases reported: Diphtheria 150 in 337 towns, measles 1,353 in 75 towns, scarlet fever 187 in 47 towns, smallpox 138 in 6 towns, tuberculosis, pulmonary, 161 in 46 towns, typhoid fever 40 in 13 towns.

INDIANA.—Month of March, 1912. Population, 2,700,876. Total number of deaths from all causes 3,375, including diphtheria 24, measles 6, scarlet fever 6, smallpox 3, tuberculosis 440, typhoid fever 39. Cases reported: Diphtheria 168 in 43 counties, scarlet fever 353 in 55 counties, smallpox 214 in 22 counties, typhoid fever 214 in 34 counties.

FOREIGN AND INSULAR.

CHINA.

Hongkong—Plague—Smallpox—Plague-infected Rats.

Surg. Brown reports: During the week ended April 6, 35 cases of plague with 29 deaths and 35 cases of smallpox with 24 deaths were reported at Hongkong.

During the same period 2,013 rats were examined for plague infection. Nine plague-infected rats were found.

ECUADOR.

Yellow Fever, Malaria, and Typhoid Fever.

The following statement was received from Passed Asst. Surg. Parker at Guayaquil:

Yellow fever.—This disease is extremely widespread, not only in the city of Guayaquil but throughout the surrounding country. Cases have been reported as follows:

APRIL 1-15, 1912.

	Cases remaining Apr. 1.	New cases.	Died.	Remaining Apr. 15.
Guayaquil.....	19	29	12	14
Duran.....	1	1		1
Yaguachi.....	1			
Milagro.....	1	4	3	1
Naranjito.....		4	2	2
Huigra.....	1			
Naranjal.....	1			

Malaria.—There are many cases of this disease in the surrounding 100 kilometers, owing to inundations during the winter season. The type is the estivo-autumnal and the medium of transmission the *Anopheles argyrotarsis*.

Typhoid fever.—This disease is more prevalent than usual both in the city and the neighboring watering places.

GREAT BRITAIN.

Liverpool—Plague from Vessel.

The medical officer of health reports the occurrence, April 27, of a case of plague in a member of the crew of the steamship *Italian Prince* which arrived at Liverpool April 19. The case ended fatally April 30.

The *Italian Prince* left Malta April 6 for Liverpool.

ITALY.

Examination of Emigrants.

Passed Asst. Surg. Robinson at Naples reports:

Vessels inspected at Naples, Messina, and Palermo, week ended Apr. 27.

NAPLES.

Date.	Name of ship.	Destination.	Steerage passengers inspected and passed.	Pieces of baggage inspected and passed.	Pieces of baggage disinfected.
Apr. 24	America.....	New York.....	1,655	260	2,180
24	Madonna.....	do.....	1,130	190	1,450
25	Ivernia.....	do.....			
25	Italia.....	do.....	598	75	920
26	Hamburg.....	do.....	868	130	1,250
27	Taormina.....	do.....	1,709	190	2,100
	Total.....		5,960	845	7,900

MESSINA.

Apr. 22	Ivernia.....	New York.....			
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PALERMO.

Apr. 22	Delphine.....	New Orleans.....			
24	Ivernia.....	New York.....			
25	Teresa.....	do.....			
26	Themistocles.....	do.....			
26	Italia.....	do.....	456	400	100
27	Hamburg.....	do.....	84	80	50
	Total.....		540	480	150

JAPAN.

Plague on Vessel from Hongkong.

Surg. Irwin at Yokohama reports April 29 the arrival of the steamship *Tacoma Maru* at Nagasaki from Hongkong and Shanghai with a case of plague on board.

PHILIPPINE ISLANDS.

Plague on Vessels from Hongkong.

Chief Quarantine Officer Heiser at Manila reports:

The steamship *Loongsang*, from Hongkong, arrived April 2 at Manila with the body of a member of the crew dead of plague on board. The death occurred when the vessel was 36 hours distant from Manila. The case was bacteriologically verified as pneumonic plague.

The steamship *Zafiro*, from Hongkong, arrived at Manila April 4, and on April 6 a death occurred in a member of the crew. Bacteriological examination showed the death to have been due to pneumonic plague.

The following circular relative to the quarantining of steerage passengers from Hongkong has been issued:

[Circular.]

UNITED STATES TREASURY DEPARTMENT,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF THE CHIEF QUARANTINE OFFICER FOR THE PHILIPPINE ISLANDS,
Manila, P. I., April 6, 1912.

To the owners, agents, and masters of vessels and others concerned.

GENTLEMEN: In view of the increase of plague in Hongkong, I have the honor to state that, beginning April 8, 1912, all steerage passengers coming from Hongkong, or those who ordinarily travel as such, will be quarantined at the Mariveles quarantine station for a period of seven days, unless the medical officer of the United States Public Health and Marine-Hospital Service at Hongkong certifies that they have undergone such quarantine detention at that port. Masters of inward-bound ships from Hongkong should be instructed to call at Mariveles and leave such passengers and be prepared to furnish them with the necessary food while they are undergoing the quarantine detention.

Respectfully,

VICTOR G. HEISER,
Passed Assistant Surgeon,
Chief Quarantine Officer for the Philippine Islands.

Smallpox on Vessels.

Dr. Heiser further reports: On April 2 the United States Army transport *Warren* arrived at Manila from Chinese and Japanese ports with three cases of smallpox on board. On April 9 three additional cases developed among the crew of the *Warren*, making a total of 8 cases. During the week ended April 6, smallpox occurred on the steamships *Serantes* and *Sotolongo*.

RUSSIA.

Typhus Fever.

At Moscow Consul Snodgrass reports the occurrence of 10 cases of typhus fever with 2 deaths during the 2 weeks ended April 13.

At Odessa Consul Grout reports 13 cases with 6 deaths for the week ended April 20.

At St. Petersburg Consul Conner reports 9 cases with 4 deaths for the 2 weeks ended April 20.

SOUTH AFRICA.

Plague at Durban, Natal.

The following information was received from the department of the interior: During the week ended April 12, a fatal case of plague occurred at Durban, and during the week ended April 19, 2 cases with 2 deaths. The total number of cases reported to date is 27 with 22 deaths.

WEST INDIES.

Trinidad—Plague and Yellow Fever—Comparative Statistics.

The following statement was received from Consul Hale at Port of Spain:

Plague.—In April, 1910, 3 fatal cases of plague were reported in Trinidad. In 1911, 6 cases were reported, 1 case occurring in February, 1 in March, 2 cases in April, and 2 in May. The first case re-

ported in 1912 occurred March 29. It was followed by 5 cases with 4 deaths occurring from April 1 to 25. From January 1 to April 26, 1912, 6,752 rats were collected in Port of Spain. Of these 5,033 were bacteriologically examined. One infected rat was found in a district adjacent to the city.

Yellow fever.—In April, 1910, 2 fatal cases of yellow fever were reported. No case has occurred since that date.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.

REPORTS RECEIVED DURING WEEK ENDED MAY 24, 1912.

[These tables include cases and deaths recorded in reports received by the Surgeon General, Public Health and Marine-Hospital Service, from American consuls through the Department of State and from other sources.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
India:				
Bassein.....	May 24-30.....	4	3	
Bombay.....	Apr. 7-13.....	9	8	
Moulmaine.....	Mar. 24-30.....	6	4	
Turkey in Asia:				
Aleppo.....	Apr. 14-20.....	5	4	

YELLOW FEVER.

Brazil:				
Manaos.....	Apr. 14-27.....		9	
Pernambuco.....	Mar. 16-31.....		8	
Do.....	Apr. 1-15.....		7	
Ecuador:				
Duran.....	April 1-15.....	1		
Guayaquil.....	do.....	29	12	
Milagro.....	do.....	4	3	
Naranjito.....	do.....	4	2	
Venezuela:				
La Guaira.....	Apr. 16-30.....	1	1	

PLAGUE.

Brazil:				
Pernambuco.....	Mar. 16-31.....		2	
Do.....	Apr. 1-15.....		1	
Chile:				
Iquique.....	Apr. 7-20.....	5		
China:				
Chaochowfu.....	Apr. 13.....			Present.
Hongkong.....	Mar. 24-30.....	27	21	
Do.....	Mar. 31-Apr. 13.....	71	65	
Egypt:				
Cairo.....	Apr. 22-25.....	2	1	
Provinces—				
Assiout.....	Mar. 23-Apr. 24.....	12	8	
Assouan.....	do.....	2	1	
Behera.....	Mar. 17-Apr. 15.....	1	1	
Beni Souef.....	Apr. 4-20.....	7	2	
Charkieh.....	Apr. 22.....	6	4	
Fayoum.....	Jan. 27-Apr. 24.....	2	1	
Galioubeh.....	Mar. 11-Apr. 23.....	6		
Kena.....	Apr. 5-24.....	27	22	
Menouf.....	Mar. 7-Apr. 23.....	6	1	
Minieh.....	Apr. 4-23.....	2	2	
Great Britain:				
Liverpool.....	Apr. 27-30.....	1	1	In the Royal Southern Hospital, from s. s. Italian Prince.
India:				
Bombay.....	Apr. 7-13.....	164	143	
Karachi.....	do.....	129	107	
Japan:				
Formosa.....	Mar. 17-30.....	39	33	
Nagasaki.....	Apr. 20.....	1		On the s. s. Tacoma Maru, from Hongkong and Shanghai.

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

Reports Received during Week ended May 24, 1912.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Java:				
Paserocean Residency	Apr. 1-6	4	4	
Mauritius	Mar. 1-14	21	18	
Peru:				
Salaverry	Apr. 18-24	1		
Philippine Islands:				
Manila				Apr. 6, a fatal case of pneumonic form in a member of the crew on s. s. Zafiro, arrived Apr. 4 from Hongkong.
South Africa:				
Durban	Apr. 5-19	3	3	
Trinidad	Apr. 1-25		4	Not previously reported.
At sea	Apr. 1	1	1	Pneumonic on s. s. Loongsang, en route from Hongkong to Manila.

SMALLPOX.

Brazil:				
Pernambuco	Mar. 16-31		52	
Do	Apr. 1-15		54	
Canada:				
Montreal	May 4-11	1		
Ottawa	do	6		
Quebec	do	6		
China:				
Dalny	Apr. 7-13		1	
Hongkong	Mar. 24-30	20	12	
Do	Apr. 1-13	62	45	
France:				
Paris	Apr. 21-27	3		
Germany:				
Hongkong	do	1		
India:				
Bombay	Apr. 7-13	67	48	
Madras	do	8	5	
Italy:				
Leghorn	Apr. 29-May 4	4		
Naples	Apr. 21-27	3		
Palermo	Apr. 14-21	7	2	
Java:				
Batavia	Apr. 1-6	3	1	
Mexico:				
Juarez	May 5-11	1		
Mazatlan	Apr. 17-30		2	
San Luis Potosi	Feb. 25-Mar. 9	2	3	
Tampico	Apr. 1-10		1	
Philippine Islands:				
Manila—				
On arriving vessels				Apr. 1 to 6, present on the steamers Serantes and Sotolongo Apr. 2-9, 8 cases among the crew of the United States Army transport Warren, from ports in China and Japan.
Roumania	Feb. 1-29			Total: Cases, 2,912; deaths, 104.
Russia:				
Batoum	Mar. 1-31	1		
Libau	Apr. 24-28	1		
Moscow	Apr. 1-13	13		
Odessa	Apr. 14-20	1		
St. Petersburg	Apr. 7-20	35	8	
Warsaw	Feb. 25-Mar. 16	24	15	
South Africa:				
Durban	Apr. 1-6	1		
Straits Settlements:				
Singapore	do	2	2	
Switzerland:				
Cantons—				
Aargau	Apr. 7-13	1		
St. Gall	Mar. 30-Apr. 6	1		
Turkey in Europe:				
Constantinople	Apr. 22-28		16	

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

REPORTS RECEIVED FROM DEC. 30, 1911, TO MAY 17, 1912.

[For reports received from July 1, 1911, to Dec. 29, 1911, see PUBLIC HEALTH REPORTS for Dec. 29, 1911. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Hodeida	Jan. 21	2	1	
Ras-el-Ketib	Dec. 27-Jan. 1			Total cases, 22 deaths, 12; mainly in the military hospital.
Austria-Hungary:				
Coastland—				
Capodistria	Dec. 14-24	2	2	
Croatia and Slavonia				Total Oct. 22-Dec. 16: Cases, 36.
Sriem	Oct. 22-Dec. 16	36		
Hungary				Total Nov. 19-Dec. 23: Cases, 37. Free Dec. 28.
Bacs-Bodog	Dec. 10-16	9	5	
Jasz-Nagykun-Szolnok	Dec. 3-23	11	7	
Torontal	Nov. 19-Dec. 16	17	2	
Bahrain Island	Nov. 27-Dec. 30		260	In the Persian Gulf.
Bulgaria:				
Burgas	Nov. 22-23	2	2	
Varna	Nov. 6	1		
China:				
Hongkong	Jan. 14-20	1	1	
Dutch East Indies				Total year 1911: Cases, 3,624; deaths, 2,919, including report, p. 2092, vol. 1. Free Dec. 31.
Batavia	Nov. 12-Dec. 23	21	8	Year 1911: Deaths, 323,237.
India:				
Bassein	Jan. 14-Mar. 23	124	101	
Calcutta	Nov. 5-Mar. 23		1,001	
Madras	Nov. 26-Apr. 6	549	447	Madras Presidency Nov. 1-Dec. 31: Cases, 10,436; deaths, 6,545. Jan. 1-Feb. 29: Cases, 18,267; deaths, 11,563.
Moulmine	Feb. 18-Mar. 23	7	7	
Negapatam	Jan. 14-Feb. 24		79	
Pondicherry	Feb. 22-28	4	4	
Rangoon	Oct. 1-Feb. 29	104	86	
Indo-China:				
Salgon	Nov. 20-Mar. 18	1,544	1,082	
Italy				Total June 8-Dec. 31: Cases, 15,985; deaths, 6,022.
Caltanissetta	Nov. 26-Dec. 31	9	7	
Girgenti	do	105	57	
Messina	Nov. 26-Dec. 2	3	2	
Syracuse	Nov. 26-Dec. 23	15	9	
Malta	Nov. 19-Dec. 10	6	6	Dec. 23 declared free from cholera.
Montenegro	Nov. 4-11	9	5	
Persia:				
Adaban	Nov. 4	1	1	
Kermansbah	Dec. 18-26		37	
Philippine Islands				Third quarter, 1911: Manila, 1, fatal case; Provinces, 27 cases and 22 deaths. Fourth quarter, 1911: Manila, no case and no death; Provinces, 22 cases, 20 deaths.
Province—				
Union	Oct. 29-Dec 4	5	5	Total Sept. 9-Dec. 13: Cases, 192; deaths, 42, including report, p. 2094, vol. 1. Free Dec. 19.
Roumania:				
Districts—				
Braila	Sept. 11-Dec. 13	84	11	Including cases previously reported.
Convouluri	Oct. 31-Nov. 28	21	1	
Doliju	Nov. 6-Dec. 13	19	4	
Jalonitza	Oct. 31-Nov. 28	4		
Konstanza	Oct. 30-Nov. 28	8		
Prahova	Nov. 6-23	1	1	
Talomita	do	2		
Tulcea	Nov. 24-Dec. 13	15	1	
Servia				Total year 1911: Cases, 95; deaths, 51, including report, p. 2095, vol. 1. Declared free Dec. 31.
Belgrade district	Nov. 26-Dec. 16	6	4	
Siam:				
Bangkok	Nov. 5-Mar. 24		1,244	

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

Reports Received from Dec. 30, 1911, to May 17, 1912.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Straits Settlements:				
Singapore.....	Nov. 5-Feb. 3.....	4	4	
Tripoli:				
Tripoli.....	Oct. 13-Jan. 24.....			Cases, 2,000; deaths, from 1,000 to 1,200.
Tunis Regency.....				Total Nov. 25-Jan. 4: Cases, 462; deaths, 323. No cases since Jan. 10.
Beja district.....	Nov. 25-Dec. 21.....	71	20	
Bizerta district.....	Nov. 25-Dec. 5.....	9	15	
Turkey in Asia.....				Provinces in Asia and Europe, Apr. 16-Dec. 30, 1911; Deaths, 6,111, excluding Constantinople. Mainly among troops. Jan. 6-Feb. 27: Cases, 101; deaths, 126.
Acre.....	Jan. 21.....		33	In vicinity.
Adana.....	Dec. 2-Apr. 8.....	46	14	
Aleppo.....	Jan. 26-Apr. 13.....	41	25	
Amara.....	Oct. 15.....	1	1	
Basra.....	Oct. 22-28.....	14	10	
Erzeroum, vilayet.....	Sept. 11-16.....	50	28	
Erzeroum.....	do.....	11	8	
Kaifa.....	Dec. 8.....			Present.
Karbela.....	Oct. 20-28.....	10	10	
Kharput.....	Nov. 19-Dec. 30.....	47	47	
Jiddah.....	Dec. 2-24.....	323	310	
Mekka.....	Dec. 4-24.....	905	879	Sept. 1-Dec. 24: Cases, 1,643, deaths, 1,565.
Mersina.....	Dec. 1-7.....	2	1	
Osmania.....	Dec. 1-6.....	2	4	
Sinope.....	Dec. 7.....	2	1	
Tor.....	Dec. 14-26.....	29		
Trebizond and vicinity.....	Sept. 18-23.....	64	34	
Tripoli.....	Jan. 4.....			Present.
Turkey in Europe:				
Constantinople.....	Oct. 24-Feb. 3.....	8	2	
Durazzo.....	Dec. 7-13.....	2		
Janina.....	Jan. 14-22.....	17	8	
Loros.....	Jan. 22.....	12	7	
Saloniki, vilayet.....	Nov. 6-19.....	4	3	In Serres.

YELLOW FEVER.

Brazil:				
Bahia.....	Mar. 23-25.....	6	1	
Ceara.....	Jan. 1-Feb. 29.....		5	
Manaos.....	Nov. 19-Apr. 13.....		57	
Para.....	Mar. 3-9.....	2	2	Dec. 9-16: 1 fatal case.
Pernambuco.....	Jan. 1-Mar. 15.....		14	Apr. 2: Epidemic.
Rio de Janeiro.....	Mar. 17-Apr. 6.....	3	2	
Canal Zone:				
Culebra Island quarantine.....	Jan. 1-31.....	1		From a vessel from Guayaquil.
Chile:				
Tocopilla.....	Apr. 11.....	90	25	And vicinity. Apr. 20: Still present.
Ecuador:				
Bucay.....	Nov. 16-Feb. 29.....	7	2	
Duran.....	Dec. 1-Feb. 29.....	13	6	
Guayaquil.....	Nov. 16-Feb. 29.....	118	54	
Huigra.....	Feb. 1-29.....			1 case.
Milagro.....	do.....	16	7	
Naranjito.....	do.....	2	2	
Yaguachi.....	do.....			1 case.
Mexico:				
Espita.....	Dec. 31-Jan. 6.....	1		
Kambul, hacienda.....	Feb. 21-27.....		7	
Maxcanu.....	Dec. 31-Jan. 6.....	1		
Merida.....	Nov. 12-Mar. 23.....	20	9	Total Aug. 1, 1911-May 2, 1912: Cases, 66; deaths, 30.
Puerto Mexico (Coatzacoalcos).....	Feb. 28.....		1	
Salina Cruz.....	Feb. 4-7.....			7 cases in the lazaretto from s. s. Ikalis from Guayaquil.
San Juan Bautista.....	May 11.....	1		
Temax.....	Dec. 31-Jan. 6.....	1		

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

Reports Received from Dec. 30, 1911, to May 17, 1912.

YELLOW FEVER—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Portuguese Guinea:				
Bolama.....	Dec. 19-25.....	1	1	In an engineer on a vessel.
Venezuela:				
Caracas.....	Nov. 16-Feb. 15...	30		Dec. 1-30, 10 deaths, and Jan. 15-Feb. 29, 8 deaths, including previous reports.
La Guaira.....	Mar. 17-Apr. 1....	2	2	
Macuto.....	Mar. 16-19.....	1	1	
Maiquetia.....	Feb. 24-Mar. 9....	3	1	A suburb of La Guaira.
Sabana Grande.....	Dec. 12.....			Epidemic.
West Indies:				
Barbados—				
Bridgetown.....	Apr. 27.....	1	1	From steamship Francis, from Para.
St. Vincent.....	Feb. 19.....	1		
At sea.....	Dec. 17-23.....	1	1	On a vessel en route from Manoaas to Para.

PLAGUE.

Algeria:				
Philippeville.....	Oct. 19-Nov. 11...	8	2	Including 5 cases, p. 2096, Vol. XXVI.
Arabia:				
Aden.....	Mar. 5-25.....	2	1	
Azores:				
Fayal.....	Jan. 10.....			Still present.
Teceira.....	do.....			Do.
Brazil:				
Bahia.....	Sept. 1-30.....		2	
Para.....	Dec. 24-Apr. 20...	24	15	
Pernambuco.....	Oct. 1-Feb. 29....		9	
Rio de Janeiro.....	Nov. 12-Feb. 10...	7	3	
British East Africa:				
Kismayu.....	Oct. 15-25.....	2		1 case pneumonic.
Chile:				
Iquique.....	Nov. 12-Apr. 6....	24	11	
Pisagua.....	Nov. 1-30.....	8		
China:				
Amoy.....	Jan. 13.....		1	
Chaochowfu.....	Mar. 10-16.....			Present.
Hongkong.....	Dec. 9-Mar. 23....	80	71	
Dutch East Indies:				
Java.....				Total Mar. 1-Dec. 30: Cases, 1,817; deaths, 1,324. Dec. 31-Feb. 9: Cases, 65; deaths, 63.
Pasoeroean Residency, Malang District.	Nov. 12-Mar. 30...	143	96	
Soerabaya.....	Oct. 17-27.....	2		
Ecuador:				
Duran.....	Feb. 1-29.....	1		
Guayaquil.....	Nov. 16-Feb. 29...	124	52	Dec. 16-Jan. 31: Reports not available because of revolution. Total Jan. 1-Dec. 31, 1911: Cases, 1,656; deaths, 1,041, including cases previously reported.
Egypt.....				
Alexandria.....	Mar. 22.....	1	1	
Provinces—				
Assiout.....	Jan. 1-Mar. 22....	50	32	Sept. 11-16: Cases, 50; deaths, 28.
Assouan.....	do.....	29	18	
Behera.....	Jan. 1-Mar. 16....	4	2	Sept. 11-16: Cases, 11; deaths, 8.
Beni Souef.....	Feb. 16-Apr. 4....	23	7	
Fayoum.....	Jan. 1-26.....	1		
Galioubeh.....	Jan. 1-Mar. 10....	4	3	Oct. 5-Dec. 26: Case, 1.
Garbieh.....	Jan. 1-Mar. 17....	18	8	
Girgeh.....	Mar. 28.....	1	1	
Kena.....	Jan. 1-Apr. 4....	69	51	Nov. 20-Dec. 13: Cases, 3; deaths, 3.
Menouf.....	Feb. 2-Mar. 7....	3	1	
Minieh.....	Jan. 1-Apr. 4....	22	4	Dec. 13: Case, 1.
German East Africa:				
Dar-es-Salaam.....	Nov. 13-15.....	1	1	From the interior via Bergamogo.
Hawaii:				
Honakaa.....	Feb. 9-Mar. 18....	4	4	

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

Reports Received from Dec. 30, 1911, to May 17, 1912.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
India:				
Bombay.....	Nov. 19-Apr. 6.....	687	601	
Calcutta.....	Nov. 11-Mar. 23.....	.....	329	
Karachi.....	Nov. 26-Apr. 6.....	652	563	Total year 1911: Cases, 3,273; deaths, 3,046.
Madras.....	Jan. 1-6.....	1	1	
Rangoon.....	Oct. 1-Feb. 29.....	166	158	
Bombay Presidency and Sind.....	Oct. 29-Mar. 23.....	58,396	42,824	
Madras Presidency.....	do.....	10,129	7,869	
Bengal.....	do.....	37,491	31,764	
United Provinces.....	do.....	86,612	76,987	
Punjab.....	do.....	10,541	8,082	
Burma.....	do.....	1,428	1,302	
Eastern Bengal and Assam.....	Jan. 1-Feb. 24.....	2	2	
Central Provinces.....	Oct. 29-Mar. 23.....	26,600	21,144	
Coorg.....	do.....	88	52	
Mysore State.....	do.....	8,631	6,688	
Hyderabad State.....	do.....	25,820	23,394	
Central India.....	do.....	9,096	7,453	
Rajputana and Ajmere Merwara.....	do.....	1,533	1,234	
Kashmir.....	Feb. 3-Mar. 23.....	114	51	
North West Province.....	Oct. 29-Feb. 24.....	2	2	Total for India, Oct. 29-Mar. 23: Cases, 276,483; deaths, 228,848. Total year 1911: Cases, 828,535; deaths, 691,849.
Indo-China:				
Saigon.....	Nov. 13-Mar. 4.....	33	5	
Japan:				
Formosa.....	Mar. 7-16.....	13	7	
Mauritius.....	Nov. 3-Feb. 29.....	71	36	
Persia:				
Bushire.....	Feb. 4-Mar. 30.....	134	83	
Peru:				
Departments—				
Callao.....	Oct. 1-21.....	1	.....	City, in November, 1 case; in January, 3 cases with 2 deaths; Mar. 1-26, 12 cases.
Chiclayo.....	do.....	12	4	
Chosica.....	do.....	1	1	
Lambayeque.....	do.....	3	.....
Libertad.....	do.....	8	.....	Apr. 10, 22 cases in the lazaretto at Trujillo. Apr. 22 still present.
Lima.....	do.....	13	6	
Philippine Islands:				
Cebu quarantine station.....	Dec. 4.....	1	.....	On s. s. Montrose from Shanghai.
Russian Empire:				
Astrakhan, government.....	Sept. 21-Jan. 7.....	201	180	Including 73 cases and 63 deaths reported on p. 2098, Vol. I.
Siam:				
Bangkok.....	Nov. 4-Mar. 23.....	.....	5	
South Africa:				
Durban.....	Jan. 14-Apr. 19.....	.....	.....	Total: Cases 27, deaths 22.
Straits Settlements:				
Singapore.....	Nov. 5-Mar. 16.....	29	25	
Turkey in Asia:				
Basra.....	Feb. 13.....	1	1	A stoker on s. s. Nicomedia from Bushire.
Jiddah.....	Jan. 13-Mar. 27.....	16	9	
Venezuela:				
Caracas.....	Mar. 12-Apr. 22.....	6	2	
West Indies:				
Trinidad.....	Apr. 2-May 1.....	6	.....
At sea.....	Mar. 1-11.....	1	1	On s. s. Macedonia from Bombay to Aden.

SMALLPOX.

Algeria:				
Algiers.....	Nov. 1-30.....	.....	1	
Oran.....	Jan. 1-31.....	2	1	
Arabia:				
Aden.....	Nov. 28-Apr. 8.....	22	10	And vicinity.

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

Reports Received from Dec. 30, 1911, to May 17, 1912.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Argentina:				
Buenos Aires.....	Jan. 1-31.....		2	Oct. 1-31, 6 deaths. No deaths in November or December, 1911.
Rosario.....	Oct. 1-Jan. 31.....		40	
Australia:				
Thursday Island.....	Jan. 2.....	1		From s. s. Taiyuan.
Austria-Hungary:				
Bohemia.....	Jan. 14-20.....	2		
Budapest.....	Jan. 4-10.....	25		
Galicía.....	Dec. 24-Apr. 13.....	30	1	
Krain.....	Jan. 14-20.....	7		
Trieste.....	Dec. 3-Apr. 6.....	2		From s. s. Baron Call from Beirut.
Tyrol.....	Jan. 14-Mar. 9.....	3		
Vienna.....	Mar. 25-30.....	1		
Brazil:				
Bahia.....	July 1-31.....		1	
Para.....	Mar. 24-Apr. 20.....	6	4	Case Mar. 30 from Alagoas.
Pernambuco.....	Oct. 1-Mar. 15.....		732	
Rio de Janeiro.....	Nov. 26-Apr. 6.....	31	1	
Santos.....	Dec. 12-23.....		1	
Canada:				
British Columbia—				
Fernie.....	Feb. 26-Mar. 16.....	5		
Nelson.....	Dec. 24-30.....	1		
Vancouver.....	Apr. 14-20.....	1		
Victoria.....	Feb. 4-10.....	1		
Manitoba—				
Winnipeg.....	Jan. 14-Apr. 20.....	4		
New Brunswick—				
Summerstown.....	Apr. 12.....			Epidemic; 10 miles from Cornwall.
Nova Scotia—				
Halifax.....	Mar. 24-Apr. 6.....	2		
Ontario—				
Hamilton.....	Apr. 14-27.....	16		
Kingston.....	Dec. 19-23.....	1		
Ottawa.....	Dec. 10-Apr. 27.....	99	1	
Sarnia.....	Oct. 17-Mar. 23.....	43		
Toronto.....	Jan. 6-Apr. 20.....	5	1	
Windsor.....	Feb. 4-Mar. 16.....	8		
Quebec—				
Montreal.....	Dec. 17-May 4.....	31		
Quebec.....	Dec. 10-Apr. 27.....	283	2	
Yukon—				
Dawson.....	Apr. 1-6.....	1		
Ceylon:				
Colombo.....	Nov. 12-Feb. 10.....	3		And vicinity
Chile:				
Iquique.....	Dec. 10-Mar. 16.....	4	2	
La Serena.....	Nov. 21-30.....	14		
Santiago.....	Nov. 1-30.....	685	343	
Talcahuano.....	Nov. 26-Dec. 23.....	14	3	
Valparaiso.....	Dec. 3-Apr. 13.....	70		
China:				
Canton.....	Nov. 11-Dec. 30.....	40	6	
Chaochowfu.....	Mar. 30.....			Present.
Chenghal.....	Jan. 29-Apr. 13.....			Do.
Chungking.....	Nov. 18-Apr. 6.....			Do.
Dalny.....	Mar. 3-Apr. 6.....	11	2	
Hankow.....	Jan. 21-Feb. 17.....	2	1	
Hongkong.....	Nov. 12-Mar. 23.....	624	466	
Kityang.....	Jan. 21-Apr. 13.....			Do.
Nanking.....	Dec. 10-Apr. 20.....			Do.
Shanghai.....	Dec. 11-Feb. 18.....	1	6	Deaths among natives.
Swatow.....	Mar. 2.....			Present.
Cuba:				
Habana.....	Dec. 19-Jan. 19.....	2		Case Dec. 19 from German s. s. Frankenwald, from Spain and Canary Islands; case Jan. 19 from s. s. México.
Dutch East Indies:				
Java—				
Batavia.....	Nov. 12-Mar. 30.....	52	14	
Egypt:				
Cairo.....	Dec. 10-Mar. 25.....	10	1	
Port Said.....	Jan. 30-Feb. 4.....	1		
France:				
Havre.....	Mar. 10-16.....		4	
Marseille.....	Jan. 1-Mar. 31.....		5	Nov. 1-30, 1 death.
Paris.....	Dec. 3-Apr. 13.....	120	2	

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

Reports Received from Dec. 30, 1911, to May 17, 1912.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Germany.....				Total, Dec. 31-Apr. 27; cases, 129.
Hamburg.....	Jan. 21-Apr. 20.....	6		
Gibraltar.....	Feb. 27-Mar. 3.....	1		
Great Britain:				
Bristol.....	Jan. 29-Feb. 3.....	2		
Liverpool.....	Mar. 17-Apr. 17.....	2	1	Case Apr. 13, an American from the s. s. Arabic.
London.....	Jan. 14-Apr. 20.....	10	1	
Southampton.....	Mar. 3-9.....	1		
West Hartlepool.....	Feb. 18-Mar. 9.....	2		
India:				
Bombay.....	Nov. 19-Apr. 6.....	841	350	
Calcutta.....	Nov. 19-Mar. 23.....		31	
Karachi.....	Apr. 1-6.....	1	1	
Madras.....	Nov. 26-Apr. 6.....	187	72	
Rangoon.....	Oct. 1-Feb. 29.....	220	55	
Indo-China:				
Saigon.....	Nov. 13-Mar. 18.....	38	7	
Italy:				
Genoa.....	Dec. 1-Apr. 15.....	47	2	
Leghorn.....	Dec. 16-Apr. 27.....	106	1	
Messina.....	Nov. 19-Jan. 31.....		6	
Naples.....	Dec. 3-Apr. 20.....	100	1	
Palermo.....	Nov. 26-Apr. 20.....	2,636	896	
Rome.....	Jan. 1-Mar. 31.....	31	3	
Turin.....	Jan. 15-Apr. 7.....	2		
Japan:				
Arima-Mura.....	Nov. 12-18.....	6	1	11 miles east from Kobe.
Formosa.....	Mar. 3-16.....	3		
Kanagawa, ken.....	Dec. 17-23.....	1		
Kobe.....	Jan. 22-28.....	2	1	Jan. 20, 1 case from s. s. Suveric from Hongkong; Jan. 28, 1 case from Shingo Maru.
Nagasaki.....	Feb. 12-18.....	1		
Nogahama.....	Mar. 17-23.....	1		On s. s. Tenyo Maru from Hongkong.
Yokohama.....	Jan. 22.....	1		From s. s. Hydra from New York via Suez.
Malta.....	Dec. 24-Jan. 6.....	2	1	
Mexico:				
Aguascalientes.....	Dec. 18-Mar. 3.....		7	
Chihuahua.....	Nov. 20-Feb. 11.....	92	36	
Coahuila, State.....	Oct. 1-30.....		16	
Guadalajara.....	Jan. 14-Apr. 13.....	8	4	
Juarez.....	Dec. 19-Apr. 27.....	16	5	
Magdalena.....	Dec. 23-Mar. 12.....	91	50	Mar. 12, 10 cases present.
Manzanillo.....	Feb. 18-24.....	1		
Mazatlan.....	Dec. 11-Mar. 19.....		11	Mar. 16, 25 cases in the lazaretto.
Mexico.....	Nov. 26-Mar. 23.....	224	101	
Monterey.....	Dec. 11-24.....		2	
Porfirio Diaz.....	Dec. 3-Mar. 23.....		35	
Salina Cruz.....	Feb. 11-Mar. 9.....	4	2	Mar. 23, present in vicinity.
San Antonio.....	Jan. 1-21.....	12	9	
San Carlos.....	do.....			Present.
Sandoval.....	Dec. 16.....			Do.
San Ignacio.....	Jan. 8.....	3		
Sarie.....	Jan. 21-27.....		6	
Santa Ana.....	Jan. 8.....	4		
San Luis Potosi.....	Nov. 12-Feb. 24.....	6	2	
Tampico.....	Dec. 1-Mar. 30.....		15	
Tapachula.....	Nov. 1-Jan. 31.....		18	
Philippine Islands.....				Third quarter, 1911: Manila, 9 cases; no deaths. Fourth quarter, 1911: 38 cases.
Portugal:				
Lisbon.....	Dec. 9-Apr. 20.....	56		
Roumania.....	Jan. 1-31.....	2,935	143	
Russia:				
Batum.....	Dec. 1-31.....	1		
Libau.....	Dec. 17-Apr. 14.....	2		
Moscow.....	Nov. 19-Mar. 30.....	59	9	
Odessa.....	Nov. 26-Apr. 6.....	34	1	
Reval.....	Nov. 1-30.....	1		
Riga.....	Dec. 24-Apr. 16.....	62		
St. Petersburg.....	Nov. 19-Apr. 6.....	176	40	Oct. 1-Jan. 31; deaths, 10.
Warsaw.....	Nov. 5-Feb. 24.....	390	185	
Siam:				
Bangkok.....	Nov. 5-Mar. 23.....		2, 175	

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

Reports Received from Dec. 30, 1911, to May 17, 1912.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Siberia:				
Omsk.....	Jan. 1-31.....	7		
South Africa:				
Durban.....	Jan. 21-Feb. 24....	4		
Johannesburg.....	Jan. 7-Feb. 10....	36		
Spain:				
Barcelona.....	Feb. 6-Apr. 1.....		2	
Cadiz.....	Nov. 1-Mar. 31....		29	
Madrid.....	Dec. 1-Mar. 31....		16	
Malaga.....	Nov. 1-30.....		45	
Seville.....	Dec. 1-Mar. 31....		10	
Valencia.....	Dec. 3-Apr. 20....	398	16	
Straits Settlements:				
Penang.....	Feb. 11-17.....	1		
Singapore.....	Nov. 19-Mar. 16....	36	13	
Switzerland:				
Cantons—				
Oberwalden.....	Jan. 14-20.....	1		
Zurich.....	Dec. 3-23.....	6		
Teneriffe:				
Santa Cruz.....	Dec. 3-Apr. 13....		54	
Turkey in Asia:				
Beirut.....	.....do.....	1,500	107	
Turkey in Europe:				
Constantinople.....	Dec. 4-Apr. 21....		183	
Uruguay:				
Montevideo.....	Sept. 1-Dec. 31....	25	4	
Venezuela:				
Caracas.....	Nov. 1-Jan. 15....	11	2	
Zanzibar:				
Zanzibar.....	Oct. 28-Dec. 15....	3	2	

MORTALITY.

WEEKLY MORTALITY TABLE, FOREIGN AND INSULAR CITIES.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Aguascalientes.....	May 5	40,000	98	4							3	2	8	
Aleppo.....	Apr. 20	200,000				4								
Amsterdam.....	Apr. 27	582,621	128	27									3	
Athens.....	do	250,010	112										2	
Barcelona.....	do	591,272	242	35									2	
Bordeaux.....	do	253,000	108	19								1	8	1
Bradford.....	do	289,618	78	2						1		1	2	
Batavia.....	Mar. 30	217,630												
Bombay.....	Apr. 13	979,445	895	41	143	8		48					12	
Brussels.....	Apr. 20	739,684	195	20						2		4	1	
Do.....	Apr. 27		192	20									3	1
Catania.....	Apr. 26	207,000	92						1		2	1	2	
Do.....	May 3		76	4							3			1
Cairo.....	Apr. 8	689,439	444	25					4	1	1	5	1	
Christiania.....	Apr. 20	245,000	82								1		1	
Do.....	Apr. 27		81	10									2	1
Constantinople.....	Apr. 21	1,000,000	275	41				21		6	1	1	8	
Do.....	Apr. 28		271	25				16		3		3	13	
Copenhagen.....	Apr. 20	465,000	162	23							3	1	4	6
Dainy.....	Apr. 13	45,693	31	1				1						1
Do.....	Apr. 20		14	1							1			
Dresden.....	Apr. 13	555,300	147	19								2		
Dundee.....	Apr. 27	171,006	52	3							1		4	1

MORTALITY—Continued.

Weekly mortality table, foreign and insular cities—Continued.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—													
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.			
Erfurt.....	Apr. 20	126,560	39	3													
Frankfort.....	Apr. 13	425,000	92														
Copenhagen.....	do	465,000	151	10													
Georgetown.....	do	57,577	42	2													
Do.....	Apr. 27		51	2													
Edinburgh.....	Apr. 27	321,200	102	7													
Glasgow.....	May 2	785,600	267	4													
Fiume.....	Apr. 27	51,500	20	4													
Ghent.....	Apr. 20	166,235	53	2													
Do.....	Apr. 27		44	3													
Gothenburg.....	do	170,100	63	14													
Gibraltar.....	May 5	25,367	9	1													
Guadalajara.....	May 4	119,468	122														
Hamburg.....	Apr. 20	953,079	241	36													
Do.....	Apr. 27		246	22													
Havre.....	Apr. 17	136,159	63	17													
Iquique.....	Apr. 20	40,000		7													
Hongkong.....	Mar. 30	336,488			21			12		1							
Karachi.....	Apr. 13	157,290	172		107												
Kharput.....	do	21,000															
Kobe.....	Apr. 14	418,646	121														
Do.....	Apr. 21		119														
Konigsberg.....	Apr. 20	252,200	98	12													
Leeds.....	Apr. 27	445,568	145	6													
Leith.....	do	81,000	17	1													
Leghorn.....	May 4	104,000	40														
Leipzig.....	Apr. 20	605,755	156	29													
Liege.....	do	166,905	58	10													
Liverpool.....	May 4	752,055	277	26	1												
Mannheim.....	Apr. 13	201,201	51	10													
London.....	Apr. 27	7,340,119	1,710														
Madras.....	Apr. 13	518,600	320					5									
Manchester.....	Apr. 27	714,427	236	27													
Matamoras.....	May 5	15,000	10	2													
Mazatlan.....	Apr. 23	22,000	20	1													
Do.....	Apr. 30		26	2													
Montreal.....	May 11	466,198	204	30													
Moscow.....	Apr. 6	1,500,000	730	91													
Do.....	Apr. 13		867	85													
Munich.....	Apr. 20	610,000	178	38													
Nagasaki.....	Apr. 14	179,257	3														
Nagoya.....	Apr. 6	424,655	161														
Do.....	Apr. 13		138														
Newcastle-on-Tyne.....	Apr. 20	269,193	79	7													
Do.....	Apr. 27		64	4													
Nottingham.....	Apr. 20	26,000	87	8													
Nuremberg.....	Mar. 30	344,797	88	11													
Odessa.....	Apr. 20	575,000	180	27													
Palermo.....	Apr. 27	340,000	130	8													
Paris.....	do	2,888,110	1,049	253													
Port Said.....	Apr. 8	25,830	34	2													
Port of Spain.....	Apr. 20	60,000	40	9													
Rotterdam.....	Apr. 27	438,744	119														
St. Johns, N. F.....	May 10	33,000															
St. Petersburg.....	Apr. 13	1,907,708	887	148													
Do.....	do		928	143													
Salina Cruz.....	Apr. 27	6,138	8	2													
San Luis Potosi.....	Mar. 2	82,479	47	2													
Do.....	Mar. 8		59	5													
Sarnia.....	May 11	9,936	2														
Shanghai.....	Apr. 7	500,000	175	25													
Do.....	Apr. 14		173	24													
Do.....	Apr. 21		159	18													
Sheffield.....	Apr. 13	455,000	134	12													
Do.....	Apr. 27		146	10													
Singapore.....	Mar. 23	303,328	202	33													
Do.....	Mar. 30		176	18													

¹ In Royal Southern Hospital, from steamship Italian Prince.

MORTALITY—Continued.

Weekly mortality table, foreign and insular cities—Continued.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—												
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.		
Smyrna.....	Mar. 9	400,000	75	8						2	2					
Do.....	Mar. 16		50	9						2						
Do.....	Mar. 23		69	9							1					
Do.....	Mar. 30		55	5												
Do.....	Apr. 6		63	6						3	1					
Port Said.....	Apr. 20	109,676	23	5												3
Do.....	Apr. 27		30	6												3
Stoke on Trent.....	do.....		67	7						1			1	3		
Tampico.....	Apr. 20	23,452	54													1
Tientsin.....	Apr. 13	465,000	30	11				1					1			1
Trieste.....	Apr. 20	235,999	108	18									5	3		1
Turin.....	Apr. 28	430,770	141	1									1			1
Vancouver.....	Apr. 27	110,000	23	1									1	2		
Do.....	May 4		25	1						1				1		
Vigo.....	Apr. 27	41,500	19	4									1			
Warsaw.....	Mar. 2	797,093	289	38						3	2	3	3	1		6
Do.....	Mar. 9		248	32				3		1	3					1
Do.....	Mar. 16		229	26				3		1	2	3	1			4
Valencia.....	Apr. 27	235,000	85	9				1			1	1	1			
Vienna.....	Apr. 13	2,081,335	677	111						1	6	9	10			7
Yokohama.....	Apr. 22	444,039								1						

MORTALITY—FOREIGN AND INSULAR COUNTRIES AND CITIES (Untabulated).

ARGENTINA—*Buenos Aires*.—Month of February, 1912. Population, 1,369,266. Total number of deaths from all causes, 1,799, including diphtheria 8, measles 6, scarlet fever 2, tuberculosis 190, typhoid fever 109.

BRAZIL—*Pernambuco*.—Two weeks ended March 31, 1912. Population, 225,000. Total number of deaths from all causes 474, including measles 1, plague 2, smallpox 52, yellow fever 8. Dysentery and malaria present.

Two weeks ended April 15, 1912. Total number of deaths from all causes 512, including plague 1, smallpox 54, typhoid fever 2, yellow fever 7.

GREAT BRITAIN.—Week ended April 20, 1912.

England and Wales.—The deaths registered in 95 great towns correspond to an annual rate of 14.5 per 1,000 of the population, which is estimated at 17,639,816.

Ireland.—The deaths registered in 21 principal town districts correspond to an annual rate of 1,157,014. The lowest rate was recorded at Ballymena, viz, 9.2, and the highest at Dundalk, viz, 55.6, per 1,000.

Scotland.—The deaths registered in 18 principal towns correspond to an annual rate of 16.1 per 1,000 of the population, which is estimated at 2,182,400. The lowest rate was recorded at Hamilton, viz,

9.3, and the highest at Leith, viz, 23.2, per 1,000. The total number of deaths from all causes was 675, including diphtheria 8, measles 41, scarlet fever, 4.

ITALY—*Genoa*.—Two weeks ended April 30, 1912. Population, 272,077. Total number of deaths from all causes 194, including diphtheria 3, measles 1, tuberculosis 38, typhoid fever 1.

PORTUGUESE EAST AFRICA—*Lourenco Marques*.—Month of March, 1912. Population, 10,000. Total number of deaths from all causes 47, including tuberculosis 5.

VENEZUELA—*La Guaira*.—Two weeks ended April 30, 1912. Population, 10,000. Total number of deaths from all causes 17, including tuberculosis 3, yellow fever 1. Leprosy cases in lazaretto.

By authority of the Secretary of the Treasury:

RUPERT BLUE,
Surgeon General,
United States Public Health and Marine-Hospital Service

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