

# PUBLIC HEALTH REPORTS

VOL. 32

NOVEMBER 30, 1917

No. 48

## VACCINATION AGAINST SMALLPOX.

### THE KIND OF VACCINE TO USE AND HOW TO USE IT.

The United States Public Health Service advises the following procedure in order to secure the best results from vaccination and to prevent possible complications.

#### I. The Vaccine.

The freshest possible vaccine should be obtained. All vaccine packages, pending use, should be kept in a metal box in actual contact with ice.

#### II. The Vaccination.

Vaccination should never be performed by cross scratching or scarification, but by one of the methods described below. If a prompt "take" is very necessary, as in case of direct exposure to smallpox or if the first attempt has been unsuccessful, three or four applications of the virus should be made, but the insertions should be at least an inch apart. Whichever method is used a control area may be first treated similarly, but without the virus, in order to estimate the amount of pressure necessary for insertion and in order to demonstrate a possible early immune reaction in previously vaccinated individuals.

#### Preparation.

The skin of the upper arm, in the region of the depression formed by the insertion of the deltoid muscle, should be thoroughly cleansed with soap and water if not seen to be clean, and in any case with alcohol or ether on sterile gauze.

After evaporation of the alcohol or ether, a drop of the virus should be placed upon the cleansed skin. To expel the virus from a capillary tube, the tube should be pushed through the small rubber bulb which accompanies it, wiped with alcohol, and one end broken off with sterile gauze; the other end may be broken inside the rubber bulb. The hole in the latter should be closed with the finger as the bulb is compressed to expel the virus.

The under surface of the arm is grasped with the vaccinator's left hand so as to stretch the skin where the virus has been placed. The skin is kept thus stretched throughout the process.

### Methods.

(a) *The method of incision, or linear abrasion.*—By means of a sterilized needle or other suitable instrument, held in the right hand, a scratch, not deep enough to draw blood, is made through the drop of virus, one-quarter of an inch long and parallel with the humerus. The virus is then gently rubbed in with the side of the needle or other smooth, sterile instrument. Some blood-tinged serum may ooze through the abrasion as the virus is rubbed in, but this should not be sufficient to wash the virus out of the wound.

(b) *The drill method.*—A sterile drill, such as is used for the von Pirquet cutaneous tuberculin test, shaped like a very small screw driver with a moderately sharp end not more than 2 millimeters wide, is held between the thumb and middle finger, and with a twisting motion and moderately firm pressure, a small circular abrasion, the diameter of the drill, is made through the drop of virus; this should draw no blood.

(c) *The multiple puncture method.*—A sterile needle is held nearly parallel with the skin and the point pressed through the drop of virus so as to make about six oblique pricks or shallow punctures, through the epidermis to the cutis, but not deep enough to draw blood. The punctures should be confined to an area not more than one-eighth of an inch in diameter.

With methods (a) and (b) it is advisable to expose the arm after vaccination to the open air, but not to direct sunlight, for 15 minutes before the clothing is allowed to touch it. With method (c) the virus may be wiped off immediately.

### III. The Vaccination Wound.

1. The original vaccination wound should be made as small as possible, and all injury to the vaccinated arm should be guarded against. Any covering which is tight, or more than temporary, tends to macerate the tissues during the "take." This is to be avoided. No shield or other dressing should be applied at the time of vaccination. Customary bathing and daily washing of the skin may be continued, so long as the crust does not break. The application of moisture to the vaccinated area should not be enough to soften the crust.

If an early reaction of immunity is to be watched for, the patient should report on the first, second, fifth, and seventh days after vaccination. Otherwise, the patient should report on the ninth day, or sooner if the vesicle, pustule or crust breaks. Every effort should be made to prevent such rupture. However, should the vesicle, pustule, or crust break, and the wound thus become open, daily moist dressings with some active antiseptic, such as mercuric chloride or dilute iodine (one part tincture of iodine in nine parts of

water) should be applied. Under no circumstances should any dressing be allowed to remain on a vaccination wound longer than 24 hours, and no dressing should be applied so long as the natural protection is intact.

On account of possible fouling by perspiration and to lessen the chance of exposure to street dust, primary vaccination should be performed preferably in cool weather.

In order to encourage proper surgical treatment, no charge should be made for the aftercare of a vaccination nor for revaccination in case the first attempt should prove unsuccessful.

Although apparently trivial, vaccination is an operation which demands skill in performance and care in aftertreatment in order to avoid the rare, but serious, complications. For the prevention of these complications vaccination (a) should be performed with strictly aseptic technique, (b) should cover the smallest possible area for each insertion, and (c) should be treated without any covering which permits maceration.

A child should be vaccinated by the time it has reached the age of 6 months, and the operation should be repeated at about 6 years of age and whenever an epidemic of smallpox is present.

---

## WINTER OUTBREAK OF POLIOMYELITIS.

ELKINS, W. VA., 1916-17.

By J. P. LEAKE, Passed Assistant Surgeon; JOSEPH BOLTON, Passed Assistant Surgeon; and H. F. SMITH, Assistant Surgeon, United States Public Health Service.

Particular attention was attracted to the West Virginia epidemic of poliomyelitis because it occurred in the winter and because it followed so closely the New York epidemic as to be really an extension of that general epidemic. At the time it was thought to be the first winter outbreak in the United States; indeed it was the first to assume anything like epidemic proportions, but a search of the records has revealed other outbreaks in this country during cold weather. Scandinavian observers had called attention to a few winter outbreaks in Sweden and Norway although no definite study had been made of the temperature conditions. A criterion must be adopted as to what constitutes a winter outbreak; the mere months of the year signify very different weather in different parts of the globe. Further, we know that occasional poliomyelitis occurs practically everywhere and in all seasons; these isolated winter cases, however, are unimportant as regards a study of conditions of infection, for it has been known ever since the epidemiologic study of poliomyelitis began that some cases occur apparently without any relation to each other, just as do cases of noninfectious nervous

diseases. Therefore it is here assumed that to be considered a winter outbreak, two or more connected cases must occur after the temperature has remained below freezing for 24 hours. A study of the available literature reveals 38 such outbreaks (Table 1), not including the West Virginia epidemic. The official meteorological records were studied, Norwegian,<sup>1</sup> Swedish,<sup>2</sup> Austrian,<sup>3</sup> Prussian,<sup>4</sup> Hessian,<sup>5</sup> or American,<sup>6</sup> as the case might be, and by interpolation from the surrounding stations, the approximate temperatures of the places where outbreaks occurred could be obtained. Besides mere distance, there had to be taken into consideration altitude, proximity to bodies of water, and direction of mountain ranges. Fortunately there were meteorological stations at several of the places themselves, as at Elkins.

---

<sup>1</sup> Jahrbuch des Norwegischen meteorologischen Instituts: Kristiania.

<sup>2</sup> Meteorologiska iakttagelser i Sverige: Uppsala & Stockholm.

<sup>3</sup> Jahrbücher der k. k. Zentral-Anstalt für Meteorologie und Geodynamik: Wien.

<sup>4</sup> Veröffentlichungen des Königlichen Preussischen Meteorologischen Instituts von G. Lüdeling: Berlin.

<sup>5</sup> Deutsches Meteorologisches Jahrbuch, Grossherzogtum Hessen: Darmstadt.

<sup>6</sup> Records of the U. S. Weather Bureau, published and unpublished.



TABLE 1.—*Winter outbreaks of poliomyelitis.*

No.	Date.	Place.	Num- ber of cases.	Latitude.	Reference.	Temperature notes.
1	Nov. 24 to Dec. 7, 1886.....	Christiansia, Norway.....	2	60° N.....	Leegaard, <sup>1</sup> p. 154.....	Maximum, 10° C. (50° F.), 17 days before first case. Minimum, -9° C. (16° F.), 4 days before last case.
2	November to December, 1904.....	Aa, Norway.....	4	64° N.....	Leegaard, <sup>1</sup> p. 165.....	Maximum, 8° C. (46° F.). Minimum, -17° C. (1° F.). Below freezing every day save 6 during 2 months.
3	February to March, 1905.....	Misvär, Norway.....	7	67° N.....	Leegaard, <sup>1</sup> p. 170.....	Maximum, 3° C. (37° F.). Minimum, -34° C. (-29° F.). Below freezing entire time. Maximum below freezing during entire 21 months save 10 days.
4	.....do.....	Sandbäck estate, Sweden.....	3	58° 45' N.....	Wickman, <sup>2</sup> p. 155.....	Maximum, 7° C. (45° F.). Minimum, -20° C. (-4° F.).
5	March and April, 1905.....	Söndres Valdres, Norway.....	7	60° 40' N.....	Leegaard, <sup>1</sup> p. 167.....	T. e first outbreak of the great 1905 Swedish epidemic. Maximum, 6° C. (43° F.). Minimum, -22° C. (-8° F.).
6	March, 1905.....	Östvasög, Norway.....	4	68° 15' N.....	Leegaard, <sup>1</sup> p. 171.....	Below freezing every day save 2.
7	October, 1905, to spring, 1906.....	Hässel and vicinity, Norway.....	45	68° 15' N.....	.....do.....	Maximum, 5° C. (41° F.). Minimum, -8° C. (18° F.).
8	October to November, 1905.....	Odensaker, Sweden.....	4	58° 45' N.....	Wickman, <sup>2</sup> p. 163.....	Maximum, 10° C. (50° F.). Minimum, -16° C. (3° F.).
9	March, 1906.....	Skierstad, Norway.....	6	67° N.....	Leegaard, <sup>1</sup> p. 177.....	Maximum, 3° C. (37° F.). Minimum, -23° C. (-9° F.).
10	Oct. 1 to Dec. 20, 1905.....	Carlshamn group, Sweden.....	9	58° 10' N.....	Wickman, <sup>2</sup> p. 216.....	Maximum, 14° C. (57° F.). Minimum, -11° C. (12° F.).
11	Oct. 2 to Dec. 7, 1905.....	Stora's group, Sweden.....	18	58° 10' N.....	Wickman, <sup>2</sup> pp. 211-213.....	Maximum, 6° C. (43° F.). Minimum, -14° C. (7° F.).
12	November, 1905, to Feb. 2, 1906.....	Årvidsberg group, Sweden.....	40	58° 20' N.....	Wickman, <sup>2</sup> pp. 241-244.....	Maximum, 6° C. (43° F.). Minimum, -20° C. (-4° F.). Intense epidemic, apparently direct contagion between cases.
13	Nov. 14 to Dec. 3, 1905.....	Medåker, Sweden.....	3	59° 30' N.....	Wickman, <sup>2</sup> p. 234.....	Maximum, 7° C. (45° F.). Minimum, -17° C. (10° F.).
14	Dec. 14 and 17, 1905.....	South Västertotten, Sweden.....	2	64° 15' N.....	Wickman, <sup>2</sup> p. 261.....	Maximum, 5° C. (39° F.). Minimum, -11° C. (12° F.).
15	November and December, 1905.....	Edsby, Sweden.....	4	63° 35' N.....	Wickman, <sup>2</sup> p. 260.....	Maximum, 5° C. (41° F.). Minimum, -16° C. (3° F.).
16	Nov. 19 to 23, 1905.....	Mellansel, Sweden.....	7	63° 20' N.....	Wickman, <sup>2</sup> p. 260.....	Maximum, 8° C. (43° F.). Minimum, -15° C. (5° F.).
17	November, 1905, to February, 1906.....	Vienna and Lower Austria.....	125	48° 15' N.....	Zappert, <sup>3</sup> p. 64.....	Maximum, 9° C. (48° F.). Minimum, -11° C. (12° F.).
18	Nov. 20 to Dec. 5, 1905.....	Marguburg and suburbs, Germany.....	50	50° 50' N.....	Müller, pp. 66, 67.....	Maximum, 9° C. (48° F.). Minimum, -11° C. (12° F.).
19	December, 1905.....	Heger and vicinity, Germany.....	41	51° 20' N.....	Krause, <sup>5</sup> p. 148.....	Maximum, 12° C. (54° F.). Minimum, -5° C. (23° F.).
20	November to December, 1909.....	Central Nebraska.....	20	41° N.....	McClanahan, <sup>6</sup> p. 1161.....	Maximum, 27° C. (81° F.). Minimum, -28° C. (-14° F.).
21	January to March, 1910.....	Jämtland, Sweden.....	25	63° N.....	Wickman, <sup>2</sup> translated by Maloney, <sup>7</sup> p. 180.....	Maximum, 7° C. (45° F.). Minimum, -30° C. (-22° F.).
22	Oct. 10, 1910, to Mar. 17, 1911.....	Mo, Norway.....	15	68° 15' N.....	Leegaard, <sup>1</sup> p. 169.....	Maximum, 8° C. (46° F.). Minimum, -20° C. (-4° F.).
23	December, 1910, to Jan. 1, 1911.....	Ware, Mass.....	3	42° 15' N.....	Roesau, Shoppard & Amoss, <sup>8</sup> p. 748.....	Maximum, 9° C. (48° F.). Minimum, -19° C. (2° F.).
24	Mar. 16 to Apr. 11, 1911.....	Mosjön, Norway.....	17	66° N.....	Leegaard, <sup>1</sup> p. 205.....	Maximum, 13° C. (55° F.). Minimum, -18° C. (-0.4° F.).
25	October to December, 1911.....	Norrbotten, Sweden.....	11	65° -69° N.....	Wernstedt, <sup>9</sup> p. 241.....	Direct contact between several of the cases.
26	Nov. 2 to Dec. 12, 1911.....	Elverum, Norway.....	18	60° 50' N.....	Leegaard, <sup>1</sup> p. 191.....	Maximum, 11° C. (52° F.). Minimum, -23° C. (-9° F.).
27	Mar. 15 to Apr. 15, 1911.....	Färila, Sweden.....	7	61° 45' N.....	Wernstedt, <sup>9</sup> p. 237.....	Maximum, 13° C. (55° F.). Minimum, -18° C. (-0.4° F.).
28	April, 1911.....	Hofgarna, Sweden.....	3	64° N.....	Wernstedt, <sup>9</sup> p. 239.....	Maximum, 11° C. (52° F.). Minimum, -25° C. (-13° F.).

TABLE 1.—*Winter outbreaks of poliomyelitis*—Continued.

No.	Date.	Place.	Num- ber of cases.	Latitude.	Reference.	Temperature notes.
29	Apr. 1 to 15, 1911.....	Tjäll, Sweden.....	5	63° 50' N	.....do.....	Maximum, 9° C. (48° F.). Minimum, -15° C. (5° F.).
30	Feb. 2 to Mar. 26, 1911.....	Aa, Norway.....	8	64° N	Leegaard, p. 200.....	Maximum, 6° C. (43° F.). Minimum, -18° C. (9° F.).
31	January and February, 1911.....	Lavanger, Norway.....	12	63° 50' N	Leegaard, p. 201.....	Maximum, 6° C. (43° F.). Minimum, -21° C. (-6° F.).
32	October, 1911, to January, 1912.....	Rollag, Norway.....	16	60° N	Leegaard, pp. 185-186.....	Maximum, 11° C. (52° F.). Minimum, -17° C. (1° F.).
33	November, 1911, to January, 1912.....	Senlen Island and vicinity, Norway.....	20	69° 30' N; over 200 miles north of Arctic Circle.	Leegaard, p. 207.....	Maximum, 8° C. (46° F.). Minimum, -13° C. (9° F.).
34	October, 1911 to Feb. 10, 1912.....	Kolvereid, Norway.....	25	64° 45' N	Leegaard, p. 204, fig. 27.....	Maximum, 10° C. (50° F.). Minimum, -15° C. (5° F.).
35	Jan. 5 to Feb. 20, 1912.....	North of Mandal, Norway.....	9	53° 15' N	Leegaard, p. 197.....	Maximum, 6° C. (43° F.). Minimum, -21° C. (-6° F.).
36	November, 1911 to Mar. 8, 1912.....	Göteborg, Sweden.....	54	57° 40' N	Wernstedt, pp. 240 and 242.....	Maximum, 11° C. (52° F.). Minimum, -18° C. (-0.4° F.).
37	Nov. 21 to Dec. 14, 1916.....	Leeds, Pa.....	5	39° 55' N	La Bontillier, p. 204.....	Maximum, 13° C. (55° F.). Minimum, -24° C. (-11° F.).
38	March, 1917.....	Waterbury, Vt.....	5	43° 20' N	Public Health Reports.....	Maximum, 13° C. (55° F.). Minimum, -24° C. (-11° F.).
39	Nov. 22, 1916, to Feb. 11, 1917.....	Winthrop, Taylor, and Marion Counties, W. Va.....	13 73	39° N	Personal investigation and information furnished by Dr. Weirich of the West Virginia Department of Health.	Maximum, 21° C. (70° F.). Minimum, -23° C. (-10° F.).

<sup>1</sup> Leegaard, Dr. Chr.: 1914-15.—*Deutsch. Zeitschr. f. Nervenhik.*, vol. 53.

<sup>2</sup> Wickman, Dr. Ivar: Beiträge zur Kenntnis der Heine-Mednischen Krankheit, Berlin.

<sup>3</sup> Zappert, J.: 1911.—*Studien über die Heine-Mednischen Krankheit*. Leipzig u. Wien.

<sup>4</sup> Müller, Eduard: 1911.—*Die spinale Kinderlähmung*. J. Springer, Berlin.

<sup>5</sup> Krause, Paul: 1911.—*Die spinale epidemische Kinderlähmung*. Therap. d. Gegenwart, vol. 52, 145-152, 208-214.

<sup>6</sup> McLachlan, H. M.: 1910.—*A brief report of the Nebraska epidemic of poliomyelitis*. J. Am. M. Ass., vol. 56, 1160.

<sup>7</sup> Maloney, W. J. M. A.: 1913.—*Translation of Wickman: Acute Poliomyelitis*. Monograph Series No. 16: J. Nerv. & Ment. Dis. Publishing Co., N. Y.

<sup>8</sup> Rosenau, Shoppard & Amoss: 1911.—*Boston Med. and Surg. J.*, vol. 164, 743-748.

<sup>9</sup> Wernstedt: 1912.—*Some epidemiological experiences from the epidemic of infantile paralysis in Sweden in 1911*: Report from the State Medical Institute of Sweden: Stockholm.

<sup>10</sup> La Bontillier: 1917.—*Am. J. M. Sc.*, vol. 133, 188-206. (Feb.)

<sup>11</sup> Public Health Reports, Apr. 20, 1917: Vol. 32, p. 574.

<sup>12</sup> For the purpose of comparison with other epidemics, only the paralytic cases occurring during cold weather are here counted, 36 in Elkins, 22 in Gratton, 15 in Fairmont, and 5 rural. Of the recognized nonparalytic cases during the epidemic period there were in Elkins 34, in Gratton 9, in Fairmont 9, and 2 rural, making a total of 124 for this group of food.

It is to be seen that some of these outbreaks were far north of the Arctic Circle. In some, the thermometer went below freezing nearly every day of the outbreak, and in some it remained below practically the entire time. In 15 of the outbreaks the thermometer went below zero Fahrenheit, the lowest temperature recorded being 29° below zero Fahrenheit—34° below zero Centigrade—at Misvär, Norway. The contagion was apparently of the most direct sort in a few cases, notably in some of a group south of Ätvidaberg, Sweden, and in the Mosjöen epidemic in Norway. The infrequent communication between houses in cold weather, and the general infrequency of sporadic, unrelated cases at this season, make it possible to trace contact between individual cases much more definitely than in summer, so that the absence in most instances of clear histories of exposure to recognized cases, as we shall see in studying the West Virginia outbreak, is all the more significant in showing the great importance of unrecognized cases and of carriers in the spread of the disease.

#### Origin of the Elkins Epidemic.

The general origin of the Elkins outbreak was undoubtedly the great New York epidemic of 1916.

It was shown at the Hygienic Laboratory that the West Virginia and the New York diseases were the same, by finding monkeys which had had an attack of poliomyelitis from the Elkins virus immune to the New York virus.

No direct connection could be traced to previous epidemics as regards the cases themselves, but it seems probable that the highly infective virus reached Elkins through Somerset County, Pa., and Garrett County, Md., in each of which a sharp outbreak occurred during the summer and autumn of 1916, the Maryland cases being on the whole later than those in Pennsylvania. From Somerset County into Garrett County, and from Garrett County down to Elkins, there is a highway, an automobile road, which carries much local traffic. The cases in Garrett County were strikingly distributed along this highway, and not in accordance with the general population distribution. No early cases were discovered along the road north of Elkins, but much of the automobile travel from Elkins goes directly into Maryland without stopping at intermediate points. One or more unrecognized cases or healthy carriers would therefore be assumed to be responsible for the Elkins outbreak.

Of the small outbreaks occurring in the United States during the summer of 1917, five were in localities within or adjoining West Virginia, i. e., those occurring in Rockingham and Page Counties, Va.; Allegany and Garrett Counties, Md.; Marion County, W. Va.; Belmont County, Ohio; and Newcastle, Pa.

In a house-to-house canvass of Elkins, search was made for old cases of poliomyelitis; that is, cases with onsets in previous years. Nine such were found in a population of 6,340. No relation of these cases to the origin of the epidemic could be made out. At least eight other old cases of paralytic disease in children were found which were not poliomyelitis. Of the nine poliomyelitis cases, four had their onset in Elkins and five were in persons living elsewhere at the time. The ages at onset were as follows:

	Cases.		Cases.		Cases.
Under 1 year.....	0	2 years.....	1	4 years.....	1
1 year.....	4	3 years.....	2	19 years.....	1

The years of onset were as follows:

	Cases.		Cases.		Cases.
1900.....	2	1905.....	2	1910.....	1
1901-1903.....	0	1906-1908.....	0	1911.....	2
1904.....	1	1909.....	1		

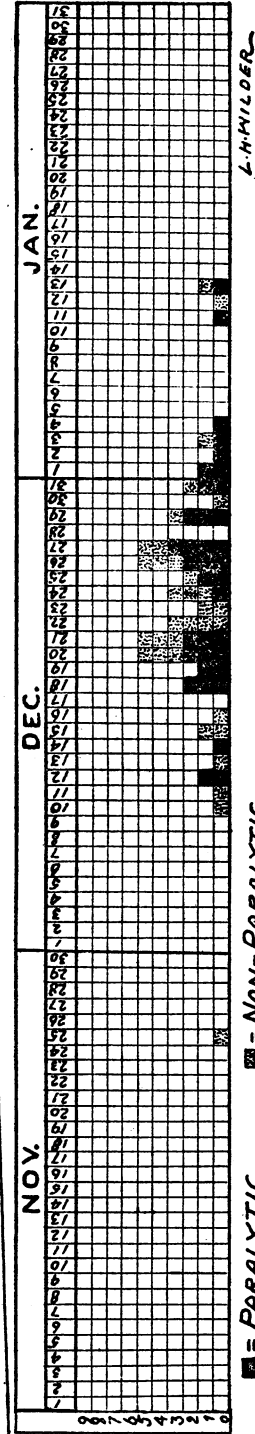
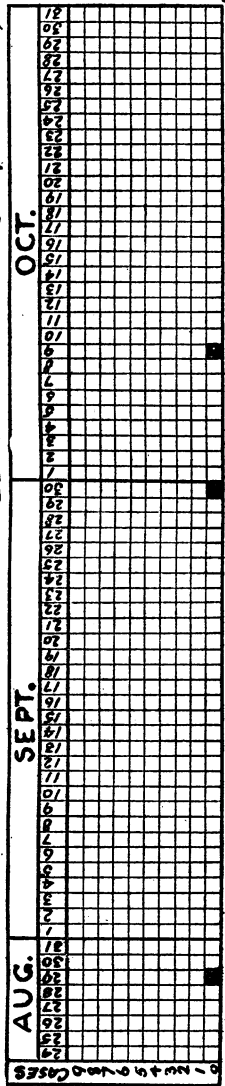
One case had its onset in spring, 4 had their onset in summer, and 3 in autumn. From these figures, 9 cases in 16 years in a population of 6,000, it would appear that a normal incidence of about 10 per 100,000, or 0.1 per thousand per year, is not an unreasonable estimate. This is, of course, higher than the reported incidence in any community during nonepidemic times, the New York City figures for 1909-1915 giving about 0.05 per thousand per year; but it is recognized that in the absence of an epidemic many cases are not reported, and only by such a canvass of the total population can the actual incidence be approximated.

No deaths from infantile paralysis were recorded for Elkins or Randolph County during the six years preceding 1916. Under the present system of recording deaths, a detailed analysis of the mortality statistics from other diseases could be of little value.

#### The Elkins Cases.

The onset of the first case of the real epidemic in Elkins (see Chart 1) was on November 25, the next on December 10, the midpoint on December 24, and the onset of the last case January 13. Three scattering cases were found to have occurred during the year previous to this, and these are included in the tables and charts, but of the real epidemic 33 cases occurred previous and 33 subsequent to December 24, with 4 cases on that date—70 in all. The maximum temperature was below freezing on November 15 and 25, December 13 to 15, 18, and 19, 29 and 30, January 11 and 12, 15 and 16, 19 and 26;

CHART 1:— POLIOMYELITIS. DATES OF ONSET OF CASES, ELKINS, W. VA. 1916-1917.



■ = PARALYTIC,

□ = NON-PARALYTIC.

U.S. PUBLIC HEALTH SERVICE

L.H. WILDER

that is, twice before, and nine times during, the outbreak. The highest temperature during the outbreak, or for 15 days preceding, was 70° F. (21° C.), but on that same day (Dec. 8) it fell to freezing. There was a very cold snap just after the epidemic started. On December 13 the thermometer ranged between 31° and 14° F. (−0.5° and −10° C.); on the 14th between 27° and 4° F. (−3° and −15° C.); on the 15th between 24° and 8° F. (−4° and −13° C.); and on the 16th between 39° and 1° above zero F. (4° and −17° C.). The largest number of onsets for any one day was 6, on December 20, 21, 26, and 27.

TABLE 2.—*Age incidence, recognized poliomyelitis at Elkins, 1916-17.*

	Years.												Total.
	Under 1.	1	2	3	4	5	6	7	8	9	10	22	
Nonparalytic.....	2	2	5	2	9	5	5	1	3	0	0	0	34
Paralytic.....	3	6	9	4	7	2	2	3	1	0	1	1	39
Total.....	5	8	14	6	16	7	7	4	4	0	1	1	73
Fatal.....	2	1	3	0	1	0	0	2	1	0	1	0	11

The age incidence is shown in Table 2. Sixty-six per cent of the cases were under 5 years, 97 per cent under 10. The total population of the city was 6,340, under 5 years of age 776, and 1,586 under 10. Counting paralytic cases only, this gives a case incidence of 37 per 1,000 for the younger age group, 23 per 1,000 for those under 10, and 6.1 per 1,000 for the whole population. The case mortality rate of the paralytic cases was 28 per cent.

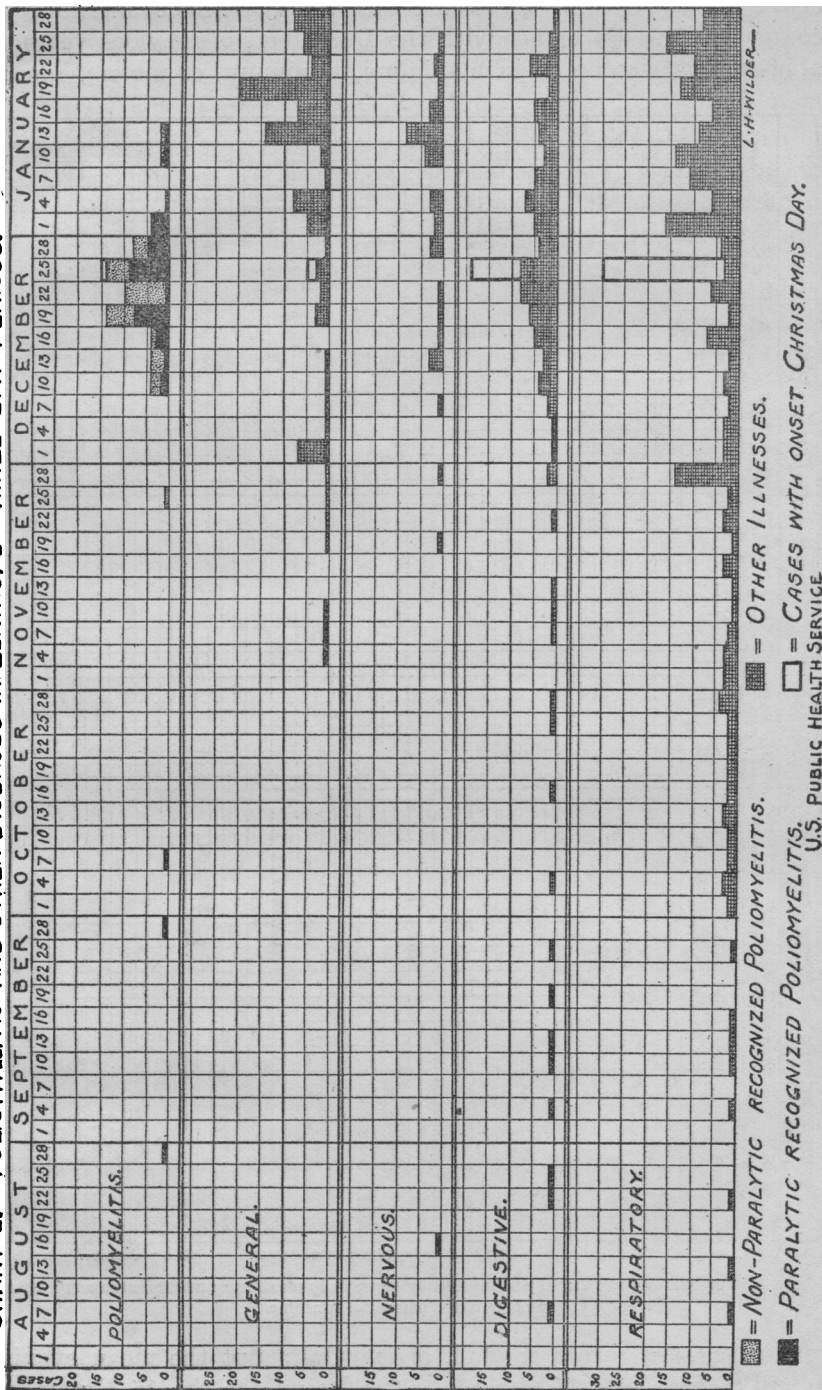
#### Possible Modes of Transmission.

Chart 3 shows the range of temperature and the number of cases on each day, the amount of snow on the ground at 8 p. m., the days on which snow or sleet fell, the amount of precipitation (snow being counted as its melted equivalent of water), and the amount of sunshine in proportion to the maximum possible.

The preponderance of temperatures below freezing during the epidemic proper may be seen by reference to the heavy line at the level of 32° F. across the upper part of the chart. As indicated on the chart, there were several inches of snow on the ground during the period when the cases occurring at the height of the epidemic probably received their infection.

The days on which the onset of the greater number of cases occurred, though cold, were somewhat warmer than the days just preceding; but the study of very large epidemics has not substantiated the impression that warm days predispose to an immediate attack

CHART 2.— POLIOMYELITIS AND OTHER DISEASES IN ELKINS, BY THREE-DAY PERIODS.



of the disease, such as is the case with the diarrheas of infancy. In comparing this December with the Decembers of previous years, no abnormality was noted in maximum, minimum, or mean tempera-

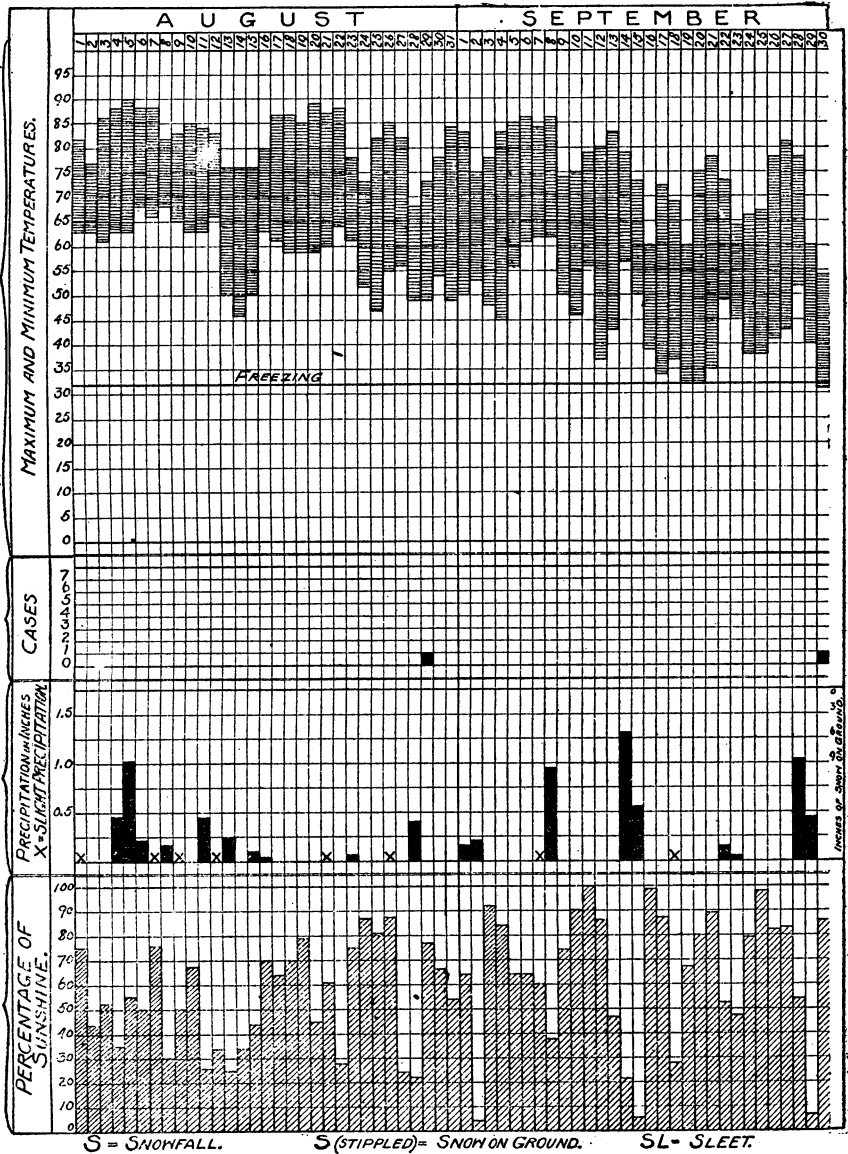


CHART 3, SECTION A.—Incidence of poliomyelitis by days; daily maximum and minimum temperatures; rainfall; cases; percent of sunshine.

tures, fogginess, wind, rainfall, or snowfall; but the mean evening humidity was low—67 per cent—the lowest for the 15 Decembers preceding being 74 per cent.



According to our observations of the surroundings of the patients, however, and information obtained from the families as to dustiness prior to onset, ordinary street or road dust is not likely to have

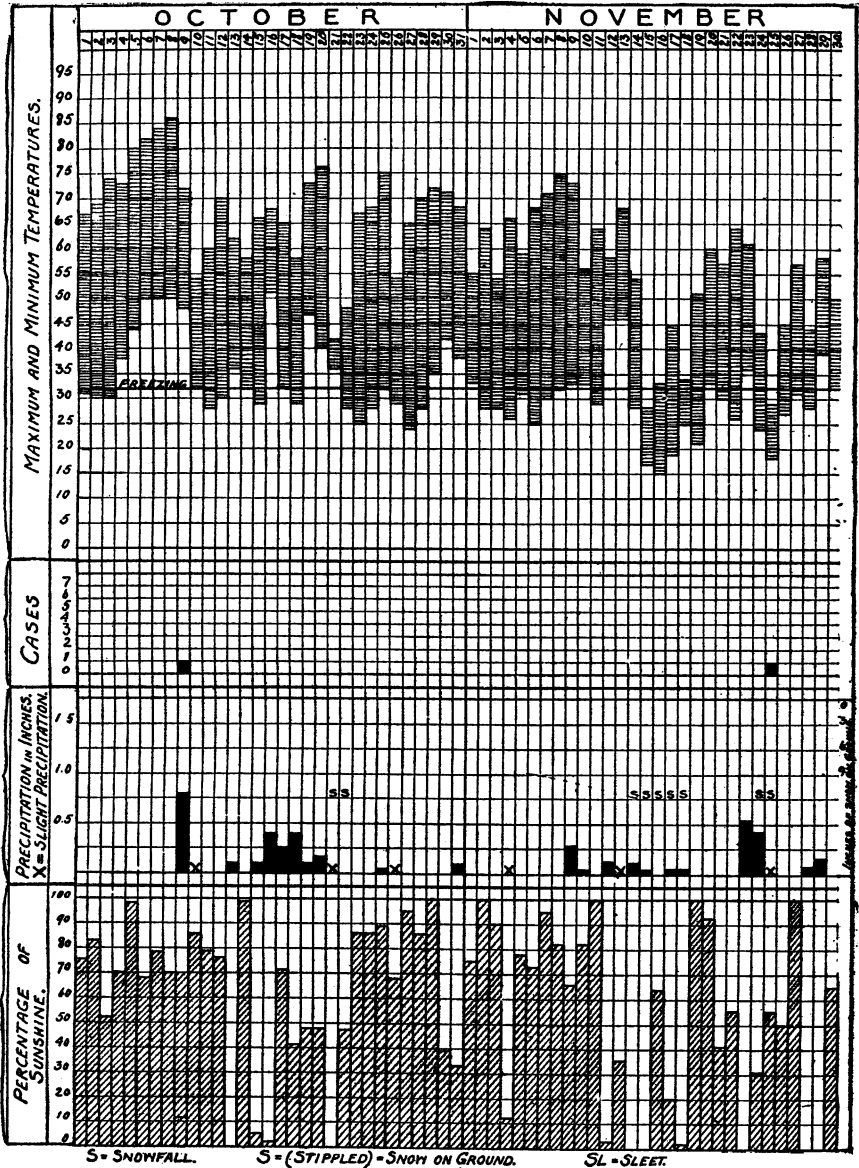


CHART 3, SECTION B.—Incidence of poliomyelitis by days; daily maximum and minimum temperatures; rainfall; cases; percent of sunshine.

played a part in causation of the disease. The morning humidity was normal for the month. Though poliomyelitis is universally recognized to be an infectious disease, and though the consensus of

opinion, now still further substantiated, ascribes its spread to contact, direct or indirect, it has been thought by some that peculiar meteorological conditions may predispose to the disease and determine an

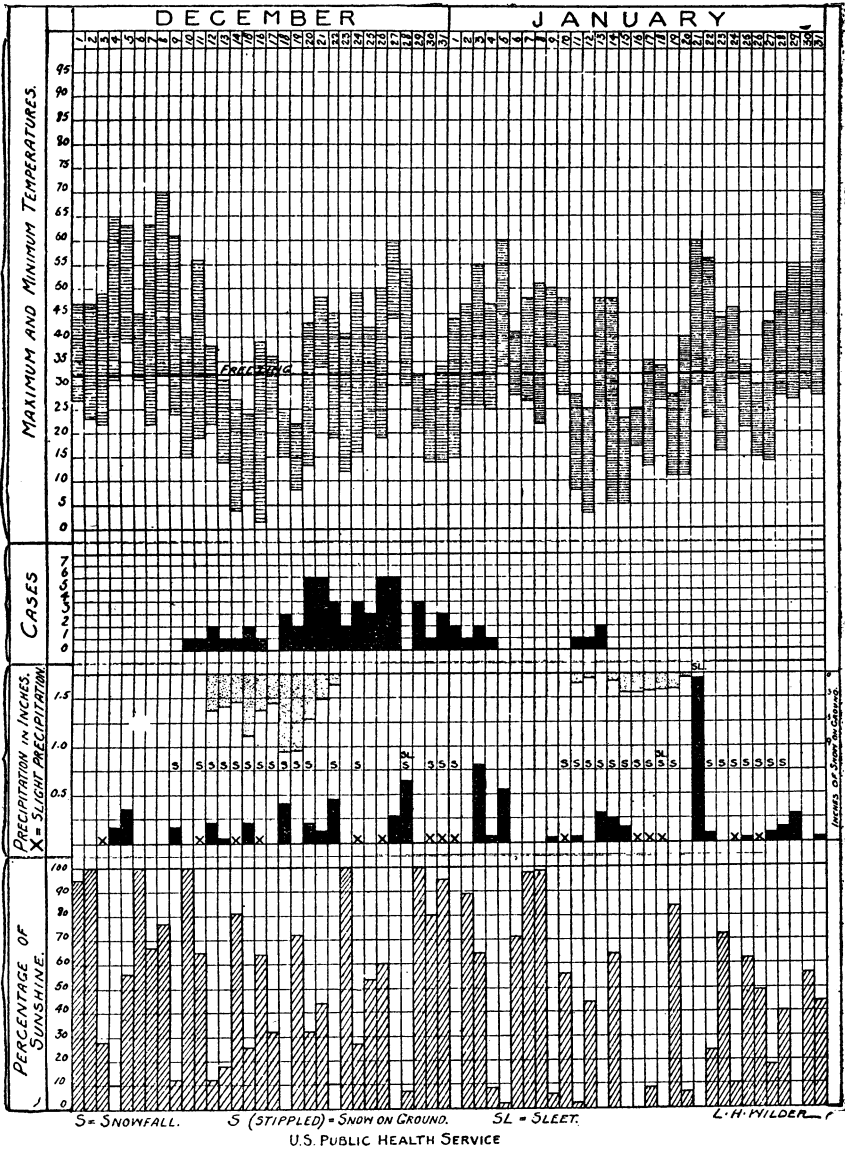


CHART 3, SECTION C.—Incidence of poliomyelitis by days; daily maximum and minimum temperatures; rainfall; cases; percent of sunshine.

epidemic, the germ itself being widespread in nonepidemic times. It has also been thought that attacks of rhinitis may allow the virus a nidus on the mucous membrane of the upper respiratory tract

where it would otherwise be destroyed. The data collected for Elkins hardly give support to these ideas. One of the phases of this study to which particular care and much time was given was a house-to-house canvas of the entire population of the city for statistics as to age, sex, occupation, visits and visitors, and morbidity. In our canvas for all cases of illness occurring before, during, and after the epidemic, no undue prominence of coryza appeared, and the only abnormality noted in the weather conditions—an increased winter dryness—would tend to inhibit respiratory disorders.

Further, dust or meteorologic conditions could hardly have been factors of great importance, on account of the nature of the radial spread of the disease, as has often been pointed out in other epidemics. The outbreak subsided in Elkins at the same time that it was advancing in Grafton, and still later it spread to Fairmont, though all these places were experiencing weather conditions which at any one time were practically identical, but from first to last very variable, as regards humidity, temperature, dustiness, rains and snowfall, and wind. The 22 paralytic and 6 recognized nonparalytic cases in Grafton occurred from December 20 to January 29, with the height of the outbreak on January 7. The 15 paralytic and 4 recognized nonparalytic cases in Fairmont occurred from January 2 to February 11, with the height at this focus about the middle of January.<sup>1</sup> The weather at both these points during the outbreaks was fully as cold as that at Elkins.

Turning again to the temperature itself, below freezing 23 out of the 30 days preceding, and 31 out of the 34 days during the Elkins epidemic, and bearing in mind the 38 other winter outbreaks on record, most of them during much colder and some during extremely cold weather, it can be denied that summer insects play any necessary rôle in the spread of the disease. Careful watch was kept for such insects in Elkins. On five of the warmer days a few rather sluggish houseflies and other nonbiting flies were seen in residences. Mosquitoes were observed outdoors on three days. Stables, manure piles, and sunny walls were searched repeatedly for *Stomoxys calcitrans*, the biting stable fly, without success. Stable men affirmed, that no biting flies had been noticed since before Thanksgiving Day. It is inconceivable that such a sharp winter epidemic as this could have been caused by any of these insects.

As noted in previous epidemics, the incidence in the most cleanly homes, as well as in those less cleanly, is an effective argument against spread by insects commonly associated with filth, such as bedbugs and lice. This argument is especially potent here, for on

---

<sup>1</sup> The data for the Grafton and Fairmont cases were obtained from the report of Dr. C. R. Weirich, director of the division of preventable diseases, West Virginia State Department of Health, to whom acknowledgment is also made for assistance during the epidemiological study in Elkins.

the house-to-house canvass it can be affirmed that the proportion of scrupulously kept residences was as great among the infected as among the noninfected. Although bedbugs and lice may invade any home, if they were necessary carriers of the disease we should have a noticeably increased incidence in houses most likely to be frequented by them.

Among other things investigated, in accordance with the suggestion of Dr. Mark Richardson, of Massachusetts, were rats, but we found no evidence of an epizootic among rats, nor of particular association of cases with rats.

Though included in the schedule used in the investigation of each case, and made the subject of other more detailed investigation in certain instances, neither domestic animals nor ingested material could be incriminated as causing poliomyelitis in Elkins. Of the latter, milk and water were the two materials most susceptible of study; the histories elicited in each case compared with the general data for the city showed no relation to the disease. One of the babies—only 40 days old—had taken nothing but mother's milk up to the time of onset. Many other exclusively breast-fed cases have occurred in Elkins and elsewhere, but this is the youngest case on record, confirmed by histological findings at autopsy and by monkey inoculation.

As regards direct contact with recognized cases as a cause of the disease, our facilities for investigation were excellent, since by the house-to-house canvass all the cases which could, with reasonable degree of certainty, be called poliomyelitis were found. The list of these cases was carried to each infected house, and questions were asked concerning contact with each name on the list. Every case was visited more than once; some were visited several times. As a rule, about two hours were spent in each house on the first visit. On the blank schedule used particular attention was given to the acute clinical features and to contact, many other questions being asked to check and bring up from other angles answers to these questions. We can not refrain from commending the sane helpfulness of the physicians and people of Elkins. In a less homogeneous, or less thoroughly American, community, these studies would have been almost impossible. Even with this opportunity, possible direct contact—that is, contact with actual previous cases through which the disease might have been contracted—could be made out in only 26 per cent of the cases.

Quarantine of the cases could have had little to do with this low percentage of direct contacts, for the first nonfatal case was not reported until December 26, after practically all of the cases had received their infection. Indeed it was only with the knowledge of the presence of the epidemic that the early nonparalytic and fatal cases could be diagnosed in retrospect.

Indirect contact, through parents or acquaintances, occurred so frequently that analysis would be without avail. The incidence of the disease was heavy in Elkins, and the population mingled freely up to the height of the epidemic, when the disease began to be recognized. The greater part of the remainder of the cases were by this time in their incubation period. In all cases, however, repeated questions were asked concerning indirect contact, in the hope that additional opportunities for direct contact—that is, contact with patients themselves—might be remembered by the parents. Except in members of the same family, where frequently the dates of onset were so close as to suggest a common source of infection, the opportunities for contact with recognized cases when they occurred were usually not intimate, while in several cases mothers or other relatives of sick children were stated to have fondled children of other families who afterwards became sick.

On the face of these returns, therefore, granting that poliomyelitis is solely a human disease and is conveyed by contact (we have very slender evidence to lead us to believe otherwise), 74 per cent of the cases were occasioned by indirect contact through unrecognizable cases or through carriers. The other illnesses, which might have been unrecognizable poliomyelitis and which we shall speak of later, occurred for the most part in children. As regards possible carriers, it is interesting to note that in each of the two successful experiments on record (one <sup>1</sup> in New York and one <sup>2</sup> in Sweden) in which natural carriers were clearly demonstrated, the pooled nasal secretion included that from at least one adult. Furthermore, the usual history of indirect exposure obtained in the Elkins epidemic was through an adult.

It might well be that opportunities for direct infection presented themselves in Elkins which were not remembered by the parent, in stores, in street play, or at other times. In some of the rural cases studied, however, direct exposure to a recognizable case of the disease could not have taken place. On account of the severe weather the children had been kept close at home for weeks, and no other members of the family had been sick.

Any explanation of the mode of conveyance of poliomyelitis must assume that the relative susceptibility to the disease in all ages and in all places is low. Only a very small proportion of those exposed are attacked.

#### Clinical Features.

The general character of the epidemic, the age incidence, fatality rate, and clinical symptoms correspond with the New York 1916 epi-

---

<sup>1</sup> Flexner, Clark, and Fraser: 1912—*J. Am. M. Ass.*, vol. 60, pp. 201-202. (Jan. 18.)

<sup>2</sup> Kling and Pettersson: 1914—*Deutsch. m. Wehnsch.*, vol. 40, p. 321. (Feb. 14.)

demic, with the possible exception that some respiratory symptoms rather frequently accompanied the other acute symptoms. Forty per cent of the cases had onset with one or more remissions.<sup>1</sup>

*Incubation period.*—Some data are afforded by this epidemic as to the incubation period of poliomyelitis. The periods formerly assigned, as low as one or two days, are now generally admitted to be too short. The possibility of simultaneous infection of two cases in one family or in close association by an adult carrier was not generally taken into account. We now recognize that two associated cases with onsets within a few days of each other probably have received their infection from the same source, instead of the later case from the former, the difference in time of onset being due to variation in incubation period. The figures based on the 1916 experience in New York and elsewhere have been given as 4 to 14 days.

This corresponds to the incubation period in artificially-infected monkeys; 4 days is about the minimum of highly virulent strains after having been passed through several generations of monkeys, while 14 days corresponds to the longer period, when a monkey is inoculated with material of lower virulence, for that species, direct from a human case. Incubation periods as long as 50 days, in monkeys, have been reported under these circumstances. The usual monkey inoculations giving the shorter incubation periods are made directly into the brain, and would be expected to produce the disease more quickly than infection by natural channels. If we may draw an analogy from rabies, a somewhat similar disease, the incubation period in the laboratory tends to be much shorter than in nature. We have one clear case in this epidemic giving an incubation period of at least nine days.

The child in question left Elkins after having been exposed directly to cases of the disease some days previous, and to possible carriers, of course, during the entire time in Elkins. He was out of contact with people from Elkins or other infected localities for nine days, when he was taken with the disease. This is more significant than the usual history of the sort, because, on account of the time of the year, poliomyelitis being in abeyance everywhere except in West Virginia, possible carriers from other localities can be more clearly excluded.

*Diagnosis.*—The question may be asked as to what constitutes a case. Our criterion for officially reporting a case, so that it would be quarantined, was that it should be of the paralytic type, showing, in addition to the acute symptoms, definite localized weakness (not a simple febrile weakness) or a clearly demonstrable disturbance of reflexes, a break in the reflex arc. Unless we base them on paralytic cases, statistics from different places are not comparable.

---

<sup>1</sup> Public Health Reports, 1917: The diagnosis of poliomyelitis, vol. 32, No. 44, pp. 1831, 1833. (Nov. 2)

There were 39 paralytic cases in Elkins, an incidence of 6.1 per 1,000 of population. But, even of these 39, we believe that the majority would not have been recognized or would have been counted as abortive in many localities. Of the 11 fatal cases, 6 were not recognized as such at time of death; of the nonfatal paralytic, 2 were not recognized until discovered in the house-to-house canvass, and 14 had such slight motor disturbance that recovery was complete in less than 3 weeks from onset.

Lumbar puncture would enable positive diagnoses to be made for quarantine purposes in such of the nonparalytic cases as are meningeal. But unless definite benefit to the patient can be promised from the lumbar puncture, relatively few parents will consent to the operation on the mild cases merely for diagnosis, and we believe that the proportion of abortive cases which can be officially diagnosed in this way will always be small. The fatal cases which occurred after our arrival in Elkins, though the clinical history was usually not clearly that of poliomyelitis (the symptoms being referred to the respiratory tract rather than to the musculature) were demonstrated positively by histological examination, and in two cases by monkey inoculation. This would indicate that very acutely fatal illnesses in children during the prevalence of poliomyelitis had best be considered cases of infantile paralysis, unless another diagnosis is clearly established.

In the diagnosis of the nonparalytic cases, we were sometimes assisted by the similarity of symptoms, if there was a paralytic case in the same family. In general, the nonparalytic cases which we recognized gave a history of fever with digestive disturbance, constipation and vomiting being two of the frequent symptoms, and either meningeal symptoms (hyperesthesia, pain on forward flexion of the neck, drowsiness, irritability) or a transient weakness out of proportion to the febrile disturbance. Headache, sweating, and retention of urine were often met with. A very common history in both paralytic and nonparalytic cases, when careful inquiry was made, was an onset with remissions; the child would be better for awhile and then worse again. We recognized 34 nonparalytic cases, seven-eighths as many as the paralytic. By far the greater part of the nonparalytic cases were not recognized until the house-to-house canvass was made, though some had been suspected previously.

One other question, to which we addressed ourselves, was whether poliomyelitis can occur with neither meningeal nor paralytic symptoms. In other words, are there many light cases of illness which we could not by any criteria, such as those just mentioned, class as poliomyelitis, and yet which are due to the same cause? It is obvious that a definite, proved answer to this question can hardly be given; if by a fortunate chance a positive monkey inoculation should be obtained from the nose and throat secretions of such a

case, it would still be possible that the patient was a mere carrier, and that his symptoms had nothing to do with poliomyelitis; on the other hand, the neutralization test, to determine whether the blood serum destroys the virus, may give a positive result with those merely exposed to the disease, or may conceivably give a negative result with those who have suffered from a very light attack, since monkeys require a definite paralysis as a rule to become immune to the virus.

Our method of approaching this problem was to take a brief history of all cases of illness from August, 1916, to February, 1917, that could be remembered by the members of the household encountered in our house-to-house survey of every home in Elkins. Doubtless many were forgotten by the mothers or omitted for one reason or another; doubtless also those most vividly remembered were those occurring when everyone was on the lookout for poliomyelitis. But by a classification of these illnesses, and chronological comparison with the curve of the epidemic, it was thought that a tentative solution of our problem could be obtained.

At first, contact studies were made of the doubtful cases of poliomyelitis, but these grew so complex that the question of contact was finally confined to the 73 definite cases (39 paralytic and 34 nonparalytic).

Our 512 other cases of illness in the 1,370 families questioned were divided into four groups, respiratory, digestive, nervous, and general, according to their predominant symptoms. In the respiratory group, we placed those complaining principally of cough, cold, or sore throat; in the digestive, those with constipation, diarrhea, nausea, or vomiting; in the nervous, twitching or irritability; the general group comprised those with merely fever, malaise, skin, or urinary trouble, and such definite diseases as measles. The greater number of all these 512 cases were not sick enough to consult a doctor.

The result of the tabulation showed (see Chart 2), as was to be expected, that, in general, the most recent illnesses were best remembered. This is particularly the case with the respiratory, nervous, and general groups. On account of the likelihood of illnesses being caused by indiscretions of various sorts at Christmas, the cases with onset on that day were counted separately. But even disregarding these, a peculiar similarity is noted in the digestive cases and the poliomyelitis cases, as regards their time of onset; instead of being most numerous at the time of investigation (last of January and first of February), these illnesses, not diagnosable as poliomyelitis from the history, and some of them very trifling in character, show a tendency to group themselves around the time when poliomyelitis was prevalent. We were in entire ignorance of this result until the data were finally assembled and the charting was completed. In fact, we had supposed a priori that the nervous and respiratory cases would more



naturally show a relation to the poliomyelitis; conscious or unconscious bias could hardly, therefore, have entered into the result. A summary of the chart appears in Table 3.

TABLE 3.—*Illnesses in Elkins as reported in house-to-house canvass, by 25-day periods.*

	Nov. 15-Dec. 9.	Dec. 10-Jan. 3.	Jan. 4-28.
Various illnesses.....	47	99	172
Digestive disturbances.....	8	54	34
Poliomyelitis.....	1	64	5

If histories of digestive disturbances had followed the chronology of the various illnesses, nervous, respiratory, and general, which were presumably not poliomyelitis, we should have had only 18 such for the 25-day period, December 10 to January 3, instead of 54. It may, therefore, be assumed that if our data are correct, about 36 digestive cases were unrecognized poliomyelitis, approximately as many as there were paralytic or recognized nonparalytic cases.

Thus we are led to believe it probable that other types of nonparalytic poliomyelitis than the meningeal do exist, and that in these other types symptoms referable in the first instance to the digestive tract are likely to be prominent. This is not saying, however, that the digestive tract is the portal of entry of the virus. Digestive symptoms in the paralytic cases come on only several days after exposure.

#### Administrative Control.

The tentative conclusion reached above, that nonparalytic cases of poliomyelitis occur, practically nonrecognizable on account of the absence of meningeal symptoms and their slight severity (frequently no doctor was called), is borne out by clinical observation of the recognized cases themselves. In the acute symptoms of poliomyelitis, as in the paralytic, we have all grades. It is a disease like scarlet fever as contrasted with measles, for example. We do have very light instances of the latter disease—measles—but they are the exception. A case of measles is usually definite and well marked. With scarlet fever and poliomyelitis, however, the symptoms in a considerable number of cases seem to trail off into nothing at all, to diminish indefinitely or without limit, as a mathematician would say. It is well known that cases of scarlet fever occur without eruption, but for administrative purposes we can regard only those which show some such definite diagnostic sign as the characteristic eruption or peeling. So in poliomyelitis we advised legal quarantine only for those in which we demonstrated definite paralytic phenomena, or the chemical and cellular changes in the fluid obtained at lumbar puncture.

What is to be done with the other cases, most of which do not now come to the attention of the health officer? In the first place, any numerical increase in the instances of digestive disturbance in children should be brought to the attention of the health officer for conference, particularly if slight meningeal signs are also present: disinclination to bend the body or neck forward, oversensitiveness to the touch, increased reflexes, irritability, drowsiness, restlessness, twitching or other nervous symptoms. Such an increase is said to have been noticed in Fairmont before the outbreak of recognized cases. We have previously mentioned the importance also of taking cognizance of deaths from acute illness in children, unless the diagnosis is very plain. Physicians will the more readily confer about these cases, when they realize that quarantine restrictions will not be oversevere. In our opinion, the suspicious and nonparalytic cases should be urged to adopt a voluntary quarantine, without placarding. An explanation of the dangers of the disease, the promise of immunity from paralysis if the case should actually be one of nonparalytic poliomyelitis, and a statement as to the reasonable methods of prevention will often, except in large centers of population, accomplish more than a shotgun quarantine.

At the same time, watch should be kept for confirmation of suspicions, and when a diagnosis is possible, the public should be informed as to measures of self protection, and the State authorities notified. At Elkins, before the first clearly paralyzed case occurred, there were 7 abortive cases, 2 fatal unrecognized cases, and 1 slight paralytic case, in which a definite diagnosis was afterwards possible solely on account of the residual reflex abolition on one side—10 cases which in many communities certainly would go unrecognized.

The data derived from this epidemic as to the period of infectiousness of the disease give no instance of infection occurring from exposure to a primary case longer than nine days after its onset. It would thus seem that two weeks from onset, or three weeks at the outside, is a reasonable period of quarantine. It must not be supposed that any quarantine of the recognizable cases, however perfect, will stop the spread of the disease. In the first place we have seen that direct contact even with abortive (nonparalytic), as well as with the paralytic, cases could account for only one-quarter of the outbreak. Further, it has been shown experimentally that the virus may be carried in the nose and throat as long as five months after the attack, an unthinkable period for quarantine. An additional period of, say 14 days, after quarantine, during which the patient and his family are kept from school or places of public assembly, is therefore wise. Our main reliance, however, is in general prevention of contact during the presence or threat of an epidemic. Parents

should not fondle their children, lest the former should be unwittingly carriers of the disease. Business is not to be stopped, but unnecessary occasions of bringing people together in close contact should be warned against and prohibited as much as possible.

The interchange of nasal and throat secretions, which takes place when our neighbors talk in our faces, cough or sneeze, is to be brought to a minimum. Personal cleanliness and the avoidance of hand contaminations should be observed. It is recognized that these opportunities for infection can not be entirely extinguished in any independent community; but it is to be hoped that, just as reduction of anopheline mosquitoes below a certain number will stamp out malaria, so the general observance of the hygienic measures outlined above will tend toward preventing poliomyelitis.

Account must also be taken of possible infection through the digestive tract. If this takes place, and there is some reason to believe that it does, the pollution of articles of food and drink is probably not on so large a scale that the water or food supply of a whole community is infected from one case, but rather as a part of human contact, the articles placed in the child's mouth having been soiled, probably invisibly, by the secretions of some infected person in reasonably close contact with the child. This still means that the nose and mouth are the portals we must guard against infection and that we must bear in mind the general public, unrecognized cases and carriers, as more important factors than the officially reported cases themselves.

#### Summary.

To summarize the important points of our studies in West Virginia:

1. Modes of spread other than by human contact are improbable. Persons and not things should receive our attention.
2. Even including all the nonparalytic cases which we could recognize, direct contact with the cases themselves is responsible for only one-quarter of the incidence.
3. As passive carriers adults are probably more important than children.
4. There are probably many unrecognizable cases of the disease during an epidemic of poliomyelitis, about as numerous as the paralytic or the recognizable nonparalytic cases, and such cases are likely to have symptoms referable in the first instance to the digestive tract.
5. Quarantine of the case for two or three weeks is long enough; but another member of the family is just as likely to be dangerous as the patient, and general intermingling, particularly contact with children, should be prevented.

**PUBLIC HEALTH LABORATORY SPECIMENS.****THEIR PREPARATION AND SHIPMENT.**

By H. E. HASSELTINE, Passed Assistant Surgeon, United States Public Health Service.

This paper has been prepared for the purpose of furnishing brief, concise instructions relative to the preparation and shipment of specimens for laboratory examination in order that the best results may be obtained.

**Postal Regulations.**

The shipping, through the United States mails, of diseased tissues, cultures, and other material capable of causing disease must be done in accordance with the provisions of the Postal Regulations, issued by the Post Office Department. Sections 472 and 473, Postal Regulations, 1913, read as follows:

SEC. 472. All kinds of poison, and all articles and compositions containing poison, and all poisonous animals, insects, and reptiles, and explosives of all kinds, and inflammable materials, and infernal machines, and mechanical, chemical, or other devices or compositions which may ignite or explode, and all disease germs or scabs, and all other natural or artificial articles, compositions, or materials of whatever kind which may kill, or in anywise hurt, harm, or injure another, or damage, deface, or otherwise injure the mails or other property, whether sealed as first-class matter or not, are hereby declared to be nonmailable matter, and shall not be conveyed in the mails or delivered from any post office or station thereof, nor by any letter carrier; but the Postmaster General may permit the transmission in the mails, under such rules and regulations as he shall prescribe as to preparation and packing, of any articles hereinbefore described which are not outwardly or of their own force dangerous or injurious to life, health, or property: *Provided*, That all spirituous, vinous, malted, fermented, or other intoxicating liquors of any kind are hereby declared to be nonmailable and shall not be deposited in or carried through the mails. Whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the direction thereon, or at any place at which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be nonmailable, unless in accordance with the rules and regulations hereby authorized to be prescribed by the Postmaster General, shall be fined not more than one thousand dollars, or imprisoned not more than two years, or both; and whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the direction thereon, or at any place to which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be nonmailable, whether transmitted in accordance with the rules and regulations authorized to be prescribed by the Postmaster General or not, with the design, intent, or purpose to kill, or in anywise hurt, harm, or injure another, or damage, deface, or otherwise injure the mails or other property, shall be fined not more than five thousand dollars, or imprisoned not more than ten years, or both.

2. Spirituous, vinous, malted, fermented, or other intoxicating liquors of any kind, poisons of every kind, and articles and compositions containing poison (except as prescribed in the fourth paragraph hereof), and poisonous animals, insects, and reptiles, and explosives of every kind, and inflammable materials (including matches, gasoline, naphtha, benzine, denatured alcohol, and all liquids having a flash point at or below 80° F.), and infernal machines, and mechanical, chemical, or other devices or compositions which may ignite or explode, and disease germs or scabs (except as prescribed in sec. 473), and other natural or artificial articles, compositions, or mate-

rials of whatever kind which may kill, or in anywise hurt, harm, or injure another, or damage, deface, or otherwise injure the mail or other property, live animals (except as prescribed in sec. 476), raw hides or pelts, guano, or any article exhaling bad odor, whether sealed as first-class matter or not, shall not be admitted to the mails.

3. Liquids not spirituous, vinous, malted, fermented, or otherwise intoxicating (including samples of altar or communion wine used in church services), and not liable to explosion or spontaneous combustion or ignition by shock or jar, and not inflammable, fruits or vegetable matter liable to decomposition, comb honey, soft soap, pastes or confections, ointments, salves, and articles of similar consistency, shall be admitted to the mails for transmission in the domestic mails when inclosed in packages in conformity with the conditions prescribed in sections 474 and 475.

4. Medicines and anesthetic agents which are not outwardly or of their own force dangerous or injurious to life, health, or property, and not in themselves unmailable (see secs. 454 and 480), may be admitted to the mails for transmission in the domestic mails when inclosed in packages in conformity with the conditions prescribed in section 474: *Provided*, That the terms "medicines" and "anesthetic agents" shall not be construed to mean poisons: *Provided further*, That the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, surgeon, dentist, or veterinarian preparing or prescribing the same.

SEC. 473. Specimens of diseased tissues may be admitted to the mail for transmission to United States, State, municipal, or other laboratories in possession of permits referred to in paragraph 3 of this section only when inclosed in mailing cases constructed in accordance with this regulation: *Provided*, That bacteriologic or pathologic specimens of plague and cholera shall under no circumstances be admitted to the mails.

2. Liquid cultures, or cultures of microorganisms in media that are fluid at the ordinary temperature (below 45° C. or 113° F.), are unmailable. Such specimens may be sent in media that remain solid at ordinary temperature.

3. No package containing diseased tissue shall be delivered to any representative of any of said laboratories until a permit shall have first been issued by the Postmaster General, certifying that said institution has been found to be entitled, in accordance with the requirements of this regulation, to receive such specimens.

4. (a) Specimens of tubercular sputum (whether disinfected with carbolic acid or not disinfected) shall be transmitted in a solid glass vial with a mouth not less than 1 inch in diameter and capacity of not more than 2 ounces, closed by a cork stopper or by a metallic screw top protected by a rubber or felt washer. Specimens of diphtheria, typhoid, or other infectious or communicable diseases or diseased tissues shall be placed in a test tube made of tough glass, not over three-fourths of an inch in diameter and not over 7½ inches in length, closed with a stopper of rubber or cotton and sealed with paraffin or covered with a tightly fitting rubber cap.

(b) The glass vial or test tube shall then be placed in a cylindrical tin box, with soldered joints, closed by a metal screw cover with a rubber or felt washer. The vial or test tube in this tin box shall be completely and evenly surrounded by absorbent cotton, closely packed.

(c) The tin box, with its contents, must then be inclosed in a closely fitting metal, wooden, or papier-mâché block or tube, at least three-sixteenths of an inch thick in its thinnest part, of sufficient strength to resist rough handling and support the weight of the mails piled in bags. This last tube shall be tightly closed with a screw-top cover with sufficient screw threads to require at least one and one-half full turns before it will come off, and fitted with a felt or rubber washer (See fig. 8.)

5. Specimens of blood dried on glass microscopic slides for the diagnosis of malaria or typhoid fever by the Widal test may be sent in any strong mailing case which is not liable to breakage or loss of the specimen in transit.

6. Upon the outside of every package of diseased tissues admitted to the mails shall be written or printed the words "Specimen for bacteriological examination. This package to be pouched with letter mail."

*Letters of transmittal.*—It is advised that a duplicate letter of transmittal, giving data for each specimen, be written, one copy to be mailed to the laboratory as a letter, the other inclosed with the specimen. This is to guard against delay caused by loss of specimens or letters in transit. If both letter and specimen arrive at the same time, nothing is lost; if the specimen arrives before the letter, the necessary data are at hand so that examination can be proceeded with at once; if the specimen is lost and the letter arrives, after waiting a reasonable time, the laboratory can notify the sender and a second specimen may be forwarded.

The use of the form letter (see p. 2019) is recommended to save time and labor necessary in preparation of letters.

*Reports.*—In case report is desired by telegraph, the sender should request that he be so notified.

*Interpretation of result.*—In general, it may be stated that positive results obtained by laboratory methods are indicative of the disease or conditions found. On the other hand, negative results do not necessarily mean the absence of the disease or condition suspected. A single negative result is of relatively little value. The examination of several specimens with constantly negative results is of some value—the presumption of the absence of the disease growing stronger after each examination which gives a negative finding. In case of a negative result, the physician should feel no hesitancy in forwarding a second specimen for the same test, provided the case continues to show symptoms warranting the original suspicion.

**Labeling, packing, and shipping, and data to be forwarded with specimens.**

*Labeling.*—Each specimen should be labeled or marked as soon as prepared, so that no possible confusion of specimens can arise later. Specimens may be labeled by use of a gummed label (written preferably with graphite pencil), by writing on container or slide with a wax pencil, or with a point for writing on glass. The label should state the source of the specimen and the character of examination desired. Special considerations in labeling will be taken up when discussing the class of specimens requiring them.

*Packing.*—Specimens of blood on slides should be packed so that the specimen will not be subject to friction. Postal regulations do not prescribe any restrictions for this class of specimen except that they shall be packed in such manner as to insure their safety against breakage en route.

Blood serum in sealed pipettes or in sterile vials, and feces, urine, sputum, and tissues placed in bottles as specified in this pamphlet should be wrapped well in cotton to insure against breakage and placed in a double mailing case as specified by postal regulations.

Water specimens usually require packing in ice. Special containers for this purpose may be had, but one may be improvised by placing the specimen bottles in a water-tight wooden container (wooden buckets or butter tubs are suitable), surrounding it by ice, and placing sawdust over the ice.

Cultures must be on media which is solid at ordinary temperatures and in test tubes of tough glass closed by a paraffined stopper or rubber cap. Gelatin cultures are unavailable, as these liquefy at ordinary temperatures. Cultures of plague and cholera are unavailable.

*Shipping.*—Nearly all specimens can be sent by mail, though specimens which have to be shipped on ice must be sent by express. All materials capable of transmitting cholera or plague are unavailable and must be sent by express. All specimens which are placed in alcohol must be sent by express, as alcohol is unavailable.

*Data to accompany each specimen.*—These data are set forth in the form letter shown below.

.....  
(Station.) (Date.)

DIRECTOR, ..... LABORATORY.

SIR: The specimens indicated below are being forwarded to you to-day by .....  
.....  
(Mail or express.)

Number of specimens.	Nature of specimen.	Marks of each specimen.	Check space.	To be examined for—
.....	Blood smears.....	{.....	.....	Differential blood count.
.....	Blood, dried.....	{.....	.....	Malarial parasites.
.....	Blood, serum.....	{.....	.....	Agglutination against..... (State organism.)
.....	Blood culture.....	{.....	.....	Other tests.
.....	Cultures on..... (State medium.)	{.....	.....	Agglutination against.....
.....	Feces.....	{.....	.....	Wassermann.
.....	Sputum.....	{.....	.....	Complement fixation for..... (State disease.)
.....	Urine.....	{.....	.....	(State organism suspected.)
.....	Water.....	{.....	.....	Diphtheria.
.....	Pathologic tissue for examination. Fixed in..... (State reagent.)	{.....	.....	Preparation of a vaccine.
.....	Shipped in..... (State fluid.)	{.....	.....	Identification.
.....	Zoological specimens..... (State host and locality.)	{.....	.....	B. typhosus.
				Other organisms..... (State organisms.)
				Animal parasites or eggs..... (State parasite.)
				Tubercle bacillus.
				Other organisms..... (State organism.)
				Chemical examination.
				Typhoid bacillus.
				Other organisms..... (State organism.)
				Bacterial count.
				Colon determination.
				Chemical examination.
				Malignancy.
				Other conditions..... (State special conditions for which examination is desired.)
				For determination.

## DATA DESIRED FOR EACH SPECIMEN.

Specimen marked ..... Collected on .....  
 (Date.)

Source.....

If from patient.....  
 (Name or No.) (Age.)

.....  
 (Race.) (Sex.) (Occupation.)

Duration of illness.....

Quinine administered..... (For malaria suspects only.)  
 (Date of last dose.)

Tissues removed—ante mortem or post mortem.....

Organ or portion of body from which tissues were taken.....

Duration of growth.....

Previous removal, if any ..... } In case of new growths only.  
 (Date.)

Remarks.....

The following list contains practically all the classes of specimens that are submitted for laboratory examinations:

1. Blood:
  - Smears, thin.
  - Smears, thick.
  - Dried blood for agglutination test.
  - Fluid blood for agglutination test.
  - Serum for agglutination test.
  - Serum for complement fixation tests.
  - Cultures for *B. typhosus* or other organisms.
2. Cultures (pure and mixed):
  - Suspected diphtheria cultures.
  - Mixed cultures from which vaccines are to be made.
  - Cultures of organisms for identification.
3. Feces:
  - For bacteriological examination.
  - For zoological examination (for animal parasites or their ova).
4. Sputum.
5. Urine:
  - For bacteriological examination.
  - For chemical examination.
6. Water:
  - For bacteriological examination.
  - For chemical examination.
7. Pathological tissues for sections.
8. Entomological specimens for determination.
9. Helminthological specimens for determination.
10. Miscellaneous.

Each class of specimens will be considered with reference to the following general subdivisions:

- A. Conditions in which the examination may give the desired result.
- B. Technique of obtaining the specimen.
- C. Special precautions to be observed and reasons for same.



### 1. Blood Specimens.

(a) Thin smears of blood are used in examining for the presence of blood parasites (malaria, filariasis, trypanosomiasis, etc.), for differential leucocytic count, and examination for the anemias or leukemias.

(b) Such smears should be made on clean glass slides. These slides should be cleansed with soap and water, followed by immersion in acid alcohol (HC1 3, alcohol 97) for several hours. If the slides are new it is advisable to immerse them in strong sulphuric acid overnight and rinse them thoroughly before placing in acid alcohol. It is convenient to keep the slides stored in acid alcohol, wiping them with a piece of clean gauze or tissue paper just prior to using. In handling the slides care should be taken to touch only the edges, as touching the flat surface leaves a thin film of grease from the skin upon the glass. This will interfere with the uniform spreading of the blood film. Forceps for handling the slides are an aid in keeping the glass clean.

The specimen is obtained from the finger or the lobe of the ear in the usual manner. The skin should be sponged thoroughly with alcohol, followed by ether to remove grease from the surface. A sterile needle or lancet should be used to make the puncture. The blood should flow freely and hastening the flow by compression of the parts should be avoided, especially if an examination for evidence of the leukemias or anemias is desired. The first drop of blood should be wiped away. A large drop of blood is not desirable as it will make the film too thick. A drop the size of a pinhead, or a No. 6 bird shot, is sufficient for one smear. The drop of blood is touched by the flat surface of the slide, near one end, the slide then placed in such position that the drop is on the upper surface, and the edge of a second slide, held at an angle of 30 to 45 degrees, is placed in the drop and pushed toward the other end of the first slide (see fig. 1, A and B). In this way the corpuscles are spread by capillary action and not distorted by pressure between the edge of the spreading slide and the surface of the specimen slide. The movements used in spreading the blood should be executed fairly rapidly with a steady hand to insure uniform distribution.

Thin smears may also be made by touching the drop of blood on the skin of the finger or ear with the edge of the spreading slide and then smearing the other slide with it.

Allow the smears to dry without heating.

Several slides should be prepared from each case as some may be failures, or it may be desirable to employ more than one stain in the examination.

(c) *Cautions.*—As the examination for the different types of white corpuscles and changes in all cellular elements of the blood is made from thin smears, it is important that the blood taken be as nearly representative of the case as is possible. On this account, compression of the tissues to facilitate bleeding is to be avoided, as such procedure may increase or decrease the various elements of the blood. For example, squeezing the tissues may cause the exudation of lymph from the tissues. This is poor in red cells but rich in white cells. The lymph is added to the blood, thereby decreasing the relative number of red cells and increasing the relative number of white cells. This is especially important if a differential count is to be made.

The thin film is also necessary to determine the species of malarial parasites.

(a) The thick blood smear is used only in examination for the presence of malarial, or other, parasites. It need not be sent unless examination for parasites is desired. Its object is to enable the microscopist to examine a large amount of blood in a shorter time. In thick smears only the presence of parasites can be determined; if determination of species is desired, thin smears must be sent.

(b) The following technique of Von Ezdorf is recommended for making the thick blood smears:

Obtain a large drop, or two, of blood on the surface of a glass slide 1 inch from the end.

With the convex surface of a steel writing pen stuck in a cork, the blood is spread evenly over an area about one-half to three-fourths inch in diameter. The pen should be wiped clean immediately after using.

A second thick smear is made on the slide at the other end (see fig. 2).

(c) *Cautions.*—It is desirable to get specimens for malarial examination before quinine has been administered, as the use of this remedy may make the finding of parasites more difficult or uncertain.

Fixation of blood smears need not be done, as the dried smear, if properly packed for shipment, will reach the laboratory in good condition. Heat should not be used on blood smears as it will ruin the specimen for staining with the better blood stains. The method of labeling of Von Ezdorf, writing on the edge of the blood smear with a soft lead pencil, may be employed.

#### **Blood for Agglutination (Widal) Test.**

(a) This test is applicable to cases of typhoid fever, paratyphoid fever, bacillary dysentery, Malta fever, and cholera.

There are two methods of obtaining blood for this test, the dried blood and fluid blood (serum) methods. The latter is much preferable as it is more accurate and more certain of results.

(b) *Technique*.—In the dried blood method the blood is obtained by pricking the finger or lobe of the ear and depositing several large drops of blood on a clean glass slide; the drops are allowed to dry without spreading. Five separate drops can be placed on one slide without difficulty (see fig. 3).

(c) *Cautions*.—Do not use dirty, greasy, or rough glass; do not collect specimens on tin, zinc, or other metal as the blood may not adhere to the metal when perfectly dry. Such specimens are frequently jarred loose from the metal and lost in the wrappings upon opening.

(b) For fluid specimens for agglutination tests the serum is all that is required. The best results are obtained when the blood is drawn from a vein with a syringe, placed in a sterile test tube, allowed to clot, and the serum removed from the clot with a sterile pipette. The technique of this procedure is given fully under collection of specimens for complement fixation tests. Five cubic centimeters of blood will be sufficient for the agglutination test.

Fluid specimens may be collected in capillary pipettes and shipped without separating the serum from the clot. This procedure is not as desirable as the syringe method but gives better results than the dried-blood method (see fig. 4).

(c) *Caution*.—In sealing capillary tubes care must be taken not to heat the blood, as this may destroy the agglutinating properties of the serum, rendering the specimen worthless. To guard against this, hold the tube with the fingers placed at the level of the blood column nearest the portion of the tube to which heat is being applied.

#### Blood Specimens for Complement Fixation Test (Wassermann).

(a) This test is at present applied chiefly in cases of suspected or confirmed syphilis, though it is applicable in principle to certain other diseases, such as gonorrhea, tuberculosis, and other infectious diseases.

For this test a specimen of clear serum is essential for obtaining good results. Sera which are discolored by laking of the red corpuscles may not give a definite result, and the reading of the hemolysis may be interfered with if hemoglobin be present in the serum; on this account the serum should be separated from the clot before shipment.

(b) *Technique*.—The following procedure is recommended: Ten cubic centimeters of blood should be drawn from a vein with a sterile needle and syringe, under aseptic conditions. Place the blood in a sterile test tube or a centrifuge tube, if a centrifuge be available.

The tubes should be stoppered by a sterile cotton plug or a sterile cork. After the clot becomes firm separate it from the wall of the tube with a sterile needle, and then set the tube in a cool place to

allow the clot to contract. Placing it in an ice box until the next morning is sufficient. If a centrifuge be available, a clearer specimen is obtained by centrifugalizing; if not, a satisfactory specimen can be obtained by removing the clear serum with a pipette, or carefully decanting it into a sterile rubber-stoppered glass vial. The stopper should be firmly inserted and, as a further precaution, a strip of adhesive plaster passed across the top of the stopper and down the sides of the vial (see fig. 5).

(c) *Cautions.*—The following points are necessary to obtain good results. Blood should be drawn before meals to avoid an excess of chyle in the serum. Specimens for the Wassermann test should not be taken after the ingestion of alcoholic beverages, as this interferes with the test.

As specimens of this nature may be taken from more than one person at one time, it is necessary that each tube be marked or labeled so that confusion of specimens may not arise later. To guard against this, the labeling should be done as soon as a specimen is placed in the vial.

#### Blood Cultures.

(a) The use of blood cultures in the diagnosis of typhoid fever furnishes us a method of positive diagnosis prior to the appearance of the Widal reaction in many cases. When positive, this result is absolutely certain, as the *Bacillus typhosus* is isolated and identified. Blood cultures should be employed whenever possible, as the results are more satisfactory and obtained at an earlier date than when the agglutination test is relied upon. The blood culture should be made early in the disease, as the following results of Buxton and Coleman (Am. J. M. Sc., vol. 133, p. 896) show:

Cases examined in first week of disease gave 89 per cent positive.

Cases examined in second week of disease gave 73 per cent positive.

Cases examined in third week of disease gave 60 per cent positive.

Cases examined in fourth week of disease gave 38 per cent positive.

Cases examined after fourth week of disease gave 26 per cent positive.

For typhoid blood cultures a special medium of ox bile is preferable, though ordinary bouillon may be used. About 20 cubic centimeters of bile should be placed in a bottle of 30 to 50 cubic centimeters capacity, fitted with a ground-glass stopper. The bottles, with their contents, are then sterilized in streaming steam for one and one-half hours.

(b) *Technique of making culture.*—To obtain blood use a sterile needle and syringe as in collecting specimens for Wassermann test; 10 cubic centimeters of blood should be drawn and at once placed in two bottles of media, 5 cubic centimeters to each bottle. The stopper is then replaced and held in place by a strip of adhesive plaster. The large amount of blood is used to insure obtaining the

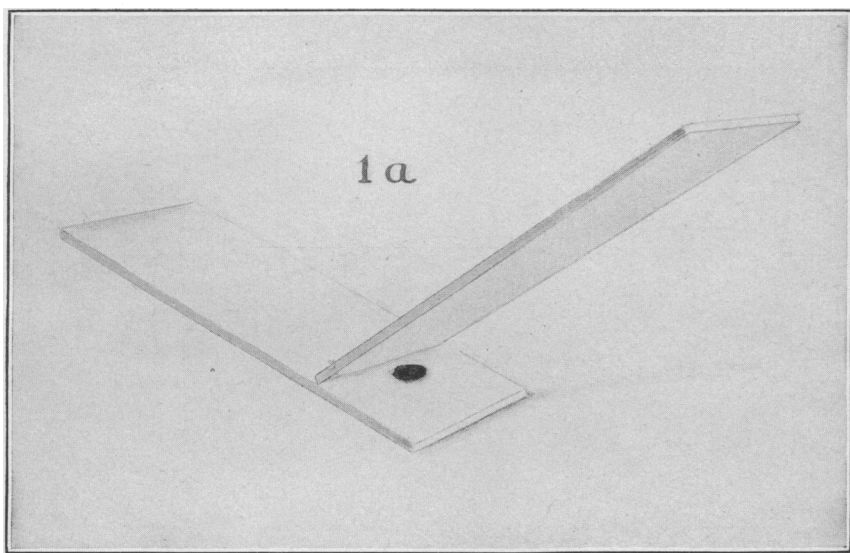


FIG. 1a.—DROP OF BLOOD JUST PRIOR TO APPLICATION OF SPREADING SLIDE.

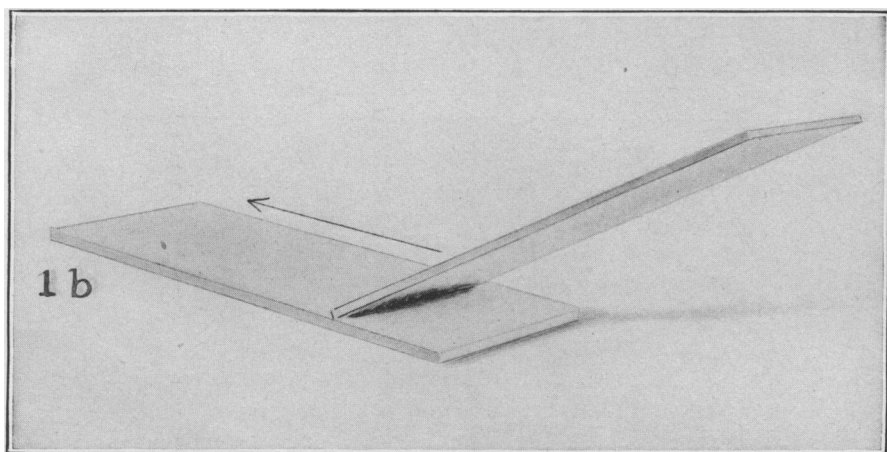


FIG. 1b.—METHOD OF SPREADING THE SMEAR.

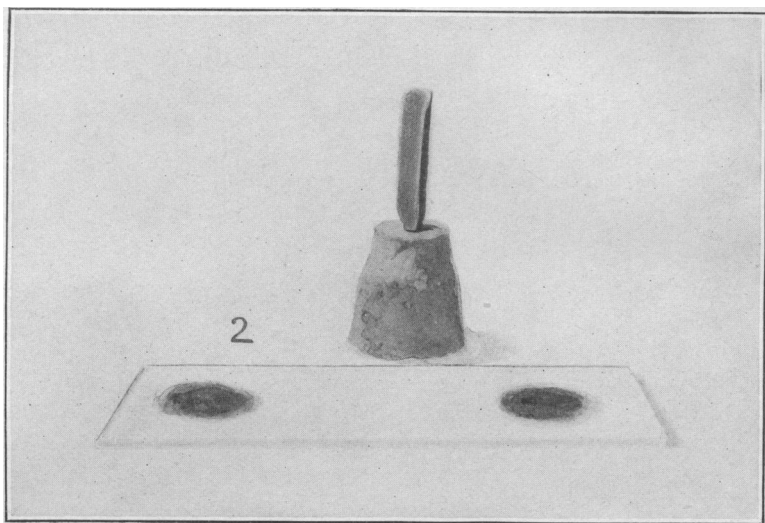


FIG. 2.—THICK SMEAR OF BLOOD AND PEN USED FOR SPREADING SAME.

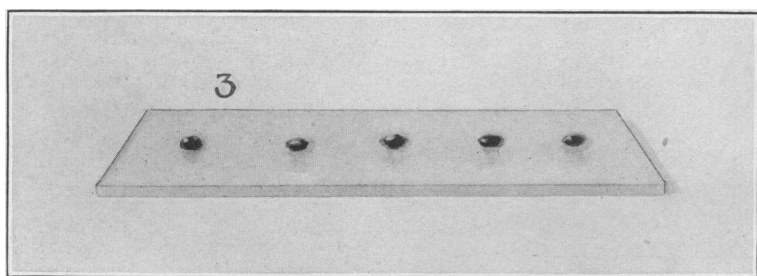


FIG. 3.—SPECIMEN OF DRIED BLOOD FOR AGGLUTINATION TEST.

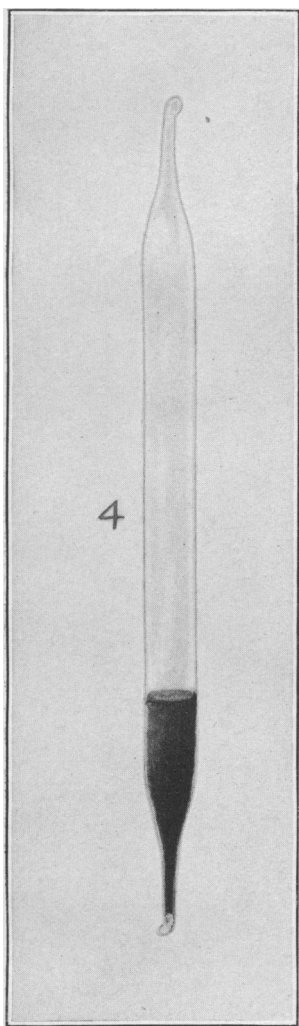


FIG. 4.—SPECIMEN OF BLOOD  
IN SEALED CAPILLARY TUBE.

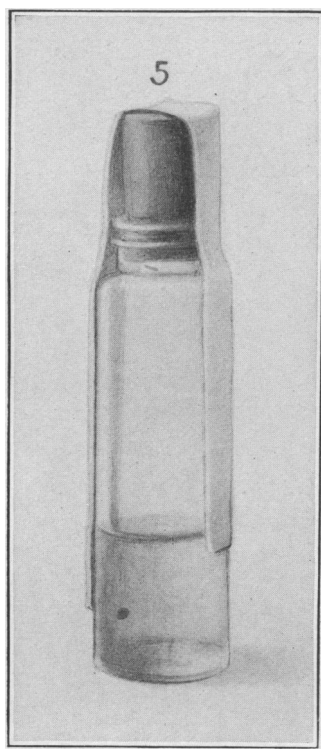


FIG. 5.—SPECIMEN OF BLOOD  
SERUM FOR WASSERMANN  
TEST.



FIG. 6.—SPECIMEN OF FECES PACKED FOR MAILING.



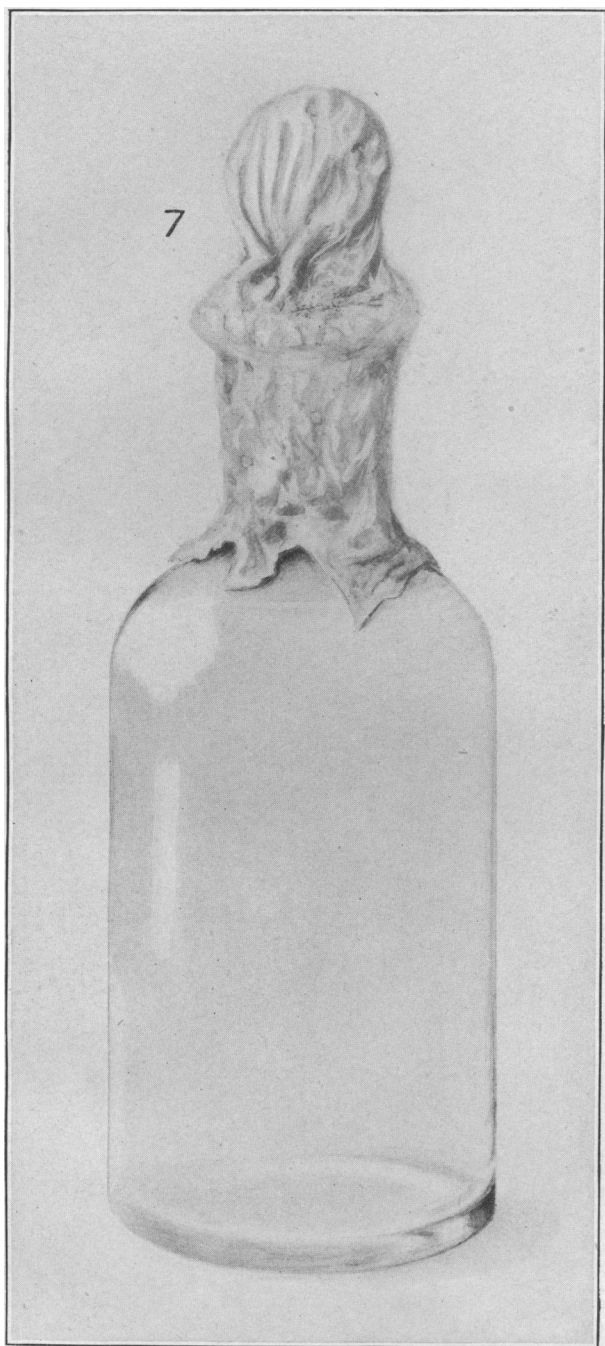


FIG. 7.—WATER SAMPLE BOTTLE FOR BACTERIOLOGICAL SPECIMEN.

8

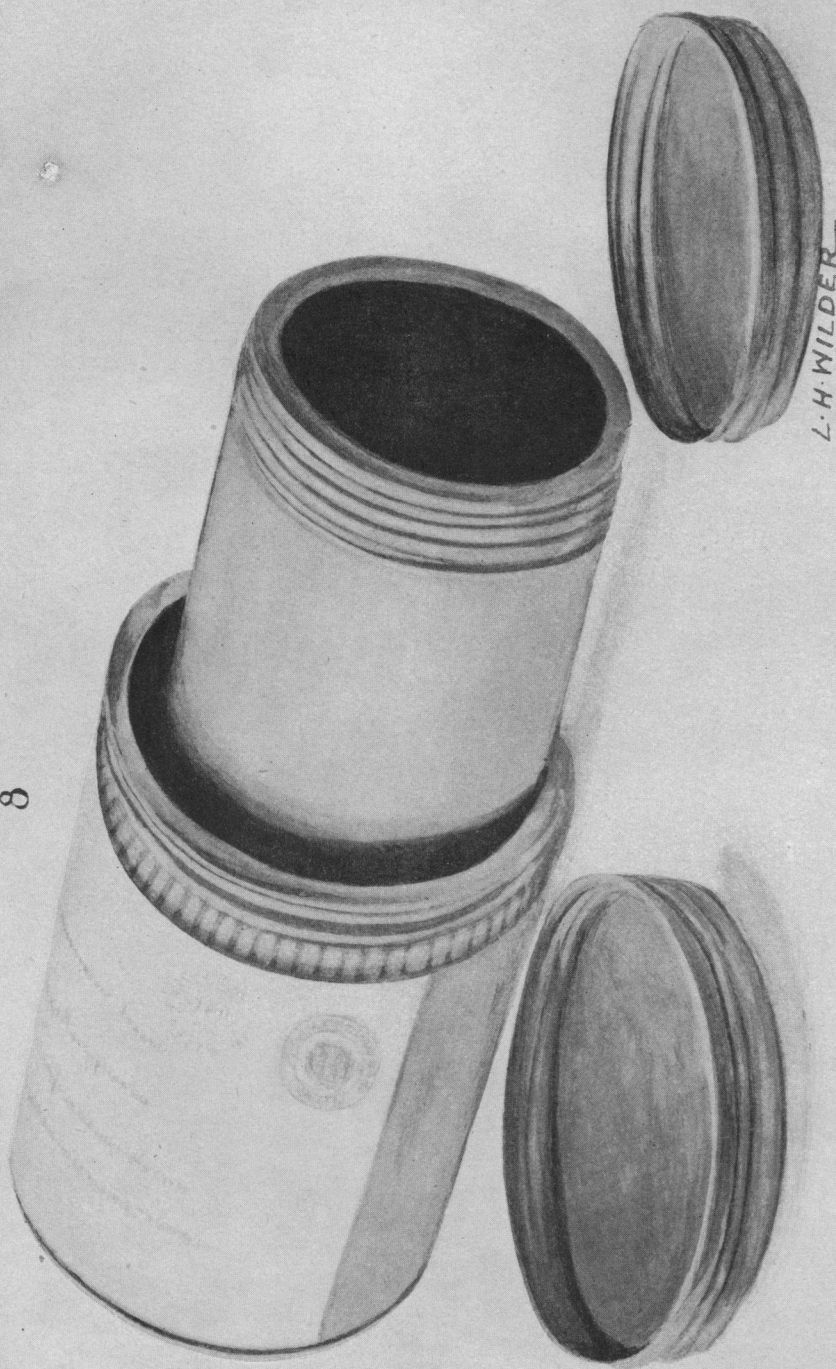


FIG. 8.—MAILING CASE.

organism sought, if present. This procedure is also applicable in other bacteriemias.

(c) *Caution.*—As the shipment of cultures in fluid medium is prohibited by postal regulations, these cultures should be shipped by express. They should be wrapped in sufficient cotton to insure absorption of all fluid in case the containers are broken, and then placed in a box or other container that will guard against breakage.

## 2. Cultures, Pure and Mixed.

(a) This class of specimens is used chiefly in suspected cases of diphtheria but is also applicable to other diseases, particularly the sending of a mixed culture from pus or other exudate, from which the preparation of autogenous vaccines is desired.

(b) *Technique.*—A sterile swab should be used to obtain the specimen from the nose, throat, or lesion. These swabs should be prepared and sterilized in test tubes. The swab is removed from its tube and rubbed over the lesion, then rubbed over the surface of the medium, and then replaced in its original tube. The inoculated tube of medium and the tube containing the used swab should both be forwarded.

(c) *Caution.*—Though most cultures taken in this way are mixed cultures, it is essential that all extraneous organisms be avoided, as many, especially the molds, will rapidly overgrow the pathogenic organisms and prevent their development.

For use in diphtheria Löffler's blood serum is the preferable medium. For pus, or vaccine specimens, agar-agar or serum may be used.

In case pure cultures are sent from one laboratory to another for identification or confirmation, complete data concerning the culture should be inclosed.

## 3. Feces.

(a) Feces are usually submitted for examination for evidence of parasites, or to determine the presence of certain organisms, particularly the typhoid bacillus. The preparation of the specimen is the same for both bacteriological and zoological examination.

(b) *Technique of preparation of specimens.*—A wide-mouthed bottle having a capacity of about 50 cubic centimeters is the best container. A well-fitting rubber or cork stopper is necessary. The bottle should be filled to about one-third of its capacity with the feces to be examined, the stopper inserted firmly and held in place by a strip of adhesive plaster passed across the stopper and down the sides of the bottle (see fig. 6).

The use of 20 per cent of glycerin in physiological salt solution has been reported by Cumming (Jour. of Amer. Med. Assn., vol. 68,

p. 1163) to have an inhibitory effect on the colon bacillus and other fecal organisms.

He recommends the use of the following solution:

Physiological salt solution (0.9 per cent NaCl).....	80
Glycerin.....	20

To 25 cubic centimeters, add a mass of feces about the size of a split pea, and shake well to make a uniform suspension. Do not use a greater amount of feces, as the inhibition of *B. coli* may not be obtained when large amounts are used.

This method gives admirable results on specimens artificially contaminated with laboratory strains of *B. typhosus* and should be applicable in practice.

(c) *Cautions.*—Frequently specimens of feces are received for bacteriological examination that have been subjected to the action of disinfectants, which renders them useless for cultural studies. This is probably the result of a misunderstanding on the part of the attendant, or, perhaps, the patient.

The isolation of the typhoid bacillus from stools becomes more difficult in direct proportion to the age of the specimen. For this reason it is essential that the specimen be forwarded to the laboratory without delay. This also has a bearing on the interpretation of results of the examination, as a specimen that is in transit for a long period may give negative results, although the same specimen at the time of collection would give positive findings.

It is also quite definitely proven that in known typhoid carriers the administration of a cathartic increases the number of typhoid bacilli in the stools. In view of this fact a purge should be given the suspect a few hours before the specimen is to be collected, and a sample of the soft or semifluid stool resulting therefrom forwarded for examination.

The bottle should not be filled to more than one-half, preferably one-third, of its capacity. The reason for this is that a certain amount of gas is formed as a result of fermentation. If a large amount of fecal material be present a larger amount of gas is liberated, and it may displace the cork, allowing the contents to escape and possibly causing disease in those handling the specimen. A small amount of feces gives less gas formation and the empty two-thirds of the container's capacity allows space for a small amount of compression of the gas.

The cork should be large enough to allow at least 1 centimeter (about one-half inch) of it to project above the mouth of the bottle. A cork that is pushed in until level with the mouth of the bottle is hard to remove with safety.

Feces of cholera patients or suspects are unmailable and must be sent by express.

#### 4. Sputum.

(a) Sputum is usually forwarded for examination for the presence of tubercle bacilli, though at times, examination for other organisms, or for the ova of parasites, may be desired. As many of the pathogenic organisms in sputum, other than tubercle bacilli, are easily killed, the examination for such organisms may not be reliable, as the particular organism may have died out in transit. Under ordinary conditions the examination of sputum for tubercle bacilli can be done by the physician or an assistant. As it may be desired to submit specimens from doubtful cases, for confirmation of diagnosis, the following directions should be followed:

(b) *Preparation of specimen.*—The directions given above for the preparation of specimens of feces for shipment apply also for specimens of sputum, except that glycerin should not be used.

(c) *Caution.*—Specimens of sputum which have been disinfected by carbolic acid will show the presence of tubercle bacilli under the microscope. It is recommended, however, that specimens be sent without disinfectant, in order that animal inoculations may be made, if microscopic examination is negative.

#### 5. Urine.

(a) Specimens of urine for chemical examination will usually decompose en route, so that this examination is not practicable unless the distance to the laboratory is very short. The ordinary chemical examination for albumen and sugar can be done by the physician. If it is desired that an examination for some substance not easily detected by ordinary methods be made, a specimen may be forwarded by adding a preservative, such as chloroform, or by icing and shipping by express.

(b) Urine for bacteriological examination, such as that of typhoid patients, should be placed in a small vial closed with a rubber stopper which is held in place by adhesive plaster. The vials (10 cubic centimeters) used for shipping serum for Wassermann tests are large enough.

(c) *Caution.*—No preservative should be added if a bacteriological examination is to be made. Urine of cholera patients or suspects is unavailable.

#### 6. Water.

In general terms, the results obtained by examination of water at a distance from the source of the specimen are only approximate. Time is the important factor, and to obtain the most accurate results, arrangements for examination of the water at, or near, the place where samples are collected should be made.

(b) If a sanitary chemical examination is desired the sample should be at least 2 gallons, placed in chemically clean bottles, and should be not over 48 hours old when received at the laboratory. Examination for mineral content can be made from older samples.

Specimens for bacteriological examination should be placed in 50 or 100 cubic centimeter ground-glass stoppered bottles, which have been sterilized by heat, the stopper and necks of the bottles being protected by lead foil (see fig. 7). The collection of the samples requires much care to prevent the addition of extraneous organisms to the sample. If a sample is taken from a tap, let the water run several minutes, then remove the stopper from the sample bottle and hold under the tap until filled. Replace the stopper without touching the neck of the bottle or that part of the stopper which is to come in contact with the water. Replace the lead foil, if it has been removed from the stopper. It is preferable to unwrap the lead foil from the neck of the bottle and then remove the stopper in its foil covering.

If a sample is to be taken from a pump, similar precautions should be taken. If from a stream, the mouth of the bottle is pointed up stream. In general terms, hold the mouth of the bottle so that water which accidentally touches the hands will not enter the container. Many specimens of water are probably grossly contaminated by carelessness in the taking of the sample. After obtaining the specimen it should be at once packed and shipped in a container with ice.

There are two kinds of bacteriological tests for water samples—an estimation of the number of bacteria per cubic centimeter and a test for the presence of the colon bacillus, which is presumptive evidence of pollution. If a bacterial count is to be made, the specimen should be examined as soon as possible after the sample is taken, and, at most, not later than 24 hours from time of collection. If a greater time be required in transit, the bacterial count may not be reliable, especially if the sample be exposed to temperatures much above 10° C.

For testing for evidence of pollution (colon bacillus test), samples may be as much as 48 hours old, but if the result is negative, it should not be interpreted as meaning an absence of pollution, as colon bacilli may have been present and died en route. In this, as in all laboratory tests, a positive finding is much more significant than a negative one. Repetition of the test for a number of times with consistently negative results may warrant the deduction of a negative finding, but a single negative result does not necessarily mean that the suspicion of contamination is not well founded.

(c) *Cautions.*—Most of the precautions have been touched upon above when considering collection of samples. It is necessary to

ship water samples on ice, and sufficient ice should be used to insure the arrival of the specimen at its destination before the ice is completely melted.

A gummed label should be attached to each sample stating its source and date of collection. To guard against loss of the label by reason of the moisture in the packing, place a rubber band around the bottle at the level of the label.

#### 7. Pathologic Tissue for Section.

The preparation of sections of tissues, and the results obtained, depend largely on the fixing fluid used. There are several fluids that may be used, but some are much superior to others.

• *Zenker's fluid*.—This is the most satisfactory fixing fluid for general use. Its formula is as follows:

Potassium bichromate.....	2 to 2.5 gm.
Corrosive sublimate.....	5 gm.
Water.....	100 cc.
Glacial acetic acid.....	5 gm.

The first two ingredients are dissolved in the water and the acetic acid is added just before using. (The original formula of Zenker's fluid contained sodium sulphate, but this has been found unnecessary.)

The tissues should be placed in this fluid 12 to 24 hours; then washed in running water 12 to 24 hours to remove the excess of fixing fluid. Then place the tissues in 80 per cent alcohol for shipment. Do not ship tissues in Zenker's fluid.

*Formaldehyde solution*.—A simple fixing fluid is 4 per cent formaldehyde solution, made by diluting one part of commercial (40 per cent) formaldehyde solution (formalin) with 9 parts of water. If great haste is desirable this is the fluid to be chosen, as it allows the making of frozen sections on receipt of the specimen. Furthermore, the tissue can be placed in it and mailed at once, fixation taking place en route. If haste is not necessary, the fixing action of formaldehyde is improved by adding 5 per cent of glacial acetic acid to the fluid and after 24 hours transferring to a 4 per cent formaldehyde solution (without acid) for shipment.

*Alcohol*.—Alcohol, though the least efficient, is probably the most popular of all fixing fluids, since it requires little or no preparation before using. It is especially valuable for specimens in which it is desired to determine the presence of bacteria. However, for purely histological sections, it does not give as good fixation as the other fluids and, as a result, poorer sections are obtained. Furthermore, if tissues containing skin are placed in alcohol, they become so hard before reaching the laboratory that sectioning is almost impossible. The use of alcohol as a fixing agent is not recommended, except when

the presence of bacteria is to be demonstrated, though if necessity requires, it should be used in 80 per cent strength for 2 to 4 hours, then in 95 per cent strength for 6 to 12 hours and then in 80 per cent for shipment.

(b) *Technique of preparation of specimens.*—On removal from the body of the tissues that are to be examined small blocks of tissue, not more than 5 millimeters in one dimension, should be cut with a sharp knife or razor from that portion of the specimen that seems most involved and dropped into the fixing fluid at once. If the specimen be small the whole specimen should be fixed in the chosen fluid; if large, place the small blocks in the chosen fixing fluid and the remainder in 4 per cent formaldehyde solution and forward the large portion of the specimen for macroscopic examination.

The attainment of fixation before cell death has begun is a most important point in the primary treatment of pathologic specimens. To secure this it is essential that delay in getting the specimens into fixing fluid be reduced to a minimum. In order to avoid delays it is suggested that autopsy rooms be stocked with a quantity of fixing fluids, glacial acetic acid, measuring graduates, etc. At autopsy the obtaining of the specimen is of primary importance. In case of specimens removed at operation the specimen, of course, is subordinate to the welfare of the patient. If, however, an assistant or interne can take the specimen as soon as removed and place it in fixing fluids it will be much better than allowing it to remain in the air until the operation is completed.

The small blocks of tissue, after being treated as outlined under the consideration of fixing fluids, should be placed in a wide-mouthed bottle in the proper medium, securely corked, and the cork held in place by a strip of adhesive plaster.

The following considerations relative to certain tissues should be observed in cutting small blocks for examination:

In case of new growths several blocks from various parts of the growth should be taken. At least one should be taken from the edge of the growth showing both normal and diseased tissue.

Blocks from the lung should be cut to include pleura and, if possible, a bronchial lymph gland.

Blocks from the kidney, liver, and spleen should be cut to include a portion of the capsule.

Blocks from the heart should be cut to include the base of a papillary muscle.

Muscle tissue should be preserved in 4 per cent formaldehyde as it is prone to become very hard in alcohol.



### 8. Entomological Specimens.

*Mosquitoes.*—Mosquitoes intended for shipping to a laboratory for identification should be killed with tobacco smoke or chloroform vapor and packed, while still soft, in pill boxes between two thin layers of cotton, packed loosely, just enough cotton being used to prevent shaking; in packing, the specimen should be handled as little as possible and very gently. Tin boxes and glass vials are to be avoided as the retained moisture causes the specimens to mold. Pill boxes, the covers of which can be lifted off, should be used as sliding covers usually ruin the specimen.

Collections made in moist climates must be well disinfected with creosote or some similar substance. The presence of a small amount of gum camphor or naphthalene in the container will preserve over great distances.

The pill boxes to be sent by mail should be securely packed in a strong outer box or mailing case that will not be crushed in transit.

Larvæ and pupæ are best preserved in 80 per cent alcohol.

Ticks and fleas can be killed and preserved by dropping them in 70 per cent alcohol.

### 9. Helminthological Specimens.

Helminthological specimens should be placed in 4 per cent formaldehyde solution or in 70 per cent alcohol to which 5 per cent of glycerin has been added and shipped in these fluids.

### 10. Miscellaneous.

Cerebrospinal, ascitic, hydrocele, or hydrothorax fluids should be collected in sterile glass-stoppered bottles, the stopper being protected by a sterile wrapping of lead foil, canvas, gauze, or paper. The chief precaution to be observed is that of aseptic technique, so that no extraneous infection may gain entrance.

The label should show the nature of the specimen, name of patient, and character of examination desired.

Small specimens may be mailed, large ones should be sent by express.

Complete data concerning the case are desirable.

As these fluids, especially hydrocele and ascitic fluids, when sterile, are of value for the preparation of special media, it is suggested that those taking specimens of such fluids collect them under aseptic conditions and forward them to the nearest laboratory. Antiseptic substances should not be added to the specimen, or used on instruments employed in obtaining the specimen.

*Anthrax*.—Tissues from cases of suspected anthrax in man or animals should be placed in a sterile glass container, securely stoppered, packed in cotton, and mailed in a double mailing case with a statement of the history of the case and disease suspected. Blood of animals dying of anthrax may also show the presence of the organism.

*Rabies or hydrophobia*.—The brains of animals suspected of rabies may show microscopic evidence of the disease.

(b) The head of the suspected animal should be severed from the body and the whole head packed in a suitable container and shipped by express. In warm weather it should be iced.

(c) *Caution*.—Heads should be sent as soon as possible after the animal dies or is killed. Killing the animals by chloroform or drowning is preferable to shooting or the application of violence about the head, as the latter is liable to lacerate the brain and facilitate the entrance of putrefactive organisms.

The name, post-office address, and telegraphic address of the sender should accompany the head, since an early report in these cases is important. If an examination other than for evidence of rabies is desired it should be stated; otherwise, on receipt of an animal's head, the presumption is that examination for rabies is desired. In case the brain is removed from the cranium and shipped in a container, the nature of the examination desired should be stated.

*Plague*.—It may be desirable to send dead rodents suspected of being infected with *Bacillus pestis* to a laboratory for examination. If the presence of plague among the rodents of a community has been proven, a plague laboratory should be established at a convenient point. In case plague is suspected but not proven, shipment to a laboratory may be done. Dead rodents should be placed in an insect-proof metal container as soon as captured and a small amount of chloroform poured into the container to kill fleas or other ectoparasites. Each rodent should have a tag attached to the carcass showing the locality where it was captured or found dead. The total collection of rodents for the day should be placed in a flea-proof metal container or can which can be sealed to prevent its being opened en route. This is shipped by express. The use of ice in the container is indispensable.

(c) *Caution*.—The protection of the collector against fleas is a point to always have foremost in the mind of those engaged in the work. The attachment of the tag is very important as on this depends the locating of the infected zone. Do not use too small a container or attempt to economize on ice.

The shipment by mail of plague cultures, or materials capable of transmitting plague, is prohibited.

# PREVALENCE OF DISEASE.

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

## UNITED STATES.

### CAMP FUNSTON—EXTRA-CANTONMENT ZONE.

The following numbers of cases of communicable diseases were reported in Riley and Geary Counties, Kans., between October 1 and November 20, 1917. These two counties constitute the special civil morbidity notification area around Camp Funston. The map on page 2034 shows the special civil notification area from which reports of communicable diseases are received.

Cerebrospinal meningitis:		Poliomyelitis (infanile paralysis):	
Manhattan .....	1	Cleburne .....	1
Manhattan (carriers) .....	2	Scarlet fever:	
Chicken pox:		Cleburne .....	1
Manhattan .....	8	Junction City .....	2
Riley .....	5	Manhattan .....	6
Diphtheria:		Smallpox:	
Junction City .....	4	Junction City .....	1
Manhattan .....	12	Tuberculosis:	
Measles:		Junction City .....	1
Alta Vista .....	1	Manhattan .....	1
Junction City .....	184	Typhoid fever:	
Manhattan .....	7	Junction City .....	1
Ophthalmia neonatorum:		Manhattan .....	3
Manhattan .....	1	Ogden .....	12
Pneumonia:		Randolph .....	1
Manhattan .....	5	Whooping cough:	
		Manhattan .....	1

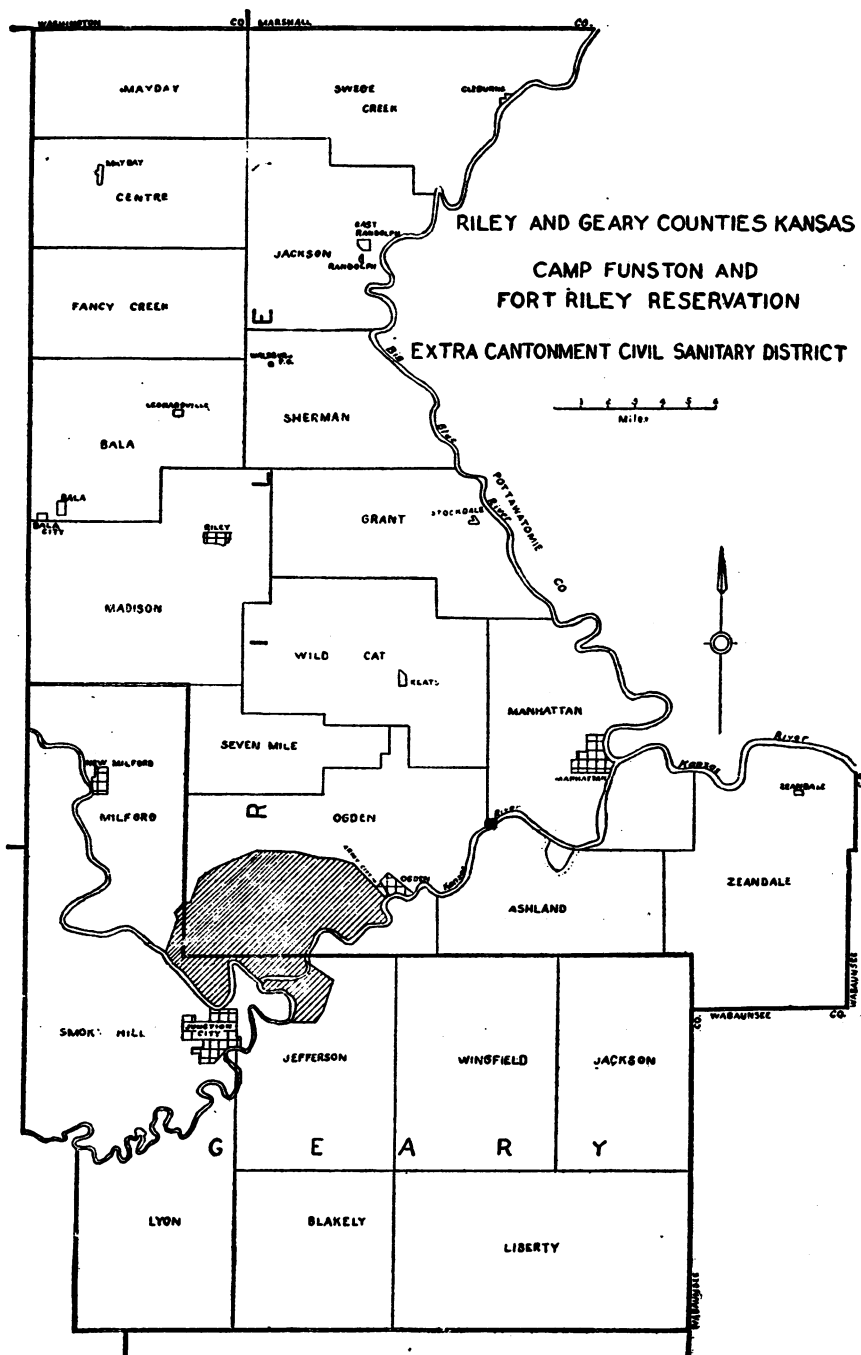
### CURRENT STATE SUMMARIES.

#### California.

From California State Board of Health, telegram dated November 27, 1917:

One anthrax in Monterey County. One epidemic cerebrospinal meningitis, San Diego city. One poliomyelitis, Mactovua. One smallpox, Kern County. Sharp outbreak chicken pox in Stockton city schools and of German measles in Visalia city schools. Marked increase in scarlet fever and whooping cough. Typhoid prevalence decreased, but 17 cases reported.

Reported by mail for the preceding week (ending Nov. 17):



Anthrax .....	2	Pneumonia .....	90
Cerebrospinal meningitis .....	1	Polioomyelitis .....	2
Chicken pox .....	118	Scarlet fever .....	72
Diphtheria .....	102	Smallpox .....	2
Erysipelas .....	12	Syphilis .....	62
German measles .....	29	Tetanus .....	2
Gonococcus infection .....	145	Tuberculosis .....	104
Malaria .....	9	Typhoid fever .....	23
Measles .....	62	Whooping cough .....	56
Mumps .....	69		

#### Indiana.

From the State Board of Health of Indiana, telegram dated November 26, 1917:

Scarlet fever epidemic, New Richmond, Montgomery County; Batesville, Ripley County; and Raccoon Township, Parke County. One human hydrophobia, Monticello. Diphtheria epidemic, Boxleytown and Arkers Corner, Tipton County.

#### Kansas.

From Collaborating Epidemiologist Crumbine, telegram dated November 27, 1917:

Week ending November 24, typhoid fever, Butler County, 60 cases, 55 of which were in Eldorado; smallpox, Kansas City, 30; epidemic meningitis, Manhattan, 4 cases, 10 carriers, Osborne, 1.

#### Massachusetts.

From Collaborating Epidemiologist Kelley, telegram dated November 27, 1917:

Unusual prevalence: Diphtheria, Greenfield, 8; Arlington, 6; Camp Devens, 8; Amesbury, 37; scarlet fever, Milford, 10; Montague, 14.

#### Minnesota.

From Collaborating Epidemiologist Bracken, telegram dated November 26, 1917:

Smallpox: Fillmore County, Beaver township, 2; Itasca County, Nashwauk village, 1; Kittson County, Grandville township, 2; Mower County, Udolpho township, 1; Rock County, Kanaranzi township, 1. One case of cerebrospinal meningitis reported since November 19.

### RECIPROCAL NOTIFICATION.

#### California.

*Cases of communicable diseases referred during October, 1917, to other State health departments by the Department of Health of the State of California.*

Disease and locality of notification.	Referred to health authority of—	Why referred.
<b>Typhoid fever:</b>		
Oakland .....	Salt Lake City, Utah .....	Patient just arrived from Salt Lake City where father was typhoid patient. Patient just arrived from Tonopah where typhoid was epidemic.
Claremont .....	Tonopah, Nev. ....	

## RECIPROCAL NOTIFICATION—Continued.

## California—Continued.

*Cases of communicable diseases referred during October, 1917, to other State health departments by the department of health of the State of California—Continued.*

Disease and locality of notification.	Referred to health authority of—	Why referred.
<b>Typhoid fever—Continued.</b>		
San Francisco.....	S. S. Ventura.....	Patient resided in place named at time he became infected.
Do.....	Portland, Oreg.....	Do.
<b>Epidemic cerebrospinal meningitis:</b>		
San Diego County.....	Denver, Colo.....	Do.
Do.....	do.....	Do.
Do.....	do.....	Do.
<b>Gonococcus infection:</b>		
Solano County.....	El Paso, Tex.....	Do.
<b>Syphilis:</b>		
Solano County.....	Philippines.....	Do.
<b>Dysentery:</b>		
Solano County.....	do.....	Do.
<b>Leprosy:</b>		
San Francisco.....	New Orleans, La.....	Patient just arrived from New Orleans.
<b>Smallpox:</b>		
Kern County.....	Zephyr, Brown County, Tex.....	Patient just arrived from Texas.
Do.....	do.....	Do.
<b>Scarlet fever:</b>		
Los Angeles.....	Colorado Springs, Colo.....	Patient resided in place named at time he became infected.
Los Angeles.....	Yuba City, Ariz.....	Patient resided at place named at time he became infected.
<b>Malaria:</b>		
Merced County.....	Mexico.....	Do.
<b>Gonococcus infection:</b>		
Monterey County.....	Japan.....	Do.
<b>Typhoid fever:</b>		
Watsonville.....	Klamath Falls, Oreg.....	Do.
<b>Gonococcus infection:</b>		
Solano County.....	Acapulco, Mexico.....	Do.
Do.....	do.....	Do.
Do.....	do.....	Do.

## Minnesota.

*Cases of communicable diseases referred during October, 1917, to other State health departments by department of health of the State of Minnesota.*

Disease and locality of notification.	Referred to health authority of—	Why referred.
<b>Diphtheria:</b>		
Minneapolis health department, Hennepin County.	Black River Falls, Jackson County, Wis.	Came to Minneapolis to consult physician; case diagnosed diphtheria later.
<b>Smallpox:</b>		
Minneapolis health department, Hennepin County.	Sweetgrass, Teton County, Mont.; Great Falls, Cascade County, Mont.; Helena, Lewis and Clark County, Mont.; Big Sandy, Chouteau County, Mont.; Glasgow, Valley County, Mont.; Williston, Williams County, N. Dak.; New Rockford, Eddy County, N. Dak.; Fargo, Cass County, N. Dak. Britton, Marshall County, S. Dak.; Aberdeen, Brown County, S. Dak.	Superintendent of construction company, first symptoms of smallpox Oct. 21; traveled in Montana and North Dakota Oct. 15-25.  Traveling salesman sent to quarantine hospital on arrival in Minneapolis from Britton, where he had stayed 8 days; stopped off at Aberdeen on way to Minneapolis.

## RECIPROCAL NOTIFICATION—Continued

## Minnesota—Continued.

*Cases of communicable diseases referred during October, 1917, to other State health departments by department of health of the State of Minnesota—Continued.*

Disease and locality of notification.	Referred to health authority of—	Why referred.
<b>Trachoma:</b> City and county hospital, St. Paul, Ramsey County.	Webster, Burnett County, Wis.....	Resident of Wisconsin: came to city and county hospital, St. Paul, for operation and wished to return to her home in Wisconsin. (Patient, mixed-blood Chippewa Indian.)
<b>Tuberculosis:</b> Mayo Clinic, Rochester, Olmsted County;	Prescott, Yavapai County, Ariz.; Freeport, Stephenson County, Ill.; Moline, Rock Island County, Ill.; Rockford, Winnebago County, Ill.; Parkersburg, Butler County, Iowa; Clare, Webster County, Iowa; Bellevue, Jackson County, Iowa; Mallard, Palo Alto County, Iowa; Newberry, Luce County, Mich.; Wakefield, Gobeic County, Mich.; Kansas City, Jackson County, Mo.; Davenport, Thayer County, Nebr.; Brockton, Ramsey County, N. Dak.; Kelso, Traill County, N. Dak.; Lima, Allen County, Ohio; Cottonwood, Stanley County, S. Dak.; Beresford, Union County, S. Dak. (2 cases); Colman, Moody County, S. Dak.; Timber Lake, Dewey County, S. Dak.; Stratford, Marathon County, Wis.; Thorpe, Clark County, Wis.; Alfred, Saskatchewan, Canada.	10 advanced, 9 moderately advanced, 3 (stage of disease not given), 1 incipient; cases left Mayo Clinic for homes.
Pokegama Sanatorium, Pine County.	Cleveland, Cuyahoga County, Ohio...	Open case left Pokegama Sanatorium for home.
Northern Pacific Hospital, Brainerd, Crow Wing County.	Bismarck, Burleigh County, N. Dak...	Open case resident in North Dakota sick in Minneapolis hospital.
Lake Julia Sanatorium, Puposky, Beltrami County.	Bermudin, Adams County, Pa.....	Open case left sanatorium for home.
<b>Typhoid fever:</b> Rochester, Olmsted County...	Lime Spring, Howard County, Iowa...	Developed first symptoms of typhoid in Iowa, came to Minnesota for 2 days, and returned to Iowa.
Warroad, Roseau County.....	Drayton, Pembina County, N. Dak....	Worked as harvest hand in North Dakota 3 weeks previous to first symptoms.
Northern Pacific Hospital, Brainerd, Crow Wing County.	Between Jamestown, Stutsman County, and Bismarck, Burleigh County, N. Dak., with Northern Pacific surveying crew.	Working with Northern Pacific Railway surveying crew in North Dakota 3 weeks before first symptoms.
St. Gabriel's Hospital, Little Falls, Morrison County.	Fessenden, Wells County, N. Dak.....	Worked at Fessenden, N. Dak., 3 weeks previous to first symptoms.
Mayo Clinic, Rochester, Olmsted County.	Wagner, Charles Mix County, S. Dak..	Living at home in South Dakota for 6 months previous to first symptoms.
	Brookings, Brookings County, S. Dak.	Patient living at home in South Dakota 3 weeks previous to first symptoms.
Brown Valley, Traverse County.	14 miles from Minnesota line in Brown County, S. Dak.	Running a thrashing engine 3 weeks previous to first symptoms.

## ANTHRAX.

## New Jersey—Essex County.

In October, 1917, a case of anthrax occurred at Verona Borough, Essex County, N. J., in the person of A. H., female, aged 21 years, engaged in setting horsehair bristles in brushes. The first symptoms of the disease appeared October 4. Bacteriological examination of scraping from the pustule showed the presence of *B. anthracis* and a pure culture therefrom injected into a guinea pig caused death in 24 hours. The patient recovered after administration of antianthrax serum.

## CEREBROSPINAL MENINGITIS.

## State Reports for October, 1917.

Place.	New cases reported.	Place.	New cases reported.
Iowa:		New Jersey—Continued.	
Mills County.....	1	Union County.....	1
Polk County.....	3	Total.....	3
Pottawattamie County.....	1		
Wapello County.....	1	North Dakota:	
Total.....	6	Grand Forks County.....	1
Kansas:		Ohio:	
Brown County—		Cuyahoga County.....	5
Hiawatha.....	1	Franklin County.....	1
Doniphan County—		Hamilton County.....	1
Troy (R. D.).....	1	Jackson County.....	1
Osage County—		Mahoning County.....	2
Osage City.....	1	Montgomery County.....	2
Total.....	3	Ross County.....	1
Louisiana:		Summit County.....	5
Lincoln Parish.....	1	Trumbull County.....	4
Vermilion Parish.....	1	Union County.....	1
Total.....	2	Warren County.....	1
Minnesota:		Total.....	24
Hennepin County—		Pennsylvania:	
Fort Snelling.....	1	Allegheny County.....	8
Minneapolis.....	3	Blair County.....	2
Martin County—		Fayette County.....	2
Manyaska Township.....	1	Lawrence County.....	2
Ramsey County—		Luzerne County.....	1
St. Paul.....	1	Montgomery County.....	3
Rock County—		Philadelphia County.....	8
Magnolia Township.....	1	Washington County.....	1
Total.....	7	Westmoreland County.....	2
Mississippi:		York County.....	1
Attala County.....	1	Total.....	30
Hinds County.....	2	Rhode Island:	
Panola County.....	1	Bristol County—	
Scott County.....	1	Barrington (town).....	1
Tate County.....	1	Providence County—	
Total.....	6	North Smithfield (town).....	1
New Jersey:		Pascoag (town).....	1
Essex County.....	1	Providence.....	2
Hudson County.....	1	Total.....	5
		South Carolina:	
		Spartanburg County.....	1



**CEREBROSPINAL MENINGITIS—Continued.****State Reports for June and July, 1917.**

Place.	New cases reported.	Place.	New cases reported.
Arkansas (July 1-31):		Rhode Island (July 1-31)—Cont'd.	
Pulaski County.....	1	Newport County—	
Scott County.....	1	Newport.....	1
Total.....	2	Providence County—	
Rhode Island (June 1-30):		Cumberland (town).....	1
Providence County—		Georgiaville (town).....	1
Providence.....	5	Johnston (town).....	2
Rhode Island (July 1-31):		Pawtucket.....	1
Kent County—		Providence.....	6
West Warwick (town).....	1	Valley Falls (town).....	1
		Total.....	14

**City Reports for Week Ended Nov. 10, 1917.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.....		2	New York, N. Y.....	3	2
Birmingham, Ala.....	2		Omaha, Nebr.....	1	1
Boston, Mass.....	3	1	Philadelphia, Pa.....		1
Buffalo, N. Y.....	3	2	Providence, R. I.....	1	
Chicago, Ill.....	4	3	Racine, Wis.....		1
Columbus, Ohio.....	1		San Diego, Cal.....	1	1
Duluth, Minn.....	1		Savannah, Ga.....	1	1
Fall River, Mass.....	3	1	South Bethlehem, Pa.....	1	
Jersey City, N. J.....		1	Springfield, Mass.....	1	
Kansas City, Kans.....	1		Springfield, Ohio.....	1	1
Manchester, N. H.....	1	1	Toledo, Ohio.....	1	
Milwaukee, Wis.....	1		Wichita, Kans.....	1	
Newark, N. J.....	2	1			

**DIPHTHERIA.**

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2056.

**ERYSIPELAS.****City Reports for Week Ended Nov. 10, 1917.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.....	1		Los Angeles, Cal.....	5	
Birmingham, Ala.....		1	Milwaukee, Wis.....	1	
Bradock, Pa.....	1		Montclair, N. J.....	1	
Buffalo, N. Y.....	1		Nashville, Tenn.....	1	
Chicago, Ill.....	7		Newark, N. J.....	4	
Cincinnati, Ohio.....	1	2	New Bedford, Mass.....		1
Cleveland, Ohio.....	1		New Castle, Pa.....	2	
Columbus, Ohio.....	1		New York, N. Y.....		3
Denver, Colo.....	2	1	Omaha, Nebr.....	1	
Detroit, Mich.....	1		Pittsburgh, Pa.....	6	
Hartford, Conn.....	1		St. Louis, Mo.....	1	1
Jersey City, N. J.....	1		San Francisco, Cal.....	1	
Johnstown, Pa.....	1		Springfield, Ill.....	1	
Kalamazoo, Mich.....	1		Steelton, Pa.....	1	
Lima, Ohio.....		1	Wichita, Kans.....	2	

**LEPROSY.****City Report for Week Ended Nov. 10, 1917.**

During the week ended November 10, 1917, 1 case of leprosy was reported in San Francisco, Cal.

## MALARIA.

## State Reports for October, 1917.

Place.	New cases reported.	Place.	New cases reported.
<b>Kansas:</b>		<b>Mississippi—Continued.</b>	
Atchison County—		George County.....	30
Potter.....	1	Greene County.....	87
Cowley County—		Grenada County.....	60
Winfield.....	1	Hancock County.....	196
Decatur County—		Harrison County.....	200
Oberlin.....	1	Hinds County.....	354
Douglas County—		Holmes County.....	723
Richland.....	1	Issaquena County.....	107
Montgomery County—		Itawamba County.....	52
Independence.....	1	Jackson County.....	187
Sedgwick County—		Jefferson County.....	114
Wichita.....	1	Jefferson Davis County.....	54
Sheridan County—		Jones County.....	382
Grinnell (R. D.).....	1	Kemper County.....	85
<b>Total.....</b>	<b>7</b>	Lafayette County.....	116
<b>Louisiana:</b>		Lamar County.....	251
Acadia Parish.....	21	Lauderdale County.....	94
Allen Parish.....	4	Lawrence County.....	128
Assumption Parish.....	10	Leake County.....	185
Avoyelles Parish.....	1	Lee County.....	170
Beauregard Parish.....	2	Lefflore County.....	491
Bienville Parish.....	1	Lincoln County.....	96
Caddo Parish.....	1	Lowndes County.....	34
Calcasieu Parish.....	1	Madison County.....	67
Concordia Parish.....	2	Marion County.....	194
De Soto Parish.....	7	Marshall County.....	81
East Baton Rouge Parish.....	1	Monroe County.....	114
East Feliciana Parish.....	4	Montgomery County.....	44
Grant Parish.....	4	Neshoba County.....	94
Iberville Parish.....	2	Newton County.....	97
Jackson Parish.....	2	Noxubee County.....	54
Jefferson Davis Parish.....	7	Oktibbeha County.....	140
Lafayette Parish.....	1	Panola County.....	340
Livingston Parish.....	3	Pearl River County.....	145
Morehouse Parish.....	2	Perry County.....	192
Natchitoches Parish.....	1	Pike County.....	139
Ouachita Parish.....	4	Pontotoc County.....	127
Rapides Parish.....	2	Prentiss County.....	57
Sabine Parish.....	5	Quitman County.....	334
St. Helena Parish.....	2	Rankin County.....	119
St. Landry Parish.....	5	Scott County.....	77
St. Martin Parish.....	29	Sharkey County.....	78
St. Mary Parish.....	8	Simpson County.....	173
St. Tammany Parish.....	8	Smith County.....	96
Tangipahoa Parish.....	2	Stone County.....	37
Tensas Parish.....	30	Sunflower County.....	751
Terrebonne Parish.....	5	Tallahatchie County.....	413
Union Parish.....	3	Tate County.....	237
Vermilion Parish.....	10	Tippah County.....	91
Washington Parish.....	1	Tishomingo County.....	127
West Feliciana Parish.....	4	Tunica County.....	395
Winn Parish.....	4	Union County.....	108
<b>Total.....</b>	<b>199</b>	Warren County.....	388
<b>Mississippi:</b>		Washington County.....	525
Adams County.....	120	Wayne County.....	109
Alcorn County.....	58	Webster County.....	28
Amite County.....	109	Wilkinson County.....	67
Attala County.....	69	Winston County.....	200
Bolivar County.....	1,090	Yalobusha County.....	75
Calhoun County.....	85	Yazoo County.....	441
Carroll County.....	137	<b>Total.....</b>	<b>15,079</b>
Chickasaw County.....	45	<b>New Jersey:</b>	
Choctaw County.....	235	Burlington County.....	2
Claiborne County.....	123	Essex County.....	3
Clarke County.....	21	Mercer County.....	3
Clay County.....	62	Sussex County.....	1
Coahoma County.....	1,106	Union County.....	1
Copiah County.....	204	<b>Total.....</b>	<b>10</b>
Covington County.....	194	<b>Pennsylvania:</b>	
Do Soto County.....	164	Philadelphia County.....	1
Forrest County.....	165		
Franklin County.....	142		

**MALARIA—Continued.****State Reports for October, 1917—Continued.**

Place.	New cases reported.	Place.	New cases reported.
<b>South Carolina:</b>		<b>South Carolina—Continued.</b>	
Bamberg County.....	5	Spartanburg County.....	1
Beaufort County.....	11	Union County.....	4
Chester County.....	13	Williamsburg County.....	12
Forchester County.....	18		
Marion County.....	43	Total.....	108
Richland County.....	1		

**Arkansas Reports for June and July, 1917.**

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas (June 1-30):</b>		<b>Arkansas (July 1-31):</b>	
Arkansas County.....	8	Ashley County.....	152
Ashley County.....	116	Bradley County.....	7
Bradley County.....	6	Carroll County.....	2
Chicot County.....	30	Clay County.....	4
Cleveland County.....	2	Garland County.....	2
Cross County.....	3	Hempstead County.....	25
Faulkner County.....	5	Izard County.....	9
Garland County.....	4	Johnson County.....	10
Greene County.....	2	Lafayette County.....	20
Hempstead County.....	25	Loran County.....	25
Izard County.....	30	Madison County.....	1
Johnson County.....	3	Monroe County.....	2
Lafayette County.....	8	Perry County.....	3
Miller County.....	25	Pope County.....	14
Mississippi County.....	7	Pulaski County.....	5
Monroe County.....	1	Saline County.....	20
Perry County.....	3	Scott County.....	5
Pulaski County.....	3	Sevier County.....	60
Saline County.....	1	St. Francis County.....	54
Sebastian County.....	20	White County.....	16
Sevier County.....	15		
St. Francis County.....	31	Total.....	447
Union County.....	30		
White County.....	52		
Total.....	10		
	440		

**City Reports for Week Ended Nov. 10, 1917.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Birmingham, Ala.....	10	.....	Richmond, Va.....	.....	1
Memphis, Tenn.....	3	.....	San Francisco, Cal.....	1	.....
Newark, N. J.....	1	.....	Savannah, Ga.....	2	.....
New Orleans, La.....	1	1			

**MEASLES.**

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2056.

## PELLAGRA.

## State Reports for October, 1917.

Place.	New cases reported.	Place.	New cases reported.
<b>Kansas:</b>		<b>Mississippi—Continued.</b>	
Sedgwick County—		Leake County.....	13
Cheney.....	2	Lee County.....	11
Shawnee County—		Lefflore County.....	5
State Hospital.....	1	Lincoln County.....	14
Total.....	3	Lowndes County.....	1
		Madison County.....	5
<b>Louisiana:</b>		Marion County.....	11
Acadia Parish.....	1	Marshall County.....	2
Assumption Parish.....	1	Monroe County.....	17
Beauregard Parish.....	1	Neshoba County.....	11
East Baton Rouge Parish.....	1	Newton County.....	4
East Feliciana Parish.....	2	Noxubee County.....	2
Morehouse Parish.....	1	Oktibbeha County.....	7
Orleans Parish.....	3	Panola County.....	11
Rapides Parish.....	1	Pearl River County.....	2
Sabine Parish.....	1	Perry County.....	5
St. Mary Parish.....	1	Pike County.....	6
St. Tammany Parish.....	2	Pontotoc County.....	8
Tensas Parish.....	1	Prentiss County.....	3
Washington Parish.....	1	Quitman County.....	12
Total.....	17	Rankin County.....	1
		Scott County.....	7
<b>Mississippi:</b>		Simpson County.....	9
Adams County.....	4	Smith County.....	3
Alcorn County.....	10	Sunflower County.....	12
Amite County.....	4	Tallahatchie County.....	19
Attala County.....	6	Tate County.....	7
Bolivar County.....	60	Tippah County.....	5
Calhoun County.....	3	Tishomingo County.....	6
Carroll County.....	4	Tunica County.....	22
Chickasaw County.....	9	Union County.....	4
Claiborne County.....	2	Warren County.....	9
Clay County.....	7	Washington County.....	27
Coahoma County.....	53	Wayne County.....	11
Copiah County.....	5	Webster County.....	2
Covington County.....	6	Yazoo County.....	10
De Soto County.....	6	Total.....	589
Forrest County.....	16		
George County.....	3	<b>Pennsylvania:</b>	
Hancock County.....	2	Philadelphia County.....	1
Harrison County.....	3		
Hinds County.....	14	<b>South Carolina:</b>	
Holmes County.....	19	Abbeville County.....	1
Itawamba County.....	6	Barnwell County.....	1
Jackson County.....	2	Chester County.....	1
Jefferson County.....	2	Dorchester County.....	6
Jefferson Davis County.....	1	Laurens County.....	1
Jones County.....	22	Marion County.....	4
Kemper County.....	1	Spartanburg County.....	8
Lafayette County.....	3	Union County.....	1
Lamar County.....	4	York County.....	1
Lauderdale County.....	5	Total.....	24
Lawrence County.....	3		

## PELLAGRA—Continued.

## Arkansas Reports for June and July, 1917.

Place.	New cases reported.	Place.	New cases reported.
Arkansas (June 1-30):		Arkansas (July 1-31):	
Ashley County.....	23	Ashley County.....	11
Bradley County.....	2	Calhoun County.....	2
Calhoun County.....	2	Clay County.....	1
Cross County.....	4	Faulkner County.....	1
Drew County.....	8	Garland County.....	2
Faulkner County.....	2	Lawrence County.....	9
Garland County.....	6	Logan County.....	2
Greene County.....	2	Madison County.....	3
Miller County.....	3	Miller County.....	3
Mississippi County.....	2	Monroe County.....	2
Saline County.....	3	Perry County.....	1
Sebastian County.....	1	Pope County.....	8
Sevier County.....	1	Pulaski County.....	3
St. Francis County.....	28	Saline County.....	4
Union County.....	23	Sevier County.....	1
White County.....	1	St. Francis County.....	8
Total.....	111	White County.....	3
		Total.....	64

## City Reports for Week Ended Nov. 10, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Austin, Tex.....		1	Richmond, Va.....	1	2
Birmingham, Ala.....	3	2	Rocky Mount, N. C.....	1	
Lexington, Ky.....		1	Washington, D. C.....	1	
Los Angeles, Cal.....	1		Winston-Salem, N. C.....		1
Memphis, Tenn.....	1				

## PNEUMONIA.

## City Reports for Week Ended Nov. 10, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.....	6	11	New Bedford, Mass.....	3	4
Binghamton, N. Y.....	1	1	New Britain, Conn.....	1	
Boston, Mass.....	17	22	New Castle, Pa.....	2	
Braddock, Pa.....	1		Newton, Mass.....	2	
Brockton, Mass.....	1		Oakland, Cal.....	2	2
Chelsea, Mass.....	2		Philadelphia, Pa.....	51	27
Chicago, Ill.....	85	67	Pittsburgh, Pa.....	25	26
Cleveland, Ohio.....	28	17	Pittsfield, Mass.....	1	
Dayton, Ohio.....	1	3	Pontiac, Mich.....	1	
Detroit, Mich.....	4	26	Reading, Pa.....	2	1
Duluth, Minn.....	1		Roanoke, Va.....	2	2
Fall River, Mass.....	1		Sacramento, Cal.....	2	2
Grand Rapids, Mich.....	2		Saginaw, Mich.....	1	
Haverhill, Mass.....	5	1	San Diego, Cal.....	2	2
Jackson, Mich.....	3	3	San Francisco, Cal.....	15	15
Kalamazoo, Mich.....	1		Somerville, Mass.....	2	2
Kansas City, Mo.....	12	8	South Bethlehem, Pa.....	1	
Long Beach, Cal.....	1	1	Springfield, Mass.....	2	1
Los Angeles, Cal.....	7	2	Steeleton, Pa.....	1	
Lowell, Mass.....	1		Washington, Pa.....	1	
Manchester, N. H.....	4	4	Wichita, Kans.....	5	1
Newark, N. J.....	46	8	Worcester, Mass.....	2	1

## POLIOMYELITIS (INFANTILE PARALYSIS).

## Illinois.

During the week ended November 24, 1917, cases of poliomyelitis were notified in the State of Illinois as follows: One case each in Dupage, Kane, and La Salle Counties; 2 cases in Vermilion County; and 6 cases in Cook County, of which 5 were in the city of Chicago.

## State Reports for October, 1917.

Place.	New cases reported.	Place.	New cases reported.
<b>Iowa:</b>		<b>Minnesota—Continued.</b>	
Audubon County.....	2	St. Louis County—	
Black Hawk County.....	1	Virginia.....	1
Clinton County.....	1	<b>Total.....</b>	<b>3</b>
Crawford County.....	1	<b>Mississippi:</b>	
Dallas County.....	1	Alcorn County.....	1
Hamilton County.....	1	Clay County.....	1
Ida County.....	2	Itawamba County.....	1
Johnson County.....	1	Pike County.....	1
Marion County.....	1	<b>Total.....</b>	<b>4</b>
Montgomery County.....	1	<b>New Jersey:</b>	
Pottawattamie County.....	1	Camden County.....	1
Scott County.....	8	Essex County.....	2
Warren County.....	1	<b>Total.....</b>	<b>3</b>
<b>Total.....</b>	<b>22</b>	<b>North Dakota:</b>	
<b>Kansas:</b>		Grand Forks County.....	2
Butler County—		Kidder County.....	1
Benton (R. D.).....	1	Morton County.....	2
Douglas.....	1	Ramsey County.....	5
Marion County—		Williams County.....	1
Tampa (R. D.).....	1	<b>Total.....</b>	<b>11</b>
McPherson County—		<b>Ohio:</b>	
Groveland.....	1	Adams County.....	1
McPherson.....	1	Ashtabula County.....	1
Pottawatomie County—		Auglaize County.....	2
Bigelow.....	1	Belmont County.....	1
Rooks County.....	1	Carroll County.....	1
<b>Total.....</b>	<b>7</b>	Columbiana County.....	2
<b>Louisiana:</b>		Cuyahoga County.....	7
Richland Parish.....	1	Franklin County.....	1
<b>Maine:</b>		Hamilton County.....	1
Cumberland County—		Holmes County.....	1
Portland.....	1	Huron County.....	1
Oxford County—		Mahoning County.....	1
Oxford (town).....	1	Montgomery County.....	1
Penobscot County—		Portage County.....	1
Old Town.....	1	Stark County.....	2
<b>Total.....</b>	<b>3</b>	Summit County.....	3
<b>Michigan:</b>		Washington County.....	1
Allegan County.....	1	Wayne County.....	3
Berrien County.....	2	<b>Total.....</b>	<b>31</b>
Calhoun County.....	1	<b>Pennsylvania:</b>	
Charlevoix County.....	1	Allegheny County.....	11
Genesee County.....	1	Armstrong County.....	1
Ingham County.....	1	Beaver County.....	3
Monroe County.....	1	Blair County.....	3
Muskegon County.....	2	Bradford County.....	1
Saginaw County.....	1	Butler County.....	1
Tuscola County.....	1	Chester County.....	1
Van Buren County.....	2	Clearfield County.....	2
Wayne County.....	11	Delaware County.....	1
<b>Total.....</b>	<b>25</b>	Elk County.....	1
<b>Minnesota:</b>		Erie County.....	8
Cass County—		Fayette County.....	6
Walker.....	1	Franklin County.....	2
Olmsted County—		Lackawanna County.....	1
Rochester.....	1		

**POLIOMYELITIS (INFANTILE PARALYSIS)—Continued.****State Reports for October, 1917—Continued.**

Place.	New cases reported.	Place.	New cases reported.
<b>Pennsylvania—Continued.</b>		<b>Rhode Island:</b>	
Lancaster County.....	7	Providence County—	
Lawrence County.....	5	Providence.....	1
Lebanon County.....	1		
Luzerne County.....	2	<b>South Carolina:</b>	
McKean County.....	1	Spartanburg County.....	1
Mercer County.....	2		
Mifflin County.....	2	<b>Vermont:</b>	
Montgomery County.....	1	Lamoille County.....	2
Philadelphia County.....	1	Orleans County.....	1
Schuylkill County.....	2	Washington County.....	6
Somerset County.....	1	Total.....	9
Warren County.....	1		
Washington County.....	5		
York County.....	2		
Total.....	75		

**State Reports for June and July, 1917.**

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas (June 1-30):</b>		<b>Rhode Island (June 1-30):</b>	
Cleveland County.....	1	Providence County—	
		Pascoag (town).....	1
<b>Arkansas (July 1-31):</b>		<b>Rhode Island (July 1-31):</b>	
Logan County.....	1	Providence County—	
		Providence.....	1

**City Reports for Week Ended Nov. 10, 1917.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Berkeley, Cal.....	1		New York, N. Y.....	2	2
Chicago, Ill.....	11	4	Portland, Oreg.....	1	
Cleveland, Ohio.....	1		Seattle, Wash.....	2	

**RABIES IN MAN.****City Report for Week Ended November 10, 1917.**

During the week ended November 10, 1917, one fatal case of rabies in man was reported in Newark, N. J.

**RABIES IN ANIMALS.****City Reports for Week Ended November 10, 1917.**

During the week ended November 10, 1917, one case of rabies in animals was reported in Akron, Ohio; one case was reported in Detroit, Mich.; and two cases were reported in Kansas City, Mo.

**ROCKY MOUNTAIN SPOTTED FEVER.****Washington—Spokane.**

On November 20, 1917, a case of Rocky Mountain spotted fever was notified in Spokane, Wash., the onset of the disease having occurred about October 10, 1917.

**State Report for October, 1917.**

During the month of October, 1917, one case of Rocky Mountain spotted fever was reported at Hoxie, Sheridan County, Kans.

**SCARLET FEVER.****Washington—Vancouver.**

During the week ended November 24, 1917, 5 cases of scarlet fever were notified in Vancouver, Clarke County, Wash.

See also Diphtheria, measles, scarlet fever, and tuberculosis, page 2056.

**SMALLPOX.****Maryland.**

Cases of smallpox were reported in Maryland as follows: November 22 to 24, 1917, 5 cases at Cumberland, Allegany County; and 2 cases at Avilton, Garrett County.

**State Reports for October, 1917.**

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
<b>Kansas:</b>						
Butler County—						
Augusta.....	1				1	
Cherokee County—						
Columbus (1 R. D.).....	2				2	
Weir (3 R. D.).....	4				4	
Cloud County—						
Glasco (R. D.).....	1				1	
Doniphan County—						
Wathena (5 R. D.).....	6				6	
Douglas County—						
Overbrook (4 R. D.).....	4				4	
Ellis County—						
Hays.....	1				1	
Franklin County—						
Princeton.....	3				3	
Jefferson County—						
Oskaloosa.....	1				1	
Perry (2 R. D.).....	2				2	
Johnson County—						
Overland Park (2 R. D.)..	2			1	1	
Spring Hill (R. D.).....	1				1	
Leavenworth County—						
Lansing.....	6				6	
Leavenworth.....	9			1	8	
Linwood.....	1				1	
Lincoln County—						
Barnard (R. D.).....	1				1	



## SMALLPOX—Continued.

## State Reports for October, 1917—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
<b>Kansas—Continued.</b>						
Linn County—						
Pleasanton (R. D.).....	1			1		
Miami County—						
Paola (1 R. D.).....	3				3	
Montgomery County—						
Coffeyville.....	1				1	
Independence (R. D.).....	1				1	
Osage County—						
Burlingame.....	10				10	
Quenemo.....	11			1	10	
Reno County—						
Hutchinson.....	1				1	
Saline County—						
Mentor.....	1				1	
Salina.....	1			1		
Sedgwick County—						
Wichita.....	1				1	
Shawnee County—						
Topeka.....	1				1	
Sumner County—						
Wellington.....	2			1	1	
Wyandotte County—						
Kansas City.....	39				39	
Rosedale.....	1				1	
Total.....	119			6	113	
<b>Michigan:</b>						
Alcona County—						
Hayes Township.....	1					1
Lincoln.....	1			1		
Alpena County—						
Alpena.....	2				1	1
Bay County—						
Pinconning Township.....	3				3	
Pinconning.....	14				14	
Bay City.....	1					1
Calhoun County—						
Battle Creek.....	3				3	
Clare County—						
Clare.....	6				6	
Clinton County—						
Watertown Township.....	1				1	
Genesee County—						
Burton Township.....	13				13	
Vienna Township.....	1				1	
Flint.....	10				5	5
Huron County—						
Collax Township.....	1					1
Dwight Township.....	1				1	
Fairhaven Township.....	4				4	
Meade Township.....	1					1
Port Austin Township.....	3				3	
Pointe Aux Barques Township.....	1				1	
Port Austin.....	13				13	
Ubyl.....	3				2	1
Ingham County—						
Aurelius Township.....	2				2	
Ionia County—						
Lyons.....	1				1	
Isabella County—						
Mount Pleasant.....	11				11	
Kent County—						
Grand Rapids.....	10				10	
Lapeer County—						
Almont.....	1					1
Macomb County—						
Lake Township.....	1				1	
Warren Township.....	2				2	

## SMALLPOX—Continued.

## State Reports for October, 1917—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Michigan—Continued.						
Mason County—						
Pere Marquette Township	6				6	
Summit Township	2				2	
Victory Township	1				1	
Ludington	7				7	
Scottsville	4				4	
Montcalm County—						
Bloomer Township	5				5	
Muskegon County—						
Muskegon	1					1
Oakland County—						
Waterford Township	1		1			
Osceola County—						
Osceola Township	1				1	
Evart	6				3	3
Ottawa County—						
Spring Lake Township	1					1
Presque Isle County—						
Bismark Township	1				1	
Saginaw County—						
Maple Grove Township	1				1	
St. Clair County—						
Clyde Township	1					1
East China Township	2				2	
Sanilac County—						
Custer Township	1				1	
Fremont Township	5				5	
Wheatland Township	1				1	
Shiawassee County—						
Woodland Township	1				1	
Owosso	1				1	
Washtenaw County—						
York Township	2				2	
Ann Arbor	4				4	
Wayne County—						
Highland Park	3				2	1
River Rouge	1				1	
Wayne	2				2	
Detroit	18				18	
Total	190		1	1	169	19
Minnesota:						
Blue Earth County—						
Mankato	2				2	
Crow Wing County—						
Klondyke Township	6				5	1
Brainerd	1		1			
Riverton	2				2	
Dakota County—						
Hastings	1				1	
Douglas County—						
Osakis	4				4	
Fillmore County—						
Newburg Township	1				1	
Preble Township	2				2	
Hennepin County—						
Corcoran Township	1				1	
Edina	1				1	
Minneapolis	32			3	29	
Kittson County—						
Norway Township	6				6	
Lyon County—						
Lynd Township	36			1	35	
Lyons Township	2				2	
Marshall	4				4	
Tracy	1				1	
Marshall County—						
Lincoln Township	3				3	
Stephen	4				4	

## SMALLPOX—Continued.

## State Reports for October, 1917—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
<b>Minnesota—Continued.</b>						
Meeker County—					2	
Darwin Township.....	2					
Mower County—						
Pleasant Valley Township.....	4				3	1
Olmsted County—						
Rochester.....	1				1	
Polk County—						
Keystone Township.....	1				1	
Ramsey County—						
Rose Township.....	1				1	
St. Paul.....	36				36	
Rice County—						
Wells Township.....	1				1	
Roseau County—						
Roseau.....	2				2	
St. Louis County—						
Hibbing.....	1			1		
Sherburne County—						
Livonia Township.....	2				2	
Sibley County—						
Severance Township.....	6				6	
Stearns County—						
St. Cloud.....	1		1			
Sauk Center.....	5				5	
Winona County—						
Winona.....	3				3	
Total .....	175		2	5	166	2
<b>Ohio:</b>						
Allen County.....	2					2
Butler County.....	3				1	2
Carroll County.....	5					5
Clark County.....	2				1	1
Clinton County.....	2				2	
Cuyahoga County.....	57				1	56
Darke County.....	4			1	3	
Fairfield County.....	5				5	
Franklin County.....	13			1	12	
Gallia County.....	1				1	
Geauga County.....	2				2	
Greene County.....	16				2	14
Guernsey County.....	15				14	1
Hamilton County.....	2					2
Highland County.....	2					2
Hocking County.....	30			1	26	3
Huron County.....	2					2
Knox County.....	1					1
Lorain County.....	2				1	1
Lucas County.....	14				2	12
Marion County.....	5				5	
Medina County.....	7				7	
Mercer County.....	1				1	
Miama County.....	37		1	3	33	
Montgomery County.....	16				1	15
Portage County.....	33				30	3
Putnam County.....	1				1	
Ross County.....	7				4	3
Sandusky County.....	1					1
Scioto County.....	4				1	3
Shelby County.....	71				71	
Stark County.....	6				5	1
Summit County.....	25				4	21
Trumbull County.....	10				9	1
Tuscarawas County.....	1				1	
Van Wert County.....	6				3	3
Vinton County.....	1				1	
Washington County.....	1				1	
Wayne County.....	39				3	36
Total.....	452		1	6	254	191

## SMALLPOX—Continued.

## Miscellaneous State Reports.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
<b>Arkansas (June 1-30):</b>			<b>Maine (Oct. 1-31):</b>		
Arkansas County.....	3	.....	Aroostook County—		
Ashley County.....	1	.....	Fort Fairfield (town).....	21	.....
Calhoun County.....	1	.....	Presque Isle (town).....	3	.....
Chicot County.....	5	.....	Kennebec County—		
Clay County.....	8	.....	Winslow (town).....	1	.....
Cleveland County.....	1	.....	Penobscot County—		
Faulkner County.....	1	.....	Bangor.....	1	.....
Garland County.....	3	.....	Washington County—		
Greene County.....	10	.....	Machias (town).....	2	.....
Hempstead County.....	1	.....	Whitneyville (town).....	16	.....
Marion County.....	1	.....	<b>Total.....</b>	<b>44</b>	
Miller County.....	3	.....			
Mississippi County.....	9	.....	<b>Mississippi (Oct. 1-31):</b>		
Pulaski County.....	41	.....	Calhoun County.....	8	.....
St. Francis County.....	1	.....	Chickasaw County.....	16	.....
White County.....	2	.....	Clay County.....	6	.....
<b>Total.....</b>	<b>91</b>		De Soto County.....	15	.....
<b>Arkansas (July 1-31):</b>			Forrest County.....	2	.....
Drew County.....	1	.....	Harrison County.....	2	.....
Faulkner County.....	1	.....	Hinds County.....	4	.....
Garland County.....	2	.....	Holmes County.....	3	.....
Lawrence County.....	1	.....	Lee County.....	1	.....
Logan County.....	4	.....	Simpson County.....	1	.....
Miller County.....	1	.....	Warren County.....	1	.....
Perry County.....	1	.....	Yazoo County.....	5	.....
Pulaski County.....	3	.....	<b>Total.....</b>	<b>64</b>	
St. Francis County.....	4	.....			
White County.....	10	.....	<b>North Dakota (Oct. 1-31):</b>		
<b>Total.....</b>	<b>28</b>		Bottineau County.....	2	.....
<b>Iowa (Oct. 1-31):</b>			Burleigh County.....	3	.....
Adair County.....	1	.....	Grant County.....	4	.....
Appanoose County.....	17	.....	McLean County.....	5	.....
Audubon County.....	8	.....	Nelson County.....	12	.....
Black Hawk County.....	2	.....	Oliver County.....	1	.....
Boone County.....	1	.....	Rolette County.....	2	.....
Butler County.....	4	.....	Ward County.....	1	.....
Cass County.....	3	.....	Williams County.....	1	.....
Cerro Gordo County.....	1	.....	<b>Total.....</b>	<b>31</b>	
Clarke County.....	3	.....			
Decatur County.....	27	.....	<b>Pennsylvania (Oct. 1-31):</b>		
Delaware County.....	1	.....	Allegheny County.....	1	.....
Dubuque County.....	3	.....	Blair County.....	1	.....
Floyd County.....	14	.....	Bedford County.....	1	.....
Hancock County.....	1	.....	Cambria County.....	1	.....
Johnson County.....	1	.....	Center County.....	2	.....
Kossuth County.....	6	.....	Cumberland County.....	1	.....
Monona County.....	1	.....	Dauphin County.....	2	.....
Montgomery County.....	4	.....	Perry County.....	1	.....
Page County.....	2	.....	Snyder County.....	5	.....
Polk County.....	11	.....	<b>Total.....</b>	<b>15</b>	
Pottawattamie County.....	6	.....			
Scott County.....	2	.....	<b>South Carolina (Oct. 1-31):</b>		
Shelby County.....	1	.....	Berkeley County.....	7	.....
Sioux County.....	2	.....	Dorchester County.....	6	.....
Washington County.....	1	.....	Greenville County.....	6	.....
Webster County.....	1	.....	Kershaw County.....	4	.....
Woodbury County.....	2	.....	Newberry County.....	1	.....
Wright County.....	2	.....	<b>Total.....</b>	<b>24</b>	
<b>Total.....</b>	<b>128</b>				
<b>Louisiana (Oct. 1-31):</b>			<b>Wyoming (Oct. 1-31):</b>		
Acadia Parish.....	5	.....	Carbon County.....	1	.....
Ascension Parish.....	13	.....	Lincoln County.....	5	.....
East Baton Rouge Parish.....	1	.....	<b>Total.....</b>	<b>6</b>	
Jefferson Davis Parish.....	1	.....			
Plaquemines Parish.....	3	.....			
St. Tammany Parish.....	4	.....			
Tensas Parish.....	2	.....			
West Carroll Parish.....	1	.....			
Orleans Parish.....	2	.....			
<b>Total.....</b>	<b>32</b>				

**SMALLPOX—Continued.****City Reports for Week Ended Nov. 10, 1917.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	12	.....	La Crosse, Wis.....	4	.....
Alton, Ill.....	5	.....	Leavenworth, Kans.....	3	.....
Ann Arbor, Mich.....	8	.....	Lincoln, Nebr.....	1	.....
Buffalo, N. Y.....	1	.....	Madison, Wis.....	1	.....
Butte, Mont.....	14	.....	Milwaukee, Wis.....	3	.....
Canton, Ohio.....	1	.....	Niagara Falls, N. Y.....	1	.....
Chicago, Ill.....	6	.....	Oklahoma City, Okla.....	3	.....
Cincinnati, Ohio.....	1	.....	Omaha, Nebr.....	55	.....
Cleveland, Ohio.....	17	.....	Pittsburgh, Pa.....	2	.....
Columbus, Ohio.....	1	.....	Portland, Oreg.....	1	.....
Davenport, Iowa.....	1	.....	Quincy, Ill.....	2	.....
Dayton, Ohio.....	8	.....	Roanoke, Va.....	1	.....
Denver, Colo.....	11	.....	St. Joseph, Mo.....	3	.....
Detroit, Mich.....	32	.....	St. Louis, Mo.....	2	.....
Dubuque, Iowa.....	2	.....	Salt Lake City, Utah.....	2	.....
Flint, Mich.....	2	.....	San Francisco, Cal.....	1	.....
Ft. Wayne, Ind.....	30	.....	Sioux City, Iowa.....	3	.....
Grand Rapids, Mich.....	2	.....	Springfield, Ohio.....	1	.....
Indianapolis, Ind.....	9	.....	Toledo, Ohio.....	2	.....
Kansas City, Kans.....	28	1	Topeka, Kans.....	1	.....
Kansas City, Mo.....	50	.....	Washington, D. C.....	1	.....

**TETANUS.****City Reports for Week Ended November 10, 1917.**

During the week ended November 10, 1917, cases of tetanus were reported as follows: Cleveland, Ohio, 1; Kansas City, Kans., 1; Pittsburgh, Pa., 1 death; Worcester, Mass., 1 case; and Auburn, N. Y., 2 fatal cases.

**TUBERCULOSIS.**

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2056.

**TYPHOID FEVER.****State Reports for October, 1917.**

Place.	New cases reported.	Place.	New cases reported.
Kansas:		Kansas—Continued.	
Allen County.....	2	Crawford County—	
Anderson County.....	2	Arma.....	1
Atchison County.....	2	Breezy Hill.....	3
Barber County.....	2	Croweburg.....	3
Barton County.....	1	Franklin.....	2
Bourbon County.....	5	Girard.....	1
Brown County.....	5	Mulberry (1 R. D.).....	4
Butler County—		Pittsburg (4 R. D.).....	18
Andover (R. D.).....	1	Ringo.....	3
Augusta (5 R. D.).....	15	Dickinson County—	
Benton (R. D.).....	1	Herington (1 R. D.).....	12
Beaumont.....	1	Doniphan County.....	1
Douglass (R. D.).....	1	Douglas County.....	9
El Dorado (1 R. D.).....	51	Elk County.....	8
Whitewater (R. D.).....	1	Ellsworth County.....	1
Chase County.....	9	Finney County.....	3
Chautauqua County.....	2	Ford County.....	2
Cherokee County.....	15	Franklin County.....	6
Clay County.....	1	Geary County.....	1
Cloud County.....	1	Gove County.....	1
Coffey County.....	4	Graham County.....	1
Cowley County—		Gray County.....	1
Arkansas City.....	5	Greeewood County.....	9
Burden (R. D.).....	1	Hamilton County.....	1
Cambridge (R. D.).....	1	Harper County.....	10
Winfield.....	10	Harvey County.....	2

## TYPHOID FEVER—Continued.

## State Reports for October, 1917—Continued.

Place.	New cases reported.	Place.	New cases reported.
<b>Kansas—Continued.</b>		<b>Louisiana—Continued.</b>	
Hodgeman County.....	1	Plaquemines Parish.....	2
Jackson County.....	1	Pointe Coupee Parish.....	1
Kearny County.....	1	Rapides Parish.....	8
Kingman County.....	2	Richland Parish.....	2
Labette County.....	9	St. James Parish.....	5
Leavenworth County.....	9	St. John Parish.....	1
Lincoln County.....	3	St. Martin Parish.....	4
Linn County.....	2	St. Mary Parish.....	4
Lyon County.....	13	St. Tammany Parish.....	1
Marion County.....	6	Tensas Parish.....	1
Marshall County.....	4	Terrebonne Parish.....	2
McPherson County.....	4	Union Parish.....	1
Miami County.....	5	Vermilion Parish.....	4
Mitchell County.....	4	Vernon Parish.....	2
Montgomery County.....	21	Webster Parish.....	1
Morris County.....	5	West Baton Rouge Parish.....	2
Morton County.....	3	West Carroll Parish.....	1
Neosho County.....	10		
Ness County.....	3	Total.....	153
Osage County.....	3		
Osborne County.....	1		
Pratt County.....	1	<b>Maine:</b>	
Reno County—		Androscoggin County—	
Abbeyville.....	1	Durham (town).....	1
Hutchinson (2 R. D.).....	14	Cumberland County—	
Sylvia.....	2	Portland.....	6
Republic County.....	1	Knox County.....	
Rice County.....	1	Rockland.....	1
Riley County—		Oxford County—	
Manhattan.....	3	Greenwood (town).....	1
Ogden.....	11	Piscataquis County—	
Randolph.....	1	Milo.....	11
Rooks County.....	1	Waldo County—	
Saline County.....	7	Searsmont (town).....	1
Sedgewick County—		York County—	
Cheney (1 R. D.).....	9	Kittery (town).....	1
Wichita (3 R. D.).....	31		
Seward County.....	9	Total.....	22
Shawnee County—			
Topeka (2 R. D.).....	17	<b>Michigan:</b>	
Smith County.....	1	Allegan County.....	1
Stafford County.....	2	Bay County.....	7
Stevens County.....	4	Barry County.....	2
Sumner County.....	4	Berrien County.....	1
Wabausee County.....	2	Branch County.....	1
Washington County.....	1	Calhoun County.....	3
Wilson County.....	4	Cheboygan County.....	1
Woodson County.....	2	Clare County.....	1
Wyandotte County—		Delta County.....	1
Kansas City.....	16	Dickinson County.....	1
Rosedale.....	1	Faton County.....	4
Turner.....	7	Genesee County.....	21
Total.....	505	Gogebic County.....	1
		Gratiot County.....	2
<b>Louisiana:</b>		Huron County.....	1
Acadia Parish.....	4	Houghton County.....	2
Ascension Parish.....	1	Ingham County.....	3
Assumption Parish.....	2	Ionia County.....	1
Avoyelles Parish.....	4	Jackson County.....	1
Beauregard Parish.....	2	Kalkaska County.....	5
Bienville Parish.....	5	Kent County.....	9
Caddo Parish.....	6	Lapeer County.....	1
Caldwell Parish.....	6	Lenawee County.....	2
Calcasieu Parish.....	9	Marquette County.....	6
De Soto Parish.....	5	Monroe County.....	1
Evangeline Parish.....	3	Montcalm County.....	1
East Baton Rouge Parish.....	3	Oakland County.....	1
East Carroll Parish.....	1	Saginaw County.....	7
Grant Parish.....	1	St. Clair County.....	1
Iberia Parish.....	2	Shiawassee County.....	3
Iberville Parish.....	1	Van Buren County.....	2
Jackson Parish.....	1	Washtenaw County.....	20
Jefferson Davis Parish.....	8	Wayne County.....	8
Lafayette Parish.....	4	Wexford County.....	2
Lafourche Parish.....	4		
Orleans Parish.....	35	Total.....	124

## TYPHOID FEVER—Continued.

## State Reports for October, 1917—Continued.

Place.	New cases reported.	Place.	New cases reported.
<b>Minnesota:</b>		<b>Mississippi—Continued.</b>	
Becker County—		Amita County.....	4
Detroit.....	1	Attala County.....	7
Frazee.....	3	Bolivar County.....	27
Bigstone County—		Calhoun County.....	6
Graceville.....	1	Carroll County.....	7
Blue Earth County—		Chickasaw County.....	9
Mankato Township.....	1	Choctaw County.....	12
Crow Wing County—		Claiborne County.....	1
Brainard.....	1	Clarke County.....	2
Crosby.....	2	Clay County.....	4
Dodge County—		Coahoma County.....	14
Dodge Center.....	1	Copiah County.....	12
Hennepin County—		Covington County.....	4
Minneapolis.....	28	De Soto County.....	14
Hubbard County—		Forrest County.....	3
Straight River Township.....	1	Franklin County.....	5
Itasca County—		Greene County.....	1
Marble.....	1	Grenada County.....	2
Nashwanak.....	1	Hancock County.....	1
Jackson County—		Hinds County.....	6
Lakefield.....	1	Holmes County.....	4
Kittson County—		Itawamba County.....	2
Donaldson.....	1	Jackson County.....	2
St. Vincent.....	1	Jefferson County.....	1
Lake County—		Jefferson Davis County.....	2
Two Harbors.....	1	Jones County.....	21
Le Sueur County—		Kemper County.....	5
Cordova Township.....	1	Lafayette County.....	5
Lyon County—		Lamar County.....	11
Tracy.....	1	Lauderdale County.....	14
Morrison County—		Leake County.....	5
Pierz.....	1	Lee County.....	17
Nicollet County—		Leflore County.....	31
North Mankato.....	1	Lincoln County.....	11
St. Peter.....	3	Madison County.....	8
Otter Tail County—		Marion County.....	7
Fergus Falls.....	13	Marshall County.....	8
Pennington County—		Monroe County.....	10
Thief River Falls.....	1	Montgomery County.....	6
Pine County—		Neshoba County.....	4
Munch Township.....	1	Newton County.....	5
Pipestone County—		Noxubee County.....	4
Ruthron.....	1	Oktibbeha County.....	16
Polk County—		Panola County.....	15
Crookston.....	2	Pearl River County.....	3
Gully Township.....	3	Perry County.....	2
Pope County—		Pike County.....	20
Grove Lake Township.....	1	Pontotoc County.....	5
Ramsey County—		Prentiss County.....	3
St. Paul.....	2	Quitman County.....	4
Redwood County—		Rankin County.....	7
Redwood Falls.....	6	Scott County.....	12
Renville County—		Simpson County.....	8
Morton.....	1	Smith County.....	8
Rice County—		Stone County.....	2
Faribault.....	2	Sunflower County.....	13
Roseau County—		Tallahatchie County.....	17
Warroad.....	1	Tate County.....	19
St. Louis County—		Tippah County.....	17
Buhl.....	1	Tishomingo County.....	8
Chisholm.....	5	Tunica County.....	14
Duluth.....	11	Union County.....	10
Ely.....	2	Warren County.....	3
Fayal Township.....	1	Washington County.....	9
Morse Township.....	1	Wayne County.....	6
Tower.....	3	Wilkinson County.....	2
Virginia.....	1	Winston County.....	5
Stearns County—		Yazoo County.....	8
St. Cloud.....	1		
Sauk Center.....	1	<b>Total.....</b>	<b>574</b>
Steele County—			
Aurora Township.....	1	<b>New Jersey:</b>	
<b>Total.....</b>	<b>114</b>	Atlantic County.....	4
<b>Mississippi:</b>		Bergen County.....	4
Adams County.....	6	Burlington County.....	17
Alcorn County.....	8	Camden County.....	3
		Cape May County.....	1
		Cumberland County.....	5

## TYPHOID FEVER—Continued.

## State Reports for October, 1917—Continued.

Place.	New cases reported.	Place.	New cases reported.
<b>New Jersey—Continued.</b>		<b>Ohio—Continued.</b>	
Essex County.....	30	Miami County.....	1
Gloucester County.....	1	Montgomery County.....	16
Hudson County.....	10	Muskingum County.....	4
Mercer County.....	8	Ottawa County.....	1
Middlesex County.....	13	Perry County.....	1
Monmouth County.....	22	Pickaway County.....	3
Morris County.....	4	Pike County.....	3
Ocean County.....	1	Portage County.....	2
Passaic County.....	10	Ross County.....	5
Salem County.....	1	Sandusky County.....	1
Somerset County.....	4	Sci. to County.....	4
Sussex County.....	2	Seneca County.....	6
Union County.....	10	Shelby County.....	2
Warren County.....	1	Stark County.....	3
Total.....	151	Summit County.....	25
<b>North Dakota:</b>		Trumbull County.....	9
Adams County.....	1	Tuscarawas County.....	4
Benson County.....	1	Union County.....	3
Bottineau County.....	1	Van Wert County.....	7
Burleigh County.....	9	Vinton County.....	5
Cass County.....	2	Warren County.....	3
Cavalier County.....	2	Wayne County.....	1
McIntosh County.....	2	Wood County.....	1
Nelson County.....	2	Wyandot County.....	2
Pembina County.....	1	Total.....	344
Pierce County.....	1	<b>Pennsylvania:</b>	
Richland County.....	4	Adams County.....	6
Stutsman County.....	7	Allegheny County.....	72
Walsh County.....	4	Armstrong County.....	10
Ward County.....	1	Beaver County.....	4
Williams County.....	1	Bedford County.....	11
Total.....	39	Berks County.....	18
<b>Ohio:</b>		Blair County.....	26
Allen County.....	1	Bradford County.....	6
Ashland County.....	4	Bucks County.....	9
Athens County.....	6	Butler County.....	11
Auglaize County.....	2	Cambria County.....	22
Belmont County.....	7	Carbon County.....	3
Brown County.....	3	Center County.....	8
Butler County.....	4	Chester County.....	51
Carr. H. County.....	3	Clarion County.....	7
Champaign County.....	3	Clearfield County.....	9
Clark County.....	7	Columbia County.....	5
Clermont County.....	8	Crawford County.....	2
Clinton County.....	2	Cumberland County.....	6
Columbiana County.....	3	Dauphin County.....	7
Crawford County.....	4	Delaware County.....	15
Cuyahoga County.....	32	Elk County.....	2
Darke County.....	12	Erie County.....	28
Defiance County.....	2	Fayette County.....	23
Delaware County.....	2	Franklin County.....	11
Erie County.....	1	Fulton County.....	5
Fairfield County.....	1	Greene County.....	8
Fayette County.....	2	Huntingdon County.....	2
Franklin County.....	12	Indiana County.....	4
Greene County.....	3	Jefferson County.....	3
Guernsey County.....	5	Juniata County.....	1
Hamilton County.....	15	Lackawanna County.....	12
Harrison County.....	4	Lancaster County.....	13
Henry County.....	2	Lawrence County.....	8
Highland County.....	1	Lebanon County.....	9
Hocking County.....	8	Lehigh County.....	13
Holmes County.....	1	Luzerne County.....	9
Jackson County.....	9	Lycoming County.....	5
Jefferson County.....	7	McKean County.....	7
Lawrence County.....	3	Mercer County.....	3
Licking County.....	11	Mifflin County.....	2
Logan County.....	6	Montgomery County.....	23
Lorain County.....	3	Montour County.....	6
Lucas County.....	15	Northampton County.....	9
Madison County.....	3	Northumberland County.....	14
Mahoning County.....	3	Perry County.....	5
Medina County.....	6	Philadelphia County.....	119
		Schuylkill County.....	8
		Snyder County.....	3



**TYPHOID FEVER—Continued.****State Reports for October, 1917—Continued.**

Place.	New cases reported.	Place.	New cases reported.
<b>Pennsylvania—Continued.</b>		<b>South Carolina—Continued.</b>	
Somerset County.....	23	Marion County.....	1
Susquehanna County.....	2	Oconee.....	1
Tioga County.....	1	Pickens.....	2
Venango County.....	2	Richland County.....	5
Warren County.....	1	Spartanburg County.....	6
Washington County.....	37	Sumter County.....	2
Wayne County.....	2	Williamsburg County.....	1
Westmoreland.....	13	Total.....	46
Wyoming County.....	4		
York County.....	28	<b>Vermont:</b>	
Total.....	776	Chittenden County—	
<b>Rhode Island:</b>		Essex Junction.....	1
Bristol County—		Essex County—	
Bristol (town).....	1	Brighton.....	3
Kent County—		Franklin County—	
West Warwick (town).....	3	Bakersfield.....	1
Newport County—		St. Albans.....	3
Tiverton (town).....	2	Orange County—	
Providence County—		Chelsea.....	1
North Providence (town).....	1	Orleans County—	
Pawtucket.....	6	Derby.....	1
Providence.....	10	Rutland County—	
Washington County—		Rutland.....	1
Hope Valley (town).....	1	Windham County—	
Total.....	24	Brattleboro.....	1
<b>South Carolina:</b>		Rockingham.....	1
Abbeville County.....	1	Wilmington.....	2
Bamberg County.....	1	Total.....	15
Chester County.....	1	<b>Wyoming:</b>	
Dorchester County.....	2	Washakie County.....	2
Florence County.....	10	Natrona County.....	6
Greenville County.....	11	Uinta County.....	3
Laurens County.....	1	Total.....	11
Lexington County.....	1		

**State Reports for June and July, 1917.**

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas (June 1-30):</b>		<b>Arkansas—Continued.</b>	
Bradley County.....	1	Logan County.....	3
Calhoun County.....	2	Madison County.....	1
Chicot County.....	1	Miller County.....	3
Conway County.....	3	Pope County.....	3
Dallas County.....	1	Pulaski County.....	16
Garland County.....	1	Saline County.....	3
Greene County.....	2	St. Francis County.....	6
Izard County.....	1	White County.....	10
Perry County.....	1	Total.....	133
Pulaski County.....	2	<b>Rhode Island (June 1-30):</b>	
Saline County.....	3	Newport County—	
Sevier County.....	4	Jamestown (town).....	1
St. Francis County.....	9	Tiverton (town).....	1
Union County.....	17	Providence County—	
White County.....	1	North Providence (town).....	1
Total.....	49	Pawtucket.....	1
<b>Arkansas (July 1-31):</b>		Providence.....	14
Ashley County.....	2	Total.....	18
Calhoun County.....	1	<b>Rhode Island (July 1-31):</b>	
Carroll County.....	10	Kent County—	
Clay County.....	1	West Warwick (town).....	1
Faulkner County.....	17	Providence County—	
Garland County.....	7	Providence.....	17
Greene County.....	29	Total.....	18
Hempstead County.....	2		
Izard County.....	2		
Johnson County.....	15		
Lawrence County.....	2		

## TYPHOID FEVER—Continued.

## City Reports for Week Ended Nov. 10, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Allentown, Pa.	1	.....	Mobile, Ala.	4	1
Altoona, Pa.	2	.....	Nashville, Tenn.	2	1
Ann Arbor, Mich.	2	.....	Newark, N. J.	4	2
Austin, Tex.	.....	1	New Bedford, Mass.	1	1
Baltimore, Md.	12	4	New Haven, Conn.	1	.....
Birmingham, Ala.	18	4	New Orleans, La.	1	.....
Boston, Mass.	4	1	New York, N. Y.	25	4
Buffalo, N. Y.	7	2	Norfolk, Va.	1	.....
Butler, Pa.	.....	1	Oakland, Cal.	1	.....
Camden, N. J.	2	.....	Oklahoma City, Okla.	3	.....
Chicago, Ill.	16	.....	Omaha, Nebr.	1	.....
Cincinnati, Ohio.	2	1	Passaic, N. J.	.....	1
Cleveland, Ohio.	4	2	Perth Amboy, N. J.	1	.....
Coffeyville, Kans.	3	.....	Philadelphia, Pa.	7	3
Columbus, Ohio.	2	1	Pittsburgh, Pa.	5	1
Cumberland, Md.	2	.....	Portland, Me.	1	.....
Davenport, Iowa	1	.....	Portland, Oreg.	7	1
Dayton, Ohio.	3	.....	Portsmouth, Va.	1	1
Denver, Colo.	1	.....	Racine, Wis.	.....	2
Detroit, Mich.	10	7	Reading, Pa.	.....	1
Duluth, Minn.	1	.....	Richmond, Va.	4	1
East Orange, N. J.	1	.....	Rockford, Ill.	1	.....
El Paso, Tex.	.....	1	Rocky Mount, N. C.	1	.....
Evansville, Ind.	1	.....	St. Louis, Mo.	5	2
Everett, Mass.	1	.....	Salt Lake City, Utah	5	.....
Everett, Wash.	.....	1	San Diego, Cal.	1	1
Fall River, Mass.	10	.....	San Francisco, Cal.	8	.....
Flint, Mich.	4	1	Savannah, Ga.	.....	1
Ft. Wayne, Ind.	2	.....	Schenectady, N. Y.	3	.....
Ft. Worth, Tex.	1	1	Seattle, Wash.	7	1
Galesburg, Ill.	.....	1	South Bend, Ind.	3	.....
Grand Rapids, Mich.	2	.....	South Bethlehem, Pa.	1	.....
Green Bay, Wis.	1	1	Springfield, Ohio.	5	1
Hagerstown, Md.	3	.....	Steelton, Pa.	1	.....
Harrisburg, Pa.	1	.....	Tacoma, Wash.	1	.....
Hartford, Conn.	3	.....	Toledo, Ohio.	.....	1
Indianapolis, Ind.	7	.....	Topeka, Kans.	5	.....
Jackson, Mich.	1	.....	Trenton, N. J.	2	1
Jersey City, N. J.	.....	1	Troy, N. Y.	2	.....
Kansas City, Mo.	.....	2	Washington, D. C.	12	3
Lancaster, Pa.	1	.....	Washington, Pa.	3	.....
Leavenworth, Kans.	1	.....	Watertown, N. Y.	2	.....
Lexington, Ky.	2	.....	Wheeling, W. Va.	1	1
Lima, Ohio.	1	.....	Wichita, Kans.	3	1
Los Angeles, Cal.	3	.....	Wilmington, Del.	.....	2
McKeesport, Pa.	1	.....	Winston-Salem, N. C.	4	.....
Memphis, Tenn.	1	1	Worcester, Mass.	2	.....
Milwaukee, Wis.	2	.....	Zanesville, Ohio.	2	.....

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

## State Reports for October, 1917.

State.	Cases reported.			State.	Cases reported.		
	Diph- theria.	Measles.	Scarlet fever.		Diph- theria.	Measles.	Scarlet fever.
Iowa.	104	.....	112	North Dakota.	27	11	35
Kansas.	194	180	231	Ohio.	1,020	194	645
Louisiana.	203	364	32	Pennsylvania.	2,270	565	747
Maine.	21	48	10	Rhode Island.	163	26	45
Michigan.	863	411	474	South Carolina.	258	30	26
Minnesota.	440	40	185	Vermont.	27	18	35
Mississippi.	179	1,265	98	Wyoming.	10	6	37
New Jersey.	605	284	286				

# **DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—** Continued.

## **State Reports for June and July, 1917.**

State.	Cases reported.			State.	Cases reported.		
	Diph-theria.	Measles.	Scarlet fever.		Diph-theria.	Measles.	Scarlet fever.
Arkansas (June 1-30).....	4	116	2	Rhode Island (June 1-30).....	68	130	26
Arkansas (July 1-31).....	4	33	6	Rhode Island (July 1-31).....	114	110	30

## **New Hampshire Reports, June to October, 1917.**

Month.	Cases reported.			Month.	Cases reported.		
	Diph-theria.	Measles.	Scarlet fever.		Diph-theria.	Measles.	Scarlet fever.
June.....	26	451	17	September.....	36	9	10
July.....	20	119	17	October.....	37	74	44
August.....	19	32	18				

## **City Reports for Week Ended Nov. 10, 1917.**

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Over 500,000 inhabitants:										
Baltimore, Md.....	599,621	194	17	1	13	.....	10	.....	30	20
Boston, Mass.....	755,476	236	125	5	47	2	32	1	54	24
Chicago, Ill.....	2,497,722	593	328	26	43	2	105	4	162	54
Cleveland, Ohio.....	674,073	166	50	4	1	.....	11	.....	24	10
Detroit, Mich.....	571,784	187	75	8	22	.....	60	1	41	15
Los Angeles, Cal.....	593,812	.....	12	1	2	.....	8	.....	24	16
New York, N. Y.....	5,602,841	1,390	233	25	129	2	85	.....	176	171
Philadelphia, Pa.....	1,709,518	472	77	7	16	.....	23	.....	68	62
Pittsburgh, Pa.....	579,090	212	51	6	29	1	7	1	24	12
St. Louis, Mo.....	757,309	213	98	2	17	.....	40	.....	41	18
From 300,000 to 500,000 inhab- itants:										
Buffalo, N. Y.....	468,553	124	31	4	12	.....	7	.....	38	9
Cincinnati, Ohio.....	410,476	115	26	4	1	.....	11	.....	24	11
Jersey City, N. J.....	306,345	.....	16	4	6	.....	9	.....	12	7
Milwaukee, Wis.....	435,535	88	11	3	13	.....	35	.....	12	7
Minneapolis, Minn.....	363,454	.....	22	5	.....	.....	7	.....	.....	.....
Newark, N. J.....	408,894	128	27	.....	13	.....	8	.....	39	20
New Orleans, La.....	371,747	132	16	1	2	.....	6	.....	26	20
San Francisco, Cal.....	463,516	134	9	.....	15	.....	4	.....	29	10
Seattle, Wash.....	348,639	44	13	.....	6	.....	13	.....	8	3
Washington, D. C.....	363,980	117	85	1	33	1	6	.....	25	16
From 200,000 to 300,000 inhab- itants:										
Columbus, Ohio.....	214,878	69	5	1	.....	.....	23	.....	9	6
Denver, Colo.....	260,800	53	4	1	1	.....	6	.....	.....	16
Indianapolis, Ind.....	271,708	.....	45	.....	4	.....	17	.....	13	.....
Kansas City, Mo.....	297,847	85	26	2	5	.....	11	1	10	6
Portland, Oreg.....	295,463	70	2	.....	2	.....	10	.....	3	3
Providence, R. I.....	254,980	92	18	3	.....	3	3	.....	.....	15
From 100,000 to 200,000 inhab- itants:										
Birmingham, Ala.....	181,762	68	6	.....	13	.....	10	.....	6	6
Bridgeport, Conn.....	121,579	26	5	.....	.....	.....	5	.....	7	1
Cambridge, Mass.....	112,981	41	7	.....	10	.....	8	.....	4	4

# DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended Nov. 10, 1917—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 100,000 to 200,000 inhabit- ants—Continued.										
Camden, N. J.	106,233		3		17		4		3	
Dayton, Ohio.	127,224	38	4		8		2		2	2
Fall River, Mass.	128,366	30	1	1					7	1
Fort Worth, Tex.	104,562	24	6	1	14		6		1	1
Grand Rapids, Mich.	128,291	32	15	2	2		6		7	
Hartford, Conn.	110,900		11	1			15		3	3
Lawrence, Mass.	100,560	21	1		2		1		4	6
Lowell, Mass.	113,245	26	24		2				3	1
Lynn, Mass.	102,425	20	1		1		3		3	2
Memphis, Tenn.	148,995	46	20	1	9		3		18	12
Nashville, Tenn.	117,057		8		2		7		3	4
New Bedford, Mass.	118,153	32	3		5		4		9	4
New Haven, Conn.	149,685		6		4		2		9	4
Oakland, Cal.	198,604	34	1		3		5		5	4
Omaha, Nebr.	165,470	49	2				4		2	2
Reading, Pa.	109,381	39	8				3		2	1
Richmond, Va.	156,687	41	25				1		6	3
Salt Lake City, Utah.	117,399	22	2		43		28			
Springfield, Mass.	105,942	27	9	4	13		10		5	1
Syracuse, N. Y.	155,624	27	37	4	5	1	15		2	1
Tacoma, Wash.	112,770				1					
Toledo, Ohio.	191,554	63	14		1		8		12	8
Trenton, N. J.	111,593	39	14	2			1		13	
Worcester, Mass.	163,314	42	15		1		5			
From 50,000 to 100,000 inhabit- ants:										
Akron, Ohio.	85,625		8				8		9	
Allentown, Pa.	63,505	20	7						3	
Altoona, Pa.	58,659		15				1			
Atlantic City, N. J.	57,660								3	
Bayonne, N. J.	69,893		2				1		4	
Berkeley, Cal.	57,653	11	1		2		1			1
Binghamton, N. Y.	53,973	13	7	1			2		2	1
Brockton, Mass.	67,449		1				2		2	
Canton, Ohio.	60,852	18	9							3
Charleston, S. C.	60,734	26	3				1	1		4
Covington, Ky.	57,144	15	6	1			2		2	5
Duluth, Minn.	94,495	15	7	1	10		3	1	2	2
Elizabeth, N. J.	86,690	20	16		6		15		3	2
El Paso, Tex.	63,705	31	2				1			10
Evansville, Ind.	76,078	15	2	1	1		11			
Flint, Mich.	54,772	5	9				9			
Ft. Wayne, Ind.	76,183	22	3		1		2			4
Harrisburg, Pa.	72,015	30	8				4		3	1
Hoboken, N. J.	77,214	19	3		14	1	3		7	3
Johnstown, Pa.	68,129	16	3		1		5		2	
Kansas City, Kans.	99,437		9				5		3	1
Lancaster, Pa.	50,853		2		1		1			
Malden, Mass.	51,155	9	6	1	1		2	1	2	
Manchester, N. H.	78,283	26	3	1	8		1			
Mobile, Ala.	58,221	11	2				2			3
New Britain, Conn.	53,794	15	5		1					
Norfolk, Va.	89,612		8		2		2			3
Oklahoma City, Okla.	92,943	18	4				4		1	2
Passaic, N. J.	71,744	14	3		1				4	1
Pawtucket, R. I.	59,411	8	3				1			3
Port and, Me.	63,867	15	4		38	1				1
Rockford, Ill.	55,185	14	1				1		5	
Sacramento, Cal.	66,595	23			1		7			1
Saginaw, Mich.	55,642	10	1				3		1	2
St. Joseph, Mo.	85,236	20	26		1		2			1
San Diego, Cal.	53,330	19	4		1		2		18	1
Savannah, Ga.	68,805	34	6	1	1					4
Schenectady, N. Y.	99,519	23	3		4				2	6
Sioux City, Iowa.	57,078						4			
Fonerville, Mass.	57,039	17	9		2		6		2	1
South Bend, Ind.	68,946	15			1		1			
Springfield, Ill.	61,120	19	7							1
Springfield, Ohio.	51,550	15			2		2			5
Terre Haute, Ind.	66,083	29	3				1			

# **DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—** Continued.

**City Reports for Week Ended Nov. 10, 1917—Continued.**

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 50,000 to 100,000 inhabitants—Continued.										
Troy, N. Y.	77,916		1				1		2	2
Wichita, Kans.	70,722						4		1	1
Wilkes Barre, Pa.	76,776	15	6	5	1		1		7	1
Wilmington, Del.	94,265	37		1						3
York, Pa.	51,656		5				1		2	
From 25,000 to 50,000 inhabitants:										
Alameda, Cal.	27,732	3	1		1		2		1	1
Auburn, N. Y.	37,385	10					1			
Austin, Tex.	34,814	12					1			2
Brookline, Mass.	32,730	6			3		3		1	
Butler, Pa.	27,632	8	1				1			
Butte, Mont.	43,425		4		1		4		5	
Chelsea, Mass.	46,192	12	13		16				1	
Chicopee, Mass.	29,319	7							1	
Cumberland, Md.	26,074	6	1						1	
Danville, Ill.	32,261	8			1		1			1
Davenport, Iowa.	48,811		1				3			
Dubuque, Iowa.	39,873		1							1
East Chicago, Ind.	28,743	8	2		2		1			
East Orange, N. J.	42,458	6	1		27				1	
Elgin, Ill.	28,203	10	2				4	1	2	
Everett, Mass.	39,213	4	4	1	4		2		2	
Everett, Wash.	35,496	8							1	1
Galveston, Tex.	41,863	16	1	1					1	4
Green Bay, Wis.	29,353	11								
Hagerstown, Md.	25,679		5				5			
Hamilton, Ohio.	40,496	4								
Haverhill, Mass.	48,477	12	6	1			1		5	
Jackson, Mich.	35,363	11	2		1		5	1	7	
Kalamazoo, Mich.	48,896	15	6	1	14				3	1
Kingston, N. Y.	23,771	9								1
Knoxville, Tenn.	38,676		3				14			
La Crosse, Wis.	31,677	6	3							
Lexington, Ky.	41,097	25	3		11		1		17	2
Lima, Ohio.	35,394	9	2	1			2			2
Lincoln, Nebr.	46,515	10	4				3			
Long Beach, Cal.	27,587	7					2			
Lynchburg, Va.	32,940	12	3							
Madison, Wis.	30,699		1				2			
McKeesport, Pa.	47,521	12	3							
Medford, Mass.	26,234	6			1		1		2	
Montclair, N. J.	26,318	1							1	
Nashua, N. H.	27,327	10								
Newburgh, N. Y.	29,603	8	1		14				3	1
New Castle, Pa.	41,133		1							
Newport, Ky.	31,927	6					1		2	2
Newport, R. I.	30,108	4	2							
Newton, Mass.	43,715	14	1		1				1	
Niagara Falls, N. Y.	37,353		8	1			1			1
Norristown, Pa.	31,401	6	3							
Ogden, Utah.	31,404	5	2				2			
Orange, N. J.	33,080	8	1				4			1
Pasadena, Cal.	46,450	9					1		1	
Perth Amboy, N. J.	41,185	9	3		2				1	
Pittsfield, Mass.	38,629	16			2		3			
Portsmouth, Va.	39,651	16	2				1			1
Quincy, Ill.	36,798	7	7	2	3					1
Quincy, Mass.	38,136	4	5						1	
Racine, Wis.	46,486	13					1			
Roanoke, Va.	43,284									1
Rock Island, Ill.	28,926	9	2		1		1			
San Jose, Cal.	38,902		1				2		2	
Steubenville, Ohio.	27,445	11	2				4			
Superior, Wis.	46,226	14								
Taunton, Mass.	36,283	11	1				7		1	1
Topeka, Kans.	48,726	8	5				6			
Waltham, Mass.	30,570	4	1						3	
Watertown, N. Y.	29,894	2							2	1
West Hoboken, N. J.	43,139	4			1				3	1
Wheeling, W. Va.	43,377	17	3				1		1	1

# DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended Nov. 10, 1917—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 25,000 to 50,000 inhabit- ants—Continued.										
Williamsport, Pa.	33,809		8				1			
Wilmington, N. C.	29,892	14	1				1			
Winston-Salem, N. C.	31,155	18	1	1	7		4		1	
Zanesville, Ohio.	30,863	7							1	
From 10,000 to 25,000 inhabitants:										
Alton, Ill.	22,874	9	1		1					2
Ann Arbor, Mich.	15,010	11	3		1		1			
Beaver Falls, Pa.	13,532		1				1			
Berlin, N. H.	13,599	3								
Braddock, Pa.	21,685		3		1					
Cairo, Ill.	15,794	6							1	
Clinton, Mass.	13,075	5								1
Coffeyville, Kans.	17,548						2			
Concord, N. H.	22,669	6	2		1					
Galesburg, Ill.	24,276	6	1				1			
Kearny, N. J.	23,539	5	1		1		2			
Kokomo, Ind.	20,930	2					1			
Leavenworth, Kans.	19,363	4							2	
Long Branch, N. J.	15,395	6								
Marinette, Wis.	14,610	1			1		1			
Melrose, Mass.	17,445	4	1		2		2		3	
Morristown, N. J.	13,294	1								
Muscatine, Iowa.	17,500						1			
Nanticoke, Pa.	23,126	5	3				4		7	
Newburyport, Mass.	15,243	5	1	1			1			
New London, Conn.	20,985	7	1				1			3
North Adams, Mass.	22,019	5								
Northampton, Mass.	19,926	4					6		1	1
Plainfield, N. J.	23,805	5	15	1			2			1
Pontiac, Mich.	17,524	6	2						1	
Rocky Mount, N. C.	12,067	2			1					
Rutland, Vt.	14,831						1			
Saratoga Springs, N. Y.	13,821	11							1	1
South Bethlehem, Pa.	24,204		3		1					
Steelton, Pa.	15,548	1	1							
Washington, Pa.	21,618						1		1	
Wilksburg, Pa.	23,228	4	1		1		1		2	1
Woburn, Mass.	15,969									1

<sup>1</sup> Population Apr. 15, 1910; no estimate made.

# FOREIGN.

## CUBA.

### Communicable Diseases—Habana.

Communicable diseases have been notified at Habana as follows:

Disease.	Oct. 21-31, 1917.		Remain- ing under treatment Oct. 31, 1917.	Disease.	Oct. 21-31, 1917.		Remain- ing under treatment Oct. 31, 1917.
	New cases.	Deaths.			New cases.	Deaths.	
Diphtheria.....	7	1	3	Paratyphoid fever.....	2	1	3
Lepr sy.....	.....	.....	10	Scarlet fever.....	1	.....	1
Malaria.....	<sup>1</sup> 15	.....	26	Typh id fever.....	<sup>2</sup> 23	2	101
Measles.....	2	.....	1	Varicella.....	.....	.....	1

<sup>1</sup> 11 from outside Habana.

<sup>2</sup> 10 from outside Habana.

## VENEZUELA.

### Mortality—January–May, 1917.<sup>1</sup>

Deaths from all causes were notified in Venezuela during the period January to May, 1917, as follows: January, 6,736; February, 5,217; March, 4,947; April, 4,375; May, 4,399. Deaths from certain diseases during this period were reported as follows:

Year 1917, month of—	Deaths from—		
	Infantile tetanus.	Malarial fever.	Typhoid fever.
January.....	180	1,382	209
February.....	180	367	167
March.....	184	802	176
April.....	170	647	136
May.....	190	554	126

<sup>1</sup> Public Health Reports, July 27, 1917, p. 1200.

**Mortality in Venezuela from Dysentery and Malarial Fevers, January-May, 1917.**

The following table shows the number of deaths from dysentery and malarial fevers notified in Venezuela, by States, during the period January-May, 1917:

States.	Popula- tion.	Malaria.					Dysentery.				
		Janu- ary.	Febru- ary.	March.	April.	May.	Janu- ary.	Febru- ary.	March.	April.	May.
Federal District of											
Caracas.....	135,504	4	2	1	2	1	10	7	11	8	15
Anzoategui.....	162,374	161	117	82	51	60	6	6	9	13	3
Apure.....	28,653	5	10	4	9	3	7	6		4	
Aragua.....	113,666	58	37	22	22	13	12	8	5	6	4
Bolivar.....	68,757	25	14	26	14	6	11	6	8	8	4
Carabobo.....	200,342	203	143	117	99	64	72	39	34	31	26
Cojedes.....	106,227	61	51	53	58	32	23	14	10	7	12
Palcon.....	168,922	152	109	63	45	45	35	15	12	6	7
Guarico.....	221,321	121	74	806	79	78	18	15	11	16	9
Lara.....	231,241	157	103	67	59	58	61	29	14	13	20
Merida.....	111,199	6	5	6	1		10	6	12	5	3
Miranda.....	171,666	86	66	57	37	31	36	31	32	27	31
Monagas.....	90,309	53	31	28	15	14	12	10	10	9	5
Nueva Esparta.....	50,347	1				2	6	4	4		1
Portuguesa.....	114,870	33	23	20	18	20	6	4	4	3	1
Sucre.....	114,493	47	20	24	31	16	55	27	16	22	29
Tachira.....	129,308	23	21	18	18	17	23	20	16	14	16
Trujillo.....	180,425	27	24	33	20	27	19	10	17	21	20
Yaracuy.....	103,265	38	34	29	17	22	25	17	12	11	8
Zamora.....	75,526	34	26	34	25	12	9	3	11	4	3
Zulia.....	184,613	87	57	38	27	32	60	41	35	33	21

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.****Reports Received During the Week Ended Nov. 30, 1917.<sup>1</sup>****CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Calcutta.....	Aug. 19-Sept. 1.....		15	
Indo-China:				
Saigon.....	Sept. 24-30.....	2	1	
Philippine Islands:				
Provinces.....				Sept. 20-Oct. 6, 1917: Cases, 101; deaths, 61.
Antique.....	Sept. 30-Oct. 6.....	15	8	
Bohol.....	.....do.....	14	14	
Capiz.....	.....do.....	2	1	
Cebu.....	.....do.....	9	5	
Iloilo.....	.....do.....	31	18	
Mindanao.....	.....do.....	17	8	
Negros Occidental.....	.....do.....	12	6	
Negros Oriental.....	.....do.....	1	1	
Provinces.....				Oct. 7-12, 1917: Cases, 112; deaths, 66.
Antique.....	Oct. 7-13.....	27	19	
Bohol.....	.....do.....	10	8	
Cebu.....	.....do.....	4	2	
Iloilo.....	.....do.....	2	1	
Mindanao.....	.....do.....	30	13	
Negros Occidental.....	.....do.....	36	21	
Negros Oriental.....	.....do.....	3	1	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.



# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received During the Week Ended Nov. 30, 1917—Continued.**

## **PLAGUE.**

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Aug. 19-Sept. 1, 1917: Cases, 15,161; deaths, 11,230.
Indo-China: Saigon.....	Sept. 24-Oct. 7....	4	3	

## **SMALLPOX.**

Canada: Ontario— Sarnia.....	Nov. 11-17.....	1		Present. Cases among foreign population; deaths among Chinese.
China: Antung.....	Oct. 15-21.....	1		
Chungking.....	Sept. 23-Oct. 13....			
Shanghai.....	Oct. 8-21.....	1	3	
India: Calcutta.....	Aug. 19-25.....		1	
Indo-China: Saigon.....	Sept. 24-Oct. 7....	35	14	
Mexico: Mexico City.....	Sept. 23-Oct. 27....	34		
Philippine Islands: Manila.....	Oct. 7-13.....	3		
Portugal: Lisbon.....	do.....	1		
Portuguese East Africa: Lourenço Marquez.....	July 1-31.....		7	

## **TYPHUS FEVER.**

China: Antung.....	Oct. 13-28.....	5		Prevalent on ranches in vicinity of El Rio.
Greece: Saloniki.....	Sept. 9-Oct. 13....	48		
Japan: Nagasaki.....	Oct. 22-28.....	3	1	
Mexico: Durango, State.....	Oct. 29.....			
Mexico City.....	Sept. 29-Oct. 27....	489		
Switzerland: Basel.....	Sept. 23-29.....	1		

**Reports Received from June 30 to Nov. 23, 1917.**

## **CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Bassein.....	Apr. 1-May 5.....		8	
Bombay.....	June 24-30.....	1	1	
Do.....	July 8-Sept. 8.....	19	10	
Calcutta.....	Apr. 29-June 30....		347	
Do.....	July 1-Aug. 18.....		42	
Karachi.....	Sept. 9-15.....	4	4	
Madras.....	Apr. 22-June 30....	5	4	
Do.....	July 1-Sept. 15....	108	67	
Mandalay.....	May 6-June 30.....		2	
Do.....	July 29-Aug. 25....		2	
Moulmein.....	May 13-June 2.....		3	
Pakokku.....	Apr. 20-May 5.....		1	
Pegu.....	May 27-June 30....		5	
Do.....	July 1-7.....		7	
Prome.....	July 29-Aug. 11....		1	
Rangoon.....	Apr. 21-June 30....	31	17	
Do.....	July 8-Sept. 8.....	10	8	June 10-16, 1917: Cases, 1; deaths, 1.

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to Nov. 23, 1917—Continued.**

## **CHOLERA—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Indo-China:</b>				
Provinces.....				Feb. 1-June 30, 1917: Cases, 1,273; deaths, 805. July 1-31, 1917: Cases, 522; deaths, 314.
Anam.....	Feb. 1-June 30.....	230	191	
Do.....	July 1-31.....	86	47	
Cambodia.....	Feb. 1-June 30.....	79	51	
Do.....	July 1-31.....	74	53	
Cochin-China.....	Feb. 1-June 30.....	878	543	
Do.....	July 1-31.....	359	214	
Laos.....	June 1-30.....	1		
Tonkin.....	Feb. 1-June 30.....	36	21	
Do.....	July 1-31.....	3		
Saigon.....	Apr. 23-May 27.....	163	108	
Do.....	July 2-Sept. 23.....	47	32	
Japan.....				Jan.-July, 1917: Cases, 391, occurring in 16 provinces and districts. Sept. 12, 1917: Cases, 252. In 5 provinces and districts.
Tokyo.....	Sept. 12.....	2		
<b>Java:</b>				
East Java.....	Apr. 2-8.....	1		
Do.....	July 9-26.....	3	3	
Mid Java.....	July 16-22.....	1	1	
West Java.....				Apr. 13-July 5, 1917: Cases, 71; deaths, 31. July 6-Sept. 13, 1917: Cases, 501; deaths, 307.
Batavia.....	Apr. 13-July 5.....	7	2	
Do.....	July 6-Sept. 13.....	38	14	
<b>Persia:</b>				
Mazanderan Province—				
Amir Kela.....	Feb. 3.....	1		
Barfourouche.....	Jan. 15-17.....	4		
Do.....	July 28.....	4	1	
Demavend.....	July 29.....	11	6	
Hamze Kela.....	Jan. 17.....	1		
Machidessar.....	Jan. 31.....	3		
Sabzevar.....	Aug. 20-29.....	19	14	
Sari.....	July 25-Aug. 5.....	179	98	
Tabriz.....				Aug. 4, 1917: In village of Ozoundeh, vicinity of Tabriz, about 7 cases daily.
<b>Philippine Islands:</b>				
Manila.....	June 17-23.....	1		
Do.....	Aug. 5-25.....	4		Sept. 2-8, 1917: 1 case. Not previously reported.
Provinces.....				May 20-June 30, 1917: Cases, 795; deaths, 503. July 1-Sept. 29, 1917: Cases, 3,619; deaths, 2,326.
Agusan.....	July 15-28.....	12	2	
Albay.....	May 20-June 30.....	113	76	
Do.....	July 1-Sept. 1.....	73	43	
Ambos Camarines.....	June 3-9.....	2	1	
Do.....	July 22-Aug. 11.....	26	15	
Antique.....	Sept. 16-29.....	35	17	
Bataan.....	July 4-14.....	1		
Batangas.....	June 17-23.....	1	1	
Bohol.....	May 20-June 30.....	368	251	
Do.....	July 1-Sept. 29.....	353	281	
Capiz.....	June 3-30.....	62	40	
Do.....	July 1-Aug. 4.....	64	45	
Cebu.....	June 2-30.....	231	150	
Do.....	July 1-Sept. 29.....	614	362	
Iloilo.....	.....do.....	95	59	
Leyte.....	June 10-30.....	14	5	
Do.....	July 1-Sept. 29.....	819	512	
Misamis.....	July 8-Aug. 4.....	237	117	
Mindanao.....	July 20-Sept. 29.....	518	295	
Negros Oriental.....	July 1-Sept. 29.....	459	297	
Rizal.....	June 21-30.....	1		
Do.....	July 1-7.....	1		
Romblon.....	July 22-28.....	1	1	
Samar.....	July 15-Sept. 22.....	138	75	
Sorsogon.....	June 3-30.....	196	68	
Do.....	July 1-Aug. 25.....	224	133	
Surigao.....	July 29-Aug. 25.....	16	10	
Tayabas.....	June 3-30.....	7	7	
Do.....	July 1-Sept. 29.....	17	16	
Zamboanga.....	July 15-21.....	11	7	

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to Nov. 23, 1917—Continued.**

## **PLAGUE.**

Place.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Aden .....	May 3-July 4 .....		43	Apr. 8-May 14, 1917: Cases, 60 deaths, 51.
Bahrein Islands .....				In Persian Gulf. Present Apr. 3, 1917.
Brazil:				
Bahia .....	June 10-30 .....	12	8	
Do. ....	July 8-Sept. 15 .....	6	2	
Pernambuco .....	July 16-Aug. 15 .....	4	1	
Ceylon:				
Colombo .....	Apr. 8-June 23 .....	41	33	
Do. ....	July 6-Sept. 1 .....	2	6	
China:				
Amoy .....	Apr. 29-May 5 .....			Present and in vicinity.
Do. ....	July 1-7 .....	6	6	Present Aug. 10.
Hongkong .....	May 13-June 30 .....	20	13	
Do. ....	July 8-Aug. 18 .....	4	3	
Kwangtung Province— Ta-pu district .....	June 2 .....			Present.
Ecuador:				
Estancia Vieja .....	Feb. 1-28 .....	1		
Guayaquil .....	.....do .....	56	29	
Do. ....	Mar. 1-Apr. 30 .....	42	22	
Do. ....	July 1-Aug. 31 .....	4		
Milagro .....	Mar. 1-31 .....	1		
Do. ....	Apr. 1-30 .....	1	1	
Nobol .....	Feb. 1-28 .....	2		
Salitre .....	.....do .....	1		
Do. ....	Mar. 1-31 .....		1	
Taura .....	Feb. 1-28 .....	3	2	
Egypt:				
Alexandria .....	June 21-27 .....	6	4	Jan. 1-Oct. 4, 1917: Cases, 724; deaths, 395.
Do. ....	July 31-Sept. 11 .....	5	1	
Port Said government .....	Apr. 30-May 19 .....	4	3	
Port Said .....	June 25 .....	1		
Do. ....	July 28-29 .....	1	1	
Provinces—				
Fayoum .....	May 11-June 26 .....	14	7	
Galloubek .....	June 28 .....	1		
Girgeh .....	May 17 .....		1	
Minieh .....	May 12-June 28 .....	4	3	
Do. ....	July 29-Sept. 11 .....	9		
Siout .....	May 12 .....	3	1	
Suez government .....	Apr. 30-June 2 .....	23	9	
Suez .....	May 12-June 28 .....	38	23	
Great Britain:				
Gravesend .....	Aug. 13-24 .....	3	1	From s. s. Matiana.
London .....	May 3-8 .....	2		2 in hospital at port. From s. s. Sardinia from Australia and oriental ports.
India:				
Bassein .....	Apr. 1-June 30 .....		54	Apr. 15-June 30, 1917: Cases, 43,992; deaths, 30,197.
Do. ....	July 1-Sept. 1 .....		24	July 1-Sept. 8, 1917: Cases, 39,303; deaths, 29,248.
Bombay .....	Apr. 22-June 30 .....	486	397	
Do. ....	July 1-Sept. 8 .....	323	263	
Calcutta .....	Apr. 29-June 2 .....		38	
Do. ....	July 15-21 .....		4	
Henjala .....	Apr. 1-June 30 .....		35	
Do. ....	Aug. 12-Sept. 1 .....		5	
Karachi .....	Apr. 22-June 30 .....	468	413	
Do. ....	July 1-Sept. 15 .....	33	28	
Madras Presidency .....	Apr. 22-June 30 .....	301	259	
Do. ....	July 1-Sept. 15 .....	2,204	1,586	
Mandaly .....	Apr. 8-May 12 .....		9	
Do. ....	July 29-Sept. 1 .....		20	
Moulmein .....	Apr. 1-June 30 .....		74	
Do. ....	July 1-Sept. 1 .....		33	
Myingyan .....	Apr. 1-7 .....		1	
Pegu .....	May 27-June 2 .....		2	
Do. ....	July 29-Aug. 18 .....		6	
Rangoon .....	Apr. 15-June 30 .....	183	169	June 10-16, 1917: Cases, 19; deaths, 16.
Do. ....	July 1-Sept. 8 .....	457	428	
Toungoo .....	Apr. 8-14 .....		2	
Do. ....	July 29-Sept. 1 .....		12	

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to Nov. 23, 1917—Continued.**

## **PLAGUE—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Indo-China:</b>				
Provinces.....				Feb. 1-June 30, 1917: Cases, 730; deaths, 491; July 1-31, 1917: Cases, 69; deaths, 45.
Anam.....	Feb. 1-June 30.....	232	131	
Do.....	July 1-31.....	13	9	
Cambodia.....	Feb. 1-June 30.....	132	115	
Do.....	July 1-31.....	10	10	
Cochin-China.....	Feb. 1-June 30.....	219	133	
Do.....	July 1-31.....	43	24	
Kwang-Chow-Wan.....	May 1-June 30.....	34	23	
Tonkin.....	Feb. 1-June 30.....	113	89	
Do.....	July 1-31.....	3	2	
Saigon.....	Apr. 23-June 3.....	47	26	
Do.....	Sept. 9-23.....	5	3	
<b>Japan:</b>				
Aichi Ken.....	Jan.-July.....	22		
Miye Ken.....	do.....	3		
<b>Java:</b>				
East Java.....				Apr. 2-May 20, 1917: Cases, 29; deaths, 29. July 30-Aug. 26, 1917: Cases, 4; deaths, 4.
Djo-jakarta Residency.....	Apr. 23-May 6.....	1	1	
Kediri Residency.....	do.....	1	1	
Samarang Residency.....	Apr. 23-May 20.....	3	3	
Surabaya Residency.....	Apr. 2-May 20.....	18	18	
Do.....	July 8-28.....	4	4	
Surakarta Residency.....	do.....	6	6	
<b>Persia:</b>				
Mohammera.....	May 1.....			Present.
<b>Peru:</b>				
Departments—				May 13-31, 1917: Cases, 15. June 1-July 31, 1917: Cases, 36.
Ancachs.....	July 1-31.....	3		At Casma.
Arequipa.....	May 16-July 31.....	10		At Mollendo.
Callao.....	do.....	5		At Callao.
Lambayeque.....	do.....	3		At Chiclayo.
Libertad.....	May 16-21.....	7		At Salaverry, San Pedro, and Trujillo. July 1-31, 1917: At Trujillo.
Lima.....	do.....	20		At Lima. July 1-31, 1917: Lima, city and country.
Senegal.....	Sept. 30.....			Present in interior.
<b>Siam:</b>				
Bangkok.....	Apr. 22-June 30.....	13	12	
Do.....	July 3-Sept. 1.....	17	15	
<b>Straits Settlements:</b>				
Singapore.....	June 3-16.....	2	1	
Do.....	July 1-Sept. 22.....	11	8	
<b>Union of South Africa:</b>				
Cape of Good Hope State—				Present.
Craddock.....	Aug. 23.....			Do.
Glengrey district.....	Aug. 13.....			At Summerhill Farm.
Terka district.....	May 28.....	1	1	
Queenstown.....	June 6.....	1		
Orange Free State.....				Apr. 16-22, 1917: 1 case. Apr. 9-22, 1917: Cases, 26; deaths, 17.
Winburg district.....	May 28.....		1	
<b>At sea:</b>				
S. S. Matiana.....	July 14-18.....	9	6	En route for port of London.

## **SMALLPOX.**

<b>Australia:</b>				
New South Wales.....				Apr. 27-Aug. 30, 1917: Cases, 77.
Brewarrina.....	Apr. 27-June 21.....	6		
Cessnock.....	July 25-28.....	4		
Coonabarabran.....	May 25-July 6.....	13		
Quambone.....	Apr. 27-June 21.....	2		
Warren district.....	June 22-Sept. 25.....	53		
<b>Queensland:</b>				
Thursday Island Quarantine Station.....	May 9.....	1		From s. s. St. Albans from Kobe via Hongkong. Vessel preceded to Townsville, Brisbane, and Sydney, in quarantine.
<b>Brazil:</b>				
Bahia.....	May 6-June 30.....	4		
Do.....	July 22-Sept. 22.....	5	1	
Rio de Janeiro.....	do.....	126	31	
Do.....	July 1-Sept. 22.....	519	169	

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to Nov. 23, 1917—Continued.**

## **SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Canada:				
Manitoba—				
Winnipeg.....	June 10-16.....	1		
Do.....	Aug. 19-Sept. 1.....	5		
New Brunswick.....	Nov. 10.....	21		Chiefly in Carleton and York Counties. One case notified in Northumberland County.
Nova Scotia—				
Halifax.....	June 18-July 7.....	3		
Port Hawkesbury.....	June 17-30.....			Present in district.
Ontario—				
Ottawa.....	July 30-Aug. 5.....	1		
Windsor.....	Sept. 30-Nov. 3.....	4		
Ceylon:				
Colombo.....	May 6-12.....	1		
China:				
Amoy.....	Apr. 29-May 26.....			Present and in vicinity.
Do.....	July 1-Sept. 22.....			Do.
Antung.....	May 21-June 24.....	4		
Do.....	Aug. 6-12.....	1		
Changsha.....	May 27-June 2.....	5		
Do.....	Aug. 11-17.....		7	
Chungking.....	May 6-June 23.....			Present.
Do.....	July 1-Sept. 22.....			Present and in vicinity.
Dairen.....	May 13-June 30.....	30	4	
Do.....	July 8-28.....	6	1	July 1-7, 1917: Present.
Hankow.....	June 21-30.....	2		
Harbin.....	Apr. 23-May 6.....	7		
Hongkong.....	May 6-June 16.....	8	7	On Chinese Eastern Ry.
Do.....	Aug. 5-18.....	1		
Manchuria Station.....	Apr. 23-29.....	1		Do.
Mukden.....	May 27-June 2.....			Present.
Do.....	July 8-Oct. 6.....			Do.
Shanghai.....	May 21-July 1.....	13	32	Cases foreign; deaths among natives.
Do.....	July 2-Oct. 7.....	1	12	Cases among foreign population; deaths among Chinese.
Taitshar Station.....	Apr. 16-22.....	1		On Chinese Eastern Ry.
Tsingtao.....	May 22-July 7.....	35	7	At another station on railway; 1 case.
Do.....	July 30-Aug. 11.....	4	1	
Chosen (Korea):				
Chemulpo.....	May 1-31.....	1		
Cuba:				
Habana.....	Nov. 1.....			From s. s. Alfonso XIII, from ports in Spain.
Ecuador:				
Guayaquil.....	Feb. 1-28.....	1		
Do.....	Mar. 1-Apr. 30.....	8		
Do.....	July 1-Aug. 31.....	12		
Egypt:				
Alexandria.....	Apr. 30-July 1.....	39	9	
Do.....	July 2-29.....	30	4	
Cairo.....	Feb. 12-Apr. 8.....	80	1	
France:				
Nantes.....	July 30-Aug. 5.....	1		
Paris.....	May 6-12.....	1		
Germany:				
Berlin.....	Mar. 18-Apr. 28.....	106		Mar. 18-Apr. 28, 1917: Cases, 71%; in cities and 32 States and districts.
Bremen.....	do.....	16		
Charlottenberg.....	do.....	18		
Hamburg.....	do.....	50		
Leipzig.....	do.....	20		
Lübeck.....	do.....	2		
Munich.....	do.....	10		
Stuttgart.....	do.....	1		
Greece:				
Athens.....	July 25-30.....		23	
India:				
Bombay.....	Apr. 22-June 30.....	186	75	
Do.....	July 1-Sept. 8.....	68	34	
Calcutta.....	Apr. 29-May 26.....		12	
Do.....	July 29-Aug. 4.....		1	
Karachi.....	Apr. 22-July 4.....	27	8	
Do.....	July 8-Sept. 1.....	5	2	
Madras.....	Apr. 22-June 30.....	80	48	
Do.....	July 1-Sept. 8.....	12	21	

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.****Reports Received from June 30 to Nov. 23, 1917—Continued.****SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>India—Continued.</b>				
Rangoon.....	Apr. 15-June 30....	33	5	
Do.....	July 1-Sept. 1.....	11		June 10-16, 1917: Cases, 9; deaths, 3.
<b>Indo-China:</b>				
Provinces.....				Feb. 1-June 30, 1917: Cases, 617; deaths, 535. July 1-31, 1917: Cases, 525; deaths, 132.
Anam.....	Feb. 1-June 30.....	1,630	237	
Do.....	July 1-31.....	353	59	
Cambodia.....	Feb. 1-June 30.....	136	26	
Do.....	July 1-31.....	28	23	
Cochin-China.....	Feb. 1-June 30.....	1,267	377	
Do.....	July 1-31.....	130	49	
Kwang-Chow-Wan.....	Mar. 1-Apr. 30.....	4		
Laos.....	Apr. 1-30.....	5	1	
Do.....	July 1-31.....	10	1	
Tontin.....	Feb. 1-June 30.....	274	30	
Do.....	July 1-31.....	4		
Saigon.....	Apr. 27-June 10.....	199	63	
Do.....	July 2-Sept. 23.....	63	32	
<b>Italy:</b>				
Turin.....	May 21-June 24.....	32	12	
Do.....	July 12-Sept. 30.....	12	3	
<b>Jamaica:</b>				
Kingston.....	Sept. 9-15.....	1		
<b>Japan</b>				Jan.-July, 1917: Cases, 4,974; in 37 Provinces and districts.
Kobe.....	May 27-July 22.....	65	16	
Nagasaki.....	May 28-June 3.....	1	1	
Osaka.....	May 16-July 5.....	177	55	
Yokkaichi.....	July 25-31.....	1	1	
Yokohama.....	May 27-July 1.....	1	1	
<b>Java:</b>				
East Java.....	Apr. 2-July 1.....	38	2	
Do.....	July 2-Aug. 29.....	21		
Mid-Java.....	Apr. 1-July 1.....	88	7	
Do.....	July 2-Sept. 4.....	45		
West Java.....				Apr. 13-July 6, 1917: Cases, 239; deaths, 44. July 6-Sept. 13, 1917: Cases, 149; deaths, 23.
Batavia.....	Apr. 13-July 5.....	30	6	
<b>Mexico:</b>				
Coatepec.....	Jan. 1-June 30.....		116	
Do.....	Aug. 1-14.....		1	Jan. 1-Aug. 14, 1916: 118 deaths.
Jalapa.....	July 1-13.....		1	
Mazatlan.....	July 11-Aug. 7.....		9	
Mexico City.....	June 3-30.....	162		
Do.....	Aug. 5-Sept. 22.....	142		
Monterey.....	June 18-24.....		24	
Orizaba.....	Jan. 1-June 30.....		23	
Do.....	July 1-23.....		1	
Vera Cruz.....	July 1-Sept. 15.....	6	2	
<b>Netherlands:</b>				
Amsterdam.....	Aug. 13-18.....	1	1	
<b>Philippine Islands:</b>				
Manila.....	May 13-June 9.....	6		Variceloid.
Do.....	July 8-Sept. 1.....	7		Do.
<b>Portugal:</b>				
Lisbon.....	May 13-June 30.....	14		
Do.....	July 8-Aug. 18.....	8		
<b>Portuguese East Africa:</b>				
Lourenco Marques.....	Mar. 1-June 30.....		5	
<b>Russia:</b>				
Archangel.....	May 1-June 28.....	56	4	
Do.....	July 2-Aug. 28.....	6		
Moscow.....	July 2-15.....	6		
Petrograd.....	Feb. 18-June 30.....	565		
Do.....	July 2-29.....	58		
Rica.....	Mar. 11-June 2.....	7		Jan. 1-Mar. 31, 1917: Cases, 0.
Vladivostok.....	Mar. 15-24.....	23	7	
<b>Siam:</b>				
Bangkok.....	June 9-30.....	16		
Do.....	July 11-17.....	3	5	
<b>Spain:</b>				
Madrid.....	May 1-June 19.....		4	
Malaca.....	Apr. 1-June 30.....		44	
Do.....	July 1-31.....		19	
Seville.....	May 1-June 30.....		11	
Valencia.....	June 3-23.....	5		
Do.....	July 1-Sept. 15.....	13		

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to Nov. 23, 1917—Continued.**

## **SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Straits Settlements:</b>				
Penang.....	Mar. 18-June 23...	6	3	
Singapore.....	June 24-30.....	1	.....	
Do.....	Sept. 16-22.....	1	.....	
<b>Sweden:</b>				
Malmo.....	Apr. 22-28.....	1	.....	
Stockholm.....	May 20-June 23...	2	1	
<b>Tunisia:</b>				
Tunis.....	June 2-8.....	2	.....	
<b>Turkey in Asia:</b>				
Trebizond.....	Feb. 25-Apr 13.....	.....	15	
<b>Union of South Africa:</b>				
Johannesburg.....	Mar. 12-24.....	4	.....	
Do.....	July 1-31.....	3	.....	
<b>Uruguay:</b>				
Montevideo.....	May 1-31.....	2	.....	
<b>Venezuela:</b>				
Maracaibo.....	June 18-July 8.....	.....	8	
Do.....	July 9-23.....	.....	1	
<b>On vessels:</b>				
S. S. Alfonso XIII.....	Nov. 1.....	1	.....	At Habana. From ports in Spain for Mexican ports.

## **TYPHUS FEVER.**

<b>Algeria:</b>				
Algiers.....	June 1-30.....	6	3	
Do.....	July 1-Aug. 31.....	1	1	
<b>Argentina:</b>				
Buenos Aires.....	Aug. 12-18.....	.....	1	
<b>Austria-Hungary:</b>				
Austria.....				Oct. 22-Dec. 17, 1916: Cases, 2,371.
Bohemia.....	Oct. 22-Dec. 17.....	634	.....	Dec. 24, 1916-Feb. 24, 1917: Cases, 2,553.
Galicja.....	do.....	809	.....	
Lower Austria.....	do.....	47	.....	
Moravia.....	do.....	617	.....	
Silesia.....	do.....	16	.....	
Styria.....	do.....	243	.....	
Upper Austria.....	do.....	5	.....	
Bosnia-Herzegovina.....	.....	.....	.....	Dec. 22, 1916-Feb. 24, 1917: Cases, 110.
<b>Hungary:</b>				Feb. 19-June 17, 1917: Cases, 1,787.
Budapest.....	Feb. 19-May 27.....	10	.....	
Eisenburg.....	Apr. 23-June 17.....	278	46	
<b>Brazil:</b>				
Rio de Janeiro.....	July 29-Aug. 11.....	2	.....	
<b>Canary Islands:</b>				
Santa Cruz de Tenerife.....	Sept. 23-29.....	.....	1	
<b>China:</b>				
Antung.....	June 22-July 1.....	3	.....	
Do.....	July 9-Sept. 23.....	15	1	
Hankow.....	June 9-15.....	1	.....	
Do.....	July 8-14.....	.....	1	
Tientsin.....	June 17-23.....	1	.....	
Tsingtao.....	May 30-July 7.....	4	.....	
Do.....	Aug. 5-Sept. 29.....	2	.....	
<b>Egypt:</b>				
Alexandria.....	Aug. 30-July 1.....	1,648	478	
Do.....	July 17-Sept. 30.....	430	118	
Cairo.....	Jan. 22-Apr. 8.....	188	76	
Port Said.....	Mar. 19-25.....	1	.....	
<b>Great Britain:</b>				
Cork.....	June 17-23.....	.....	1	
Glasgow.....	Sept. 30-Oct. 6.....	1	.....	
<b>Greece:</b>				
Saloniki.....	May 23-June 30.....	.....	32	
Do.....	July 1-Aug. 4.....	.....	19	
<b>Japan:</b>				
Hakodate.....	July 22-28.....	1	.....	
Nagasaki.....	June 11-21.....	4	.....	
Do.....	July 9-Oct. 14.....	41	7	

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**

**Reports Received from June 30 to Nov. 23, 1917—Continued.**

## **TYPHUS FEVER—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Java:</b>				
East Java.....				May 6-July 1, 1917: Cases, 6.
Surabaya.....	June 25-July 29.....	4		Aug. 29, 1917: Cases, 7.
Mid-Java.....				Apr. 1-June 24, 1917: Cases, 38;
Samarang.....	May 5-June 10.....	14	2	deaths, 5. July 9-Sept. 4, 1917:
Do.....	July 2-8.....	5		Cases, 15; deaths, 1.
West Java.....				Apr. 13-July 5, 1917: Cases, 147;
Batavia.....	Apr. 13-July 5.....	70	6	deaths, 6. July 6-Sept. 13,
Do.....	July 6-Sept. 1-13.....	76	9	1917: Cases, 102; deaths, 12.
<b>Mexico:</b>				
Aguaascalientes.....	July 10-Oct. 28.....		2	
Coatepec.....	Aug. 1-14.....		1	
Jalapa.....	Apr. 1-June 30.....		5	
Do.....	July 1-31.....		3	
Mexico City.....	June 3-30.....	431		
Do.....	July 8-Sept. 22.....	1,044		
Orizaba.....	Jan. 1-June 30.....		6	
Do.....	July 1-31.....		1	
<b>Netherlands:</b>				
Rotterdam.....	June 9-23.....	3	2	
Do.....	July 15-Sept. 1.....	11		
<b>Norway:</b>				
Bergen.....	July 8-28.....	7		
<b>Portuguese East Africa:</b>				
Lourenço Marques.....	Mar. 1-31.....	1		
<b>Russia:</b>				
Archangel.....	May 1-June 28.....	11	2	
Do.....	July 2-Aug. 28.....	16	5	
Moscow.....	July 2-15.....	10		
Petrograd.....	Feb. 18-June 30.....	141	3	
Do.....	July 2-29.....	33		
<b>Poland:</b>				
Lodz.....	Apr. 23-June 3.....	120	16	Apr. 23-June 3, 1917: Cases,
Do.....	June 17-July 14.....	108	16	2,814; deaths, 187. June 17-
Warsaw.....	Apr. 23-June 3.....	1,644	95	July 14, 1917: Cases, 2,328;
Do.....	June 17-July 14.....	1,495	131	deaths, 211.
Riga.....	May 31-June 16.....	8		Jan. 1-31, 1917: 1 case.
Do.....	July 22-28.....	5		May 1-31, 1917: Cases, 4.
Vladivostok.....	Mar. 29-May 21.....	5		
<b>Spain:</b>				
Almeria.....	May 1-31.....		5	
Madrid.....	do.....		2	
<b>Switzerland:</b>				
Basel.....	June 17-23.....	1		
Do.....	July 8-Sept. 22.....	7	1	
Zurich.....	July 26-Sept. 22.....	2		
Trinidad.....	June 4-9.....	2		
<b>Tunisia:</b>				
Tunis.....	June 30-July 6.....		1	
<b>Union of South Africa:</b>				
Cape of Good Hope State.....				Aug. 25, 1917: Present in 16 districts.
East London.....	Sept. 10.....			Present.

## **YELLOW FEVER.**

<b>Ecuador:</b>				
Babahoyo.....	Feb. 1-28.....	1	1	
Do.....	Mar. 1-31.....	2	1	
Chobo.....	do.....	1	1	
Guayaquil.....	Feb. 1-28.....	18	7	
Do.....	Mar. 1-Apr. 30.....	34	18	
Do.....	July 1-Aug. 31.....	24	10	
Milagro.....	Feb. 1-28.....	1		
Do.....	Mar. 1-Apr. 30.....	2	1	
Naranjito.....	July 1-Aug. 31.....	2	2	
<b>Mexico:</b>				
Campeche, State—				
Campeche.....	Sept. 25.....	2		
Yucatan, State—				
Merida.....	Sept. 1-Oct. 28.....	3		
Peto.....	Jan. 23.....	1	1	In person recently arrived from
Do.....	July 23-Aug. 11.....	6	2	Mexico City.
<b>Venezuela:</b>				
Coro.....				Present Sept. 5.