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CASES OF INFLUENZA REPORTED BY STATES.

COMPARISON OF THE FIRST SEVEN WEEKS OF THE YEARS 1920, 1921, AND 1922.

The accompanying table shows the number of cases of influenza reported for the first seven weeks of 1922 by 24 States, compared with similar reports for the corresponding weeks of the years 1920 and 1921.

All weeks ended on Saturday. The first week of 1922 ended January 7; in 1921 the first week ended January 8; and in 1920 it ended January 10.

Number of cases of influenza reported by States for the first seven weeks of the years 1920 to 1922, inclusive.

State.	Week number.						
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
Alabama:							
1922.....	2		5	3	26	95	29
1921.....					5	11	
1920.....			8	203	1,296	3,236	2,366
Arkansas:							
1922.....	83	40	64	88	192	232	158
1921.....	63	78	75	37	52	70	19
1920.....	35	53	179	595	5,666	6,599	2,793
California:							
1922.....	38		28	48	92	845	4,315
1921.....	22	23	30	37		98	
1920.....	32	322	1,604	7,133	13,660	11,887	7,420
Connecticut:							
1922.....	5	7	9	22	109	518	1,325
1921.....	13	14	13	13	8	9	12
1920.....	1	14	1,123	4,664	5,666	4,868	2,771
Delaware:							
1922.....			5	2	7	2	2
1921.....	9	12	12	4	2	7	19
1920.....	1		5	21	86	78	43
District of Columbia:							
1922.....	1	3	4	7	5	9	8
1921.....	2	2	2	4	4	1	1
1920.....	9	126	1,216	1,616	557	298	104
Florida:							
1922.....	3	6	21	6	15	35	123
1921.....	6	3	4	10	3	6	4
1920.....	2	10	484	1,547	1,581	1,735	1,420
Georgia:							
1922.....	21	19	52	64	74	81	128
1921.....	30	24	26	25	37	26	35
1920.....	27	27	95	617	3,256	5,411	7,809
Illinois:							
1922.....	25	49	38	125	108	417	633
1921.....	42	18	27	19	28	35	34
1920.....	73	3,251	14,805	29,156	30,330	23,037	7,237
Kansas:							
1922.....	9	23	88	121	364	440	480
1921.....	13	9	13	29	5	9	9
1920.....	17	45	1,130	8,582	16,960	17,699	10,026

Number of cases of influenza reported by States for the first seven weeks of the years 1920 to 1922, inclusive—Continued.

State.	Week number.						
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
Kentucky:							
1922.....	17	25	18	51	332	640	765
1921.....	10	8	40	19	33	21	25
1920.....	45	75	170	878	2,536	6,067	4,295
Louisiana:							
1922.....	7	8	4	8	10	39	36
1921.....	39			10			22
1920.....	52	27	123	763	1,901	3,990	3,153
Maine:							
1922.....	5	9	18	14	97	145	131
1921.....	13	6	14	7	1	2	2
1920.....	1	4		387	936	3,942	3,702
Maryland:							
1922.....	21	40	52	93	110	189	263
1921.....	70	79	82	107	125	164	143
1920.....					4,935	8,942	4,758
Massachusetts:							
1922.....	7	12	18	66	398	1,469	1,764
1921.....	37	63	39	15	17	37	32
1920.....	46	58	489	4,495	9,627	10,747	5,601
Missouri:							
1922.....	7	16	8	20	71	99	234
1921.....	51	48	40	43	26	32	30
1920.....				4,043	5,359	1,696	466
Nebraska:							
1922.....					6	6	10
1921.....	3	4	1	1	9	2	
1920.....	2	1	154	1,815	3,998	6,048	3,272
New Jersey:							
1922.....	28	36	40	126	426	1,288	1,555
1921.....	34	26	22	33	32	20	94
1920.....	23	98	753	7,365	9,603	5,807	2,798
New Mexico:							
1922.....			1		10	14	35
1921.....				2	1	6	
1920.....	8	4	61	260	1,576	1,166	632
New York (exclusive of New York City):							
1922.....	28	48	80	173	694	771	1,577
1921.....	86	109	96	79	43	44	63
1920.....	31	61	555	4,755	11,616	13,259	11,304
New York City:							
1922.....	56	57	110	1,230	5,731	7,070	3,284
1921.....	134	73	84	72	59	84	109
1920.....	100	384	5,680	30,456	21,338	8,091	3,030
Texas:							
1922.....	48		5	5	57	141	123
1921.....	39	24			9	113	8
1920.....					11,265	6,788	1,035
Vermont:							
1922.....		1		1	7	2	12
1921.....	5	1	2	3	6	1	
1920.....			25	89	272	796	1,314
Washington:							
1922.....			1	33	176	1,061	902
1921.....							
1920.....			12	902	6,451	6,426	4,596
Wisconsin:							
1922.....	46	17	59	22	24	37	22
1921.....	64	81	44	43	25	48	22
1920.....	3	67	1,944	6,739	14,328	10,310	6,274
Total:							
1922.....	457	416	728	2,328	9,141	15,645	17,854
1921.....	790	710	666	612	525	840	694
1920.....	508	4,627	30,625	117,081	184,849	168,623	98,219
Number of States reporting cases:							
1922.....	19	17	22	22	24	24	24
1921.....	21	20	19	21	20	22	19
1920.....	18	17	20	22	24	24	24

DEATHS FROM INFLUENZA AND PNEUMONIA COMBINED.

COMPARISON OF THE FIRST SEVEN WEEKS OF THE YEARS 1919-1922, INCLUSIVE, FOR CERTAIN LARGE CITIES OF THE UNITED STATES.

The accompanying table gives the number of reported deaths from influenza and pneumonia (all forms), combined, during the first seven weeks of the years 1919, 1920, 1921, and 1922, in 36 large cities of the United States.

This is a continuation of the table printed on pages 333-334 of the Public Health Reports of February 17, 1922 (vol. 37, No. 7).

The weeks for which figures are given all ended on Saturday, the "first" week for each year ending on the following days, respectively: January 4, 1919, January 10, 1920, January 8, 1921, and January 7, 1922.

The figures for 1919 and 1920 were taken from the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce, supplemented by reports to the Public Health Service. For 1921 and 1922 the figures are taken from reports made by the city health officers to the Public Health Service.

Blanks in the table indicate that no reports of deaths from influenza or pneumonia were received for the week. This does not always indicate that no deaths from these diseases occurred. In the seventh week of 1922 it means in most instances that the report has been delayed.

Number of deaths from influenza and pneumonia (all forms) combined.

City.	Week number.						
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
Birmingham, Ala.:							
1922.....	8	10	14	6	13	4	4
1921.....	7	14	6	4	9	9	12
1920.....	13	9	16	14	22	18	59
1919.....	36	44	52	41	29	21	28
Los Angeles, Calif.:							
1922.....	18	19	14	21	26	29	33
1921.....	12	19	9	13	15	12	17
1920.....	16	18	19	22	42	88	74
1919.....	99	151	178	177	104	47	21
Oakland, Calif.:							
1922.....	4	5	5	6	8	8	12
1921.....	4	3	8	7	9	4	6
1920.....	4	8	20	24	55	54	60
1919.....	66	92	111	67	38	18	18
San Francisco, Calif.:							
1922.....	11	12	4	12	9	15	36
1921.....	.....	5	8	9	7	11	13
1920.....	14	26	48	59	115	137	113
1919.....	194	290	310	149	59	41	20
Denver, Colo.:							
1922.....	22	11	10	17	18	16	19
1921.....	25	22	23	11	16	21	20
1920.....	21	18	24	49	159	160	67
1919.....	65	47	35	24	29	30	37
New Haven, Conn.:							
1922.....	5	1	5	4	13	10	14
1921.....	4	7	7	7	2	6	9
1920.....	6	8	10	19	20	60	68
1919.....	40	38	27	26	20	12	11

¹ Pneumonia (all forms) deaths only.

Number of deaths from influenza and pneumonia (all forms) combined—Continued.

City.	Week number.						
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
Washington, D. C.:							
1922.....	20	22	27	27	25	22	27
1921.....	22	22	14	9	9	12	19
1920.....	22	27	31	181	164	92	55
1919.....	139	109	107	73	60	42	40
Atlanta, Ga.:							
1922.....	13	7	9	7	20	17	11
1921.....	16	8	9	5	7	18	10
1920.....	19	11	10	15	32	75	104
1919.....	140	140	154	157	154	128	121
Chicago, Ill.:							
1922.....	48	43	63	65	72	80	56
1921.....	64	79	89	102	92	90	75
1920.....	107	153	472	1,109	1,065	494	243
1919.....	321	269	328	341	277	194	235
Indianapolis, Ind.:							
1922.....	20	11	9	17	29	42	39
1921.....	15	12	13	13	21	6	13
1920.....	18	16	21	26	92	124	72
1919.....	34	40	25	28	25	23	28
Louisville, Ky.:							
1922.....	6	12	18	7	16	24	28
1921.....	6	4	5	5	2	2	9
1920.....	10	10	9	18	40	52	48
1919.....	22	20	21	30	26	19	19
New Orleans, La.:							
1922.....	13	14	14	13	4	25	20
1921.....	18	18	21	*3	12	21	23
1920.....	27	27	27	32	36	62	89
1919.....	94	141	202	201	125	58	49
Baltimore, Md.:							
1922.....	32	25	24	26	29	27	29
1921.....	33	20	24	18	26	56	44
1920.....	20	35	24	59	122	268	231
1919.....	48	75	83	150	138	126	117
Boston, Mass.:							
1922.....	21	17	36	28	33	38	51
1921.....	27	23	36	33	22	10	25
1920.....	28	28	45	85	158	255	216
1919.....	244	227	158	153	110	89	71
Cambridge, Mass.:							
1922.....	5	8	3	4	7	7	8
1921.....	4	5	5	5	1	3	4
1920.....	8	7	8	14	22	28	23
1919.....	39	22	20	16	15	10	3
Fall River, Mass.:							
1922.....	5	4	3	6	5	7	9
1921.....	14	5	11	4	5	8	5
1920.....	7	10	5	3	5	16	25
1919.....	10	18	16	14	17	17	15
Lowell, Mass.:							
1922.....	4	7	5	4	4	6	5
1921.....	7	6	8	3	6	4	2
1920.....	5	4	2	7	12	10	35
1919.....	13	10	20	26	11	17	18
Worcester, Mass.:							
1922.....	5	10	11	7	16	16	16
1921.....	4	7	13	9	4	10	12
1920.....	10	9	7	14	15	44	52
1919.....	40	36	44	22	23	21	23
Minneapolis, Minn.:							
1922.....	10	6	9	9	6	9	4
1921.....	13	14	10	8	10	16	20
1920.....	12	10	9	63	168	125	53
1919.....	37	45	24	32	31	31	14
St. Paul, Minn.:							
1922.....	7	13	7	3	8	6	6
1921.....	9	5	9	9	.....	7	8
1920.....	4	10	26	75	80	63	26
1919.....	39	25	14	12	15	13	11
Kansas City, Mo.:							
1922.....	15	13	14	25	25	28	39
1921.....	17	17	19	13	14	17	16
1920.....	13	29	96	120	220	167	74
1919.....	49	50	68	45	68	40	51
Omaha, Nebr.:							
1922.....	11	9	17	12	16	12	11
1921.....	8	7	4	14	.....	4	12
1920.....	4	7	13	45	42	63	32
1919.....	25	25	17	17	11	12	10

¹ Pneumonia (all forms) deaths only.² Influenza deaths only.

Number of deaths from influenza and pneumonia (all forms) combined—Continued.

City.	Week number.						
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
Newark, N. J.:							
1922.....	13	15	20	20	33	29	39
1921.....	16	14	15	7	12	13	12
1920.....	17	14	30	55	116	142	93
1919.....	72	66	57	53	50	45	32
Buffalo, N. Y.:							
1922.....	6	20	13	19	21	15	15
1921.....	20	18	18	20	13	18	20
1920.....	10	7	19	17	67	141	145
1919.....	48	19	90	123	90	75	35
New York, N. Y.:							
1922.....	215	263	284	302	481	596	576
1921.....	235	216	204	203	199		212
1920.....	218	261	511	1,308	1,988	1,796	987
1919.....	753	870	998	1,193	1,153	893	786
Rochester, N. Y.:							
1922.....	5	11	12	14	6	7	14
1921.....	4	3	6	8	5	5	4
1920.....	13	7	12	23	50	52	27
1919.....	59	26	17	21	12	16	16
Syracuse, N. Y.:							
1922.....	4	6	4	6	7	7	7
1921.....	4	8	3	5	6	2	7
1920.....	9	8	10	31	89	78	29
1919.....	8	13	4	14	18	10	10
Cincinnati, Ohio:							
1922.....	14	20	15	19	21	27	41
1921.....	14	16	13	11	18	16	17
1920.....	14	12	17	25	38	62	81
1919.....	51	18	18	26	23	39	37
Cleveland, Ohio:							
1922.....			30	28	25	18	25
1921.....	25	22	23	24	31	28	31
1920.....	21	25	26	41	158	258	177
1919.....	132	94	92	92	108	100	80
Columbus, Ohio:							
1922.....	5	9	4	10	8	6	10
1921.....	8	8	12	12	13	12	7
1920.....	15	9	8	22	59	118	66
1919.....	15	14	10	20	19	11	15
Toledo, Ohio:							
1922.....	6	9	8	12	7	6	5
1921.....		3	9	10	5	4	3
1920.....	9	8	9	18	54	50	50
1919.....	19	15	19	20	15	6	11
Portland, Oreg.:							
1922.....	4	7	4	6	5	15	17
1921.....	6	5	7	6	4	8	5
1920.....	13	8	9	17	21	57	52
1919.....	55	101	123	122	50	15	10
Philadelphia, Pa.:							
1922.....	73	98	87	86	85	91	101
1921.....	72	83	85	101	114	108	115
1920.....	55	75	108	153	289	564	620
1919.....	142	194	229	259	308	262	232
Providence, R. I.:							
1922.....	13	8	12	17	11	15	26
1921.....	14	6	5	8	14	11	9
1920.....	12	13	8	14	39	88	92
1919.....	47	59	62	61	35	30	28
Nashville, Tenn.:							
1922.....	2	7		3	5	5	4
1921.....	2	8	4		10	9	9
1920.....	6	11	6	12	8	23	47
1919.....	20	17	21	21	17	15	16
Richmond, Va.:							
1922.....	8	9	9	4	8	9	12
1921.....	5	5	13	6	5	7	10
1920.....	2	9	6	21	35	38	28
1919.....	50	26	34	30	23	11	9
Total:							
1922.....	671	761	823	872	1,125	1,294	1,362
1921.....	750	737	768	725	738	800	836
1920.....	802	947	1,771	3,820	5,657	5,922	4,314
1919.....	3,165	3,346	3,688	3,756	3,180	2,427	2,167

1 Pneumonia (all forms), deaths only.

TULARÆMIA Francis 1921.¹**VII. SIX CASES OF TULARÆMIA OCCURRING IN LABORATORY WORKERS.**

By G. C. LAKE, Passed Assistant Surgeon, and EDWARD FRANCIS, Surgeon, United States Public Health Service.

All of the men, six in number, who have been intimately connected during the past two years with the laboratory investigations of tularæmia, which the Public Health Service has been conducting, have contracted this disease. Such a record of morbidity among investigators of a disease is probably unique in the history of experimental medicine. Fortunately, there were no fatalities. Two of the men contracted the disease in the field laboratory in Utah, where they were compelled to work under primitive conditions; the other four contracted the infection in the Hygienic Laboratory at Washington, D. C. Two of the men were physicians, with years of experience in working with infectious diseases and materials; one was a highly trained scientist; and the other three were experienced laboratory assistants.

Before discussing the diagnosis of tularæmia in these laboratory cases we will first summarize the picture presented by seven known cases of this disease which have occurred by natural infection in Utah. All seven had a sudden onset of illness with fever, closely following an insect bite, which became the site of suppuration and which was accompanied by a consequent unilateral suppurative lymphadenitis of the glands, which immediately drained the bitten area. The constitutional disturbance was severe, as indicated by febrile attacks which lasted from three to six weeks and which were followed by slow convalescence. *Bacterium tularensis* was isolated from the suppurating lymph glands in five cases and from the blood in two. Serological tests were positive for complement fixation and agglutination, using antigens composed of cultures of *Bacterium tularensis*. In an endemic focus no second attacks have come to our attention, although this subject was not especially investigated.

In reaching the diagnosis of tularæmia in the six infections contracted in the laboratory, the evidence will be considered in comparison with that of the seven infections contracted in nature in Utah, under the following heads: (1) Clinical evidence, (2) serological tests, (3) epidemiologic evidence, (4) absence of local lesions and the portal of entry of the infection, and (5) absence of *Bacterium tularensis* from the blood.

1. CLINICAL EVIDENCE. (See Appendix A.)

The laboratory cases all had a sudden onset, with high fever, which, after remitting about the third day almost to normal, immediately became high again and then fell gradually to normal at the end of

¹See Public Health Reports vol. 36, No. 30, July 29, 1921, pp. 1731-1753; vol. 37, No. 3, Jan. 20, 1922, pp. 83-115.

This series of seven articles on tularæmia will be combined and reprinted in pamphlet form as Hygienic Laboratory Bulletin No. 130.

about three weeks (see Charts 1 and 2). A lack of other significant constitutional disturbances or physical signs was noted. A slow convalescence extended over about two months, and recovery took place without complications.

2. SEROLOGICAL TESTS. (See Appendix B.)

Complement fixation and agglutination tests made on the serums of the six laboratory cases on several occasions, from January, 1921, to October, 1921, were all positive. The shortest interval after the onset of the disease before the serum was tested was 13 days; the longest interval from the date of illness was more than two years. Serums from two of our laboratory cases were found positive by comparison with serums from four known cases of tularæmia from which Francis had isolated the organism in Utah. These two serums served as positive controls in the tests made on the other laboratory cases. In all 66 negative control serums, for the most part from nonfebrile patients hospitalized in Washington, were used. Two or three of the latter gave some degree of positive complement fixation action but were negative by the agglutination test. We wish to point out that the control serums preferably should have been from patients in the febrile stages of well-known diseases, but such cases were not available. Seven of the 66 negative control serums were from laboratory personnel coming in casual contact with infected animals; these were completely negative. The control on Case 6 was unique and the most perfect one that could be obtained; his serum was tested on two occasions by complement fixation and agglutination during his exposure to the laboratory infection, but before the onset of his illness, and was negative by both tests, whereas after his illness it became strongly positive by both tests on two occasions.

3. EPIDEMIOLOGIC EVIDENCE.

The entire laboratory personnel (six) who have been employed continuously in handling or dissecting rodents infected with the Utah strains of *Bacterium tularensis* have contracted febrile attacks which lasted approximately three weeks and were followed by slow convalescence. These attacks developed on the seventh, seventeenth, thirtieth, forty-third, eightieth, and ninety-eighth days, respectively, of such employment. Case 1 developed a second attack two years and five months after the first attack. Three of the cases have continued their work after recovery for many months in the same manner as before their illness without developing a second attack.

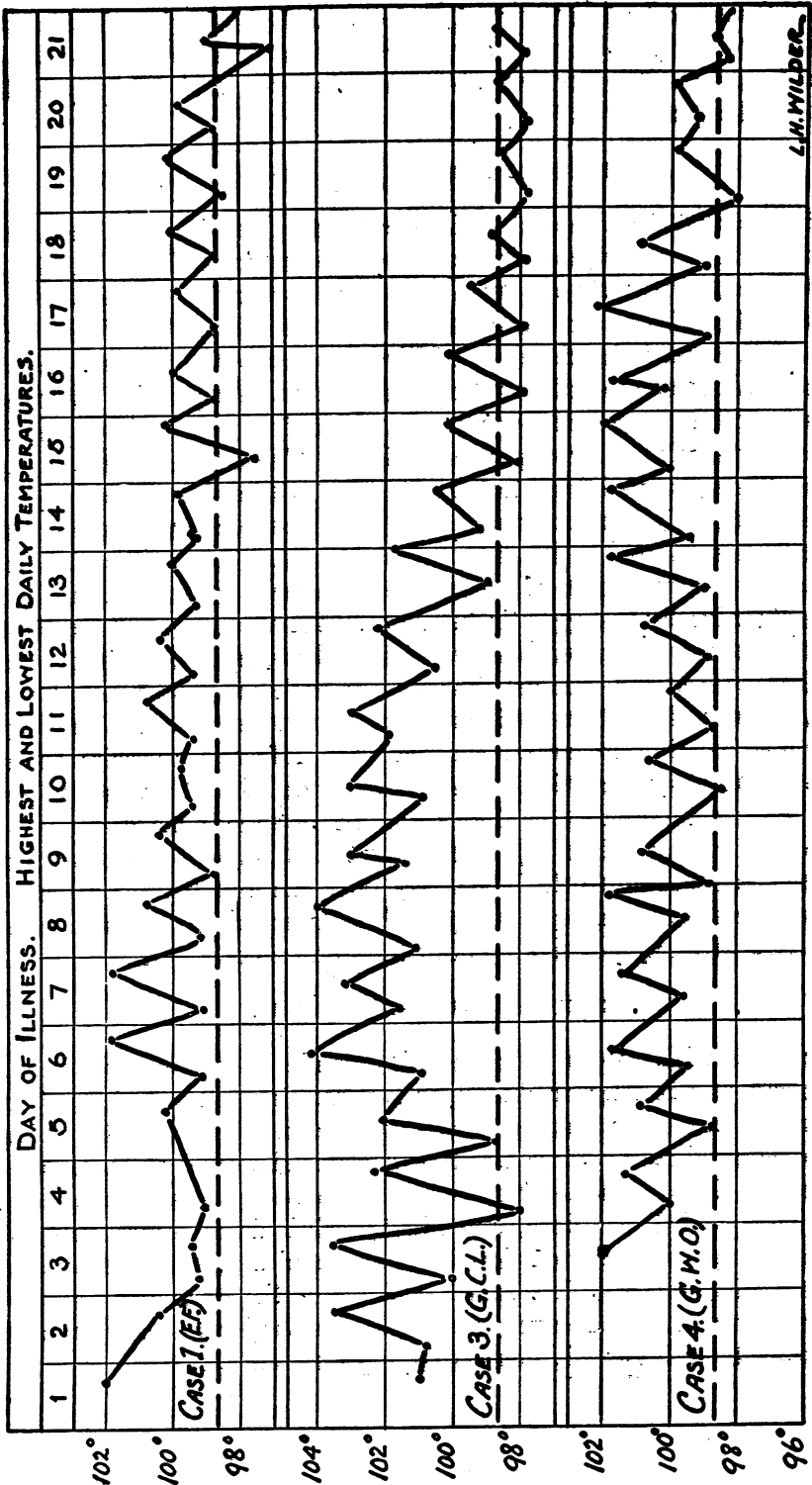


CHART 1.—Temperature curves of tularaemia cases 1, 3, and 4, developing in laboratory workers.

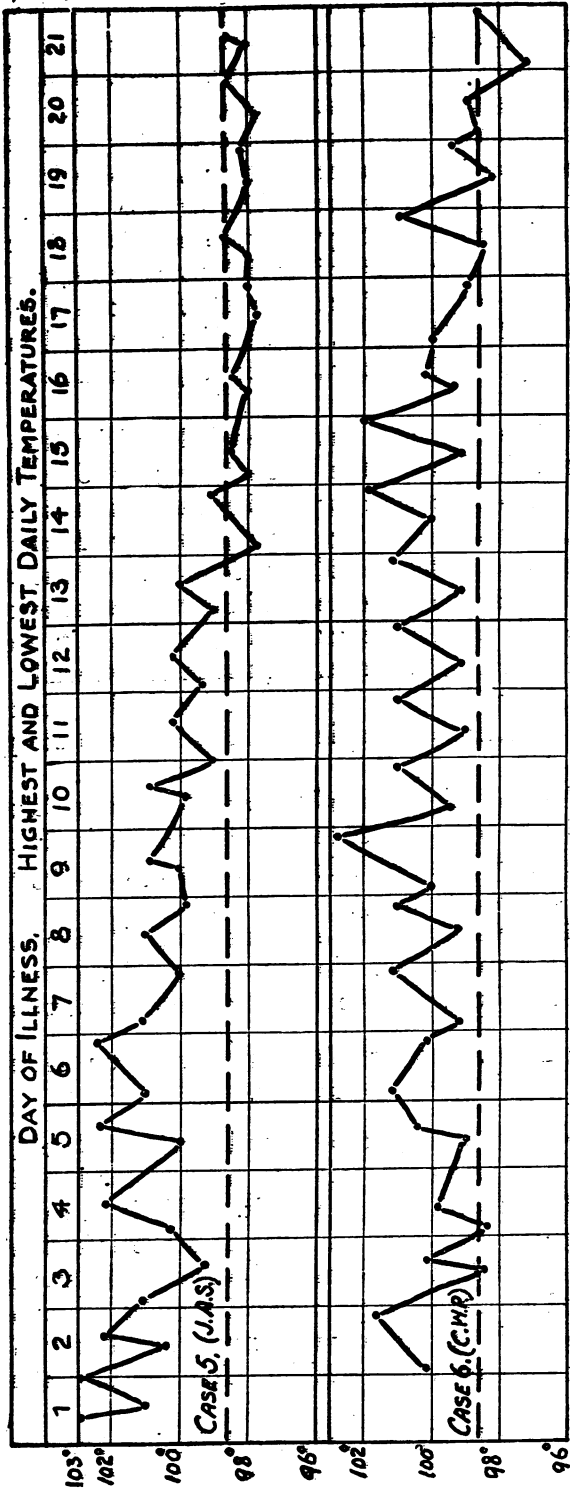


CHART 2.—Temperature curves of tularemia cases 5 and 6, developing in laboratory workers.

The laboratory room in which animals were inoculated, dissected, and handled after autopsy was so located in the middle of the building that it was freely used as a passageway by other workers on the same floor and by general laboratory attendants. None of the laboratory personnel thus coming into casual contact with the work developed the disease, although several either worked with cultures or occasionally inoculated an animal. During the period when four cases developed in the laboratory in those who handled or dissected rodents, there was a remarkably low sick rate among the other personnel of the laboratory, numbering about 100, none of whom developed a febrile attack. Moreover, no infections occurred among fresh stock animals kept in the laboratory in cages adjacent to infected animals.

Infected insects whose bites have been followed by transmission of the infection to animals are: The bloodsucking fly, *Chrysops discalis*; the stable fly, *Stomoxys calcitrans*; the bedbug, *Cimex lectularius*; the squirrel flea, *Ceratophyllus acutus*; the rabbit louse, *Hæmodipsus ventricosus*; and the mouse louse, *Polyplax serratus*. Of the insects enumerated, only the first four are known in our experience to bite man.

Chrysops discalis can not be excluded as a factor in the transmission to Cases 1 and 2, who contracted the infection while working in the field laboratory in Utah, but can positively be excluded in the four cases which contracted the infection in the laboratory in Washington.

Stomoxys calcitrans might have been a factor in the Cases 1 and 2, developing in Utah, but three of the Washington cases developed during the season of minimal prevalence of this fly, during which time none was seen in the laboratory.

No fleas or bedbugs were seen in connection with the infected animals either in Utah or in Washington. None of the cases had any knowledge of being bitten by the insect carriers enumerated.

4. ABSENCE OF LOCAL LESIONS AND THE PORTAL OF ENTRY OF THE INFECTION,

The six laboratory cases (except second attack of Case 1) furnished no local lesions indicating the portal of entry of the infection and no involvement of superficial lymph glands. This is in contrast to the human cases of tularæmia which contracted the infection in nature in Utah, all of whom had a pronounced lesion at the site of infection (insect bite) and a consequent pronounced lymphadenitis of the adjacent glands; but it is in harmony with numerous observations on the disease in animals, both by natural infection and laboratory inoculation.

Francis has recently shown that the infection traversed the unclipped, unshaved, unabraded, and unrubbed skins of five guinea

pigs when spleen juice of infected guinea pigs was gently placed on the skin of these animals after turning aside the hair on their backs. The experimental guinea pigs all wore a stiff collar $1\frac{1}{2}$ inches wide, which served to sufficiently immobilize the head to prevent ingestion of the infected material. The animals all died acutely. The local lesion consisted of a pale papule surrounded by slight congestion. The secondary lymph glands were caseous, and the spleen and liver showed the typical lesions of the disease.

White mice injected with blood subcutaneously or bitten by infected bedbugs may die from the infection and yet show almost no appreciable lesion at the site of infection or in the superficial lymph glands.

Bacterium tulareense was isolated at autopsy by guinea pig inoculations from the spleens of 17 jack rabbits infected in nature in Utah, in which an absence of involvement of the inguinal and axillary glands was noted.

In transmission experiments conducted in Utah upon rabbits and guinea pigs, instances were noted of the absence of a lesion at the site of an infected *Chrysops discalis* bite or in the adjacent lymph glands, whereas the liver or spleen showed typical lesions.

We have noted instances of the absence of involvement of the subcutaneous glands of guinea pigs after subcutaneous injection with infected bedbug feces which had dried 20 days on a filter paper; yet the guinea pigs died acutely with lesions of the spleen and liver typical of tularæmia.

In view of the facts stated in preceding paragraphs, consideration must be given to the skin of the hands as a possible portal of entry of the infection in laboratory workers, even in the absence of a local lesion or lymphadenitis.

On the other hand, in the second attack which Case 1 of our series developed two years and five months after his first attack, there was a papule on the finger from which *Bacterium tulareense* was isolated by guinea pig inoculation. There was also a secondary lymphadenitis involving the epitrochlear and axillary glands of the same arm, but an absence of constitutional symptoms.

5. ABSENCE OF BACTERIUM TULARENSE FROM THE BLOOD.

The blood of three of the laboratory cases, taken during the febrile stage, was injected intraperitoneally into guinea pigs, but with negative results. The absence of the organism from the blood in these cases as shown by guinea pig inoculations is taken as an indication of the mildness of the attacks. Of the two cases in Utah in which the organism was isolated from the blood, one terminated fatally and the other was very sick. The presence of the organism in the blood

probably indicates a grave condition in which the patient's resistance has given way. Laboratory animals which uniformly die from the infection show the organism with great constancy in the blood in the later stages.

UNRECOGNIZED CASES OF TULARÆMIA.

Known foci of this infection in rodents have been reported from California, Utah, and Indiana. The known insects capable of transmitting the infection in animals are two species of biting flies, one species of fleas, two species of lice, and the common bedbug. There are probably other foci and other transmitting insects in the United States. The most practical method of search for unrecognized cases of this disease is the routine testing of specimens of blood collected from various parts of the country for complement fixation and agglutination using an antigen consisting of *Bacterium tularensis*. Our laboratory cases show well-marked antibodies to this antigen for many months after recovery.

As an instance of unrecognized cases of tularæmia, we wish to refer to the work of McCoy and Chapin,² of the Public Health Service, who discovered *Bacterium tularensis* in 1912 as the cause of a plaguelike disease of rodents in the California ground squirrels.

They reported at that time complement fixation and agglutination to *Bacterium tularensis* antigens not only in the case of serums of naturally or artificially immune animals but also in the case of 2 out of 11 human serums tested. The two positive human serums were from Dr. C. W. Chapin and a laboratory attendant, both of whom were extensively engaged in handling or dissecting infected rodents in the laboratory.

Dr. Chapin now states that shortly previous to testing his own serum in 1912 he had had a febrile attack which kept him off duty for about three weeks and which was unaccompanied by glandular enlargement or other local lesion. No absence from duty on the part of the laboratory attendant can now be recalled by Dr. Chapin.

In the light of present knowledge it seems certain that what to McCoy and Chapin was a puzzling circumstance (the presence of antitularæmia amboceptors in the serums of two laboratory workers) was the proof of two unrecognized human cases of tularæmia.

SUMMARY AND CONCLUSIONS.

All of the persons (six) who have been intimately engaged during the past two years in the laboratory in handling or dissecting rodents infected with the Utah strains of *Bacterium tularensis* have suffered an attack of tularæmia.

² McCoy, G. W., and Chapin, C. W., *Bacterium tularensis*, the cause of a plaguelike disease of rodents. Public Health Bulletin, No. 53, 1912, p. 21.

The diagnosis in each of the six cases rests upon the occurrence of a febrile period lasting about three weeks, positive serum reactions for agglutination and complement fixation to antigens composed of *Bacterium tularensis*, and the absence of febrile attacks in 100 other persons in the laboratory coming in casual contact with the infected rodents.

Consideration must be given to the skin of the hands as a possible portal of entry of the infection in laboratory workers even in the absence of a local lesion or lymphadenitis.

A second attack has recently occurred in Case 1 of the above series, two years and five months after his first attack. The second attack was associated with evident cracks on the fingers, on one of which there developed an inflammatory papule which was soon followed by enlarged, painful, and tender lymph glands in the epitrochlear and axillary regions of the corresponding side, but without fever or other constitutional disturbance. *Bacterium tularensis* was isolated from the papule by guinea pig inoculation.

The absence of constitutional symptoms in the second attack, although there was a local lesion and consequent lymphadenitis, is accounted for by the persistence of immune bodies acquired by the first attack.

Unrecognized cases of tularæmia probably occur in the known foci of infection in the United States, some of which may have febrile attacks without local lesions, while some may have local lesions and a secondary regional lymphadenitis without very notable constitutional disturbance.

Routine serological tests for agglutination especially and for complement fixation using antigens composed of *Bacterium tularensis* would probably not only detect cases in known foci of infection but would bring to light unknown foci. Positive serological reactions are known to persist for two years after an attack. Light might be thrown upon the etiology of some fevers of undetermined origin.

A warning is sounded against unwarranted indifference to an infection which, in our experience, has claimed all of those who have persistently worked with it in the laboratory.

Acknowledgment.—Through the courtesy of the United States Naval Hospital, Washington, D. C., Case 3 was treated in that institution on the service of Lieut. Commander J. J. O'Malley, Medical Corps, United States Navy, to whom we are indebted for clinical data on this case.

To Dr. J. J. Bateman, Passed Assistant Surgeon (R.), United States Public Health Service, we are indebted for clinical data on Cases 4, 5, and 6, who were treated in United States Public Health Service Hospital No. 32, Washington, D. C.

Appendix A.

BRIEF CLINICAL REPORTS OF SIX LABORATORY CASES OF TULARÆMIA.

CASE 1.

First attack.—E. F., male, age 49, physician, began investigations of tularæmia in Delta, Utah, July 23, 1919. His exposure differs from the other cases to be reported in that in addition to exposure to laboratory animals he took blood and pus on two occasions from a human case which terminated fatally. On the thirtieth day of his investigation, August 23, 1919, E. F. became ill in the late afternoon, feeling tired and weak and having a temperature of 102.2°. With the exception that his temperature (see temperature curve, Chart 1, Case 1) almost reached normal on the third and fourth days, at which time he felt slightly improved; his fever continued until the twenty-fourth day. During the first 12 days of his illness he packed up his laboratory equipment and animals in Utah with great difficulty and proceeded with them to Washington, D. C., and after his arrival made a futile attempt to continue work. The next 14 days he spent in the hospital lying on the bed, but not confined to the bed.

The temperature was highest, 102.2°, on the first day and showed a steady decline to normal on the twenty-fourth day. The departure of the patient from the hospital on the twenty-eighth day was attended with some forced exercise, which resulted in a secondary rise of temperature which lasted four days, after which it remained normal.

The second month was spent in a hotel, lying on the bed most of the time. The third month was one of slow convalescence.

Throughout the illness there was an absence of localized pain or tenderness, except that on the sixteenth day of illness a sore throat developed on the right side, manifested by redness of the anterior pillar of the fauces without involvement of the tonsil. Practically the only complaint was that of languor, or weakness, and a desire to remain quiet on the bed.

Blood: White cell count on the fifteenth day, 13,600; white cell count on the twenty-first day, 8,650.

Agglutination tests for typhoid, paratyphoid A and B, on the twenty-first day were negative.

Serological tests for tularæmia, made January 20, April 29, June 15, and September 30, 1921, were all positive. (See Tables I, II, IV, and V.)

Second attack.—Following recovery from the first attack, this patient continued handling and dissecting infected guinea pigs, rabbits, and white mice in the laboratory for two years without using gloves. During this time infected material frequently got on his hands, but was washed off. In the first part of January, 1922, he

handled formaldehyde excessively in preparing specimens for preservation in Kaiserling solutions, and very evident cracks appeared on the fingers of both hands. In spite of this he autopsied infected animals without gloves.

On January 14 the right index finger showed on the inside of the first phalanx, near its upper end, a red, tender papule at the site of a recent crack. That night attention was directed to enlarged, tender lymph glands located in the right epitrochlear and right axillary regions.

From January 15 to 20 the glands mentioned were painful, tender, and noticeably enlarged on inspection and palpation. There was a red flush of the skin overlying the glands and at the outer border of the right biceps muscle, but no red streaks were noted on the hand, forearm, or arm.

On January 21 no redness could be noted, and the glands were not painful, but were still tender and enlarged on palpation.

The temperature was taken daily throughout the attack, but was never above normal. No notable constitutional disturbance was observed and the patient continued work as usual. On the seventh day the white blood cells numbered 7,500, and 30 c. c. of blood taken from the median basilic vein were injected intraperitoneally into six guinea pigs with negative results.

On the second day of the attack the papule on the finger was incised, but no pus was noted. The escaping blood was injected subcutaneously on the right side of the abdomen of a guinea pig. The papule was swabbed with iodine and dressed with wet bichloride of mercury dressings for the next five days, during which time no pus was noted in the wound.

The guinea pig was dying on the fifth day after injection and was chloroformed. It showed a severe local reaction at the site of injection and typical gray granular caseation of the right inguinal, right retroscapular, and retropancreatic lymph glands. Its liver and spleen were studded over the surface with small foci or granules of necrosis. Portions of the lymph glands and spleen of the guinea pig were rubbed on the shaved, abraded skin of the abdomen of two healthy guinea pigs, causing acute death with the typical lesions of tularæmia.

CASE 2.

B. M., male, age 37, scientific expert, stated that on July 20, 1920, seven days after beginning work in the field laboratory at Delta, Utah, which work brought him into intimate contact with laboratory animals suffering with, or dead from, tularæmia, he became ill rather suddenly. His chief symptoms at the time were headache, backache, shifting pains involving especially the chest, knees, and elbows, and

fever. His temperature was not taken at the time, but from July 22 to July 31 it ranged from 100° in the morning to 103° in the evening, after which it reached normal in the morning and was no longer taken. Malaria was suspected, but examinations of the blood for parasites were negative. He remained at work most of the time, although barely able to get about. The shifting pains persisted for about a month, during which time there was some loss of appetite and gastrointestinal disturbance, with a weight loss of 15 pounds. On August 19 he took 10 days' sick leave, during which he spent most of the time lying on the bed. After this he returned to duty, but stated that it was three or four months before he was able to perform his work without undue fatigue, and that for more than a year afterwards he has been troubled with pains in the back.

On June 14, 1921, the patient happened to be at the Hygienic Laboratory, and a sample of his serum was obtained, which was tested for tularæmia antibodies, by both the complement fixation and agglutination reactions. In both tests the results were positive. (For protocols of tests see Tables IV and V. Temperature curves are not given, as complete temperature records were not kept.)

CASE 3.³

G. C. L., physician, age 37, engaged in experimental investigations of tularæmia at the Hygienic Laboratory, Washington, D. C., was in good health up to October 23, 1920 (43 days after beginning this work), when, after putting in a full day at the laboratory, he suddenly became ill in the evening. He was compelled to go to bed because of weakness and dizziness, and a few minutes later had a fairly severe chill, after which the temperature was found to be 101°. (See temperature curve, Case 3.) The temperature, which was quite irregular, gradually became higher, reaching 104.2° on the sixth day. There was a remission to 98° the morning of the fourth day, at which time the patient got up with the intention of going to work, but suddenly became dizzy and weak and had to go back to bed. On the eighth day he was taken to the hospital, where the temperature, after reaching 103° for the next three days, gradually began to fall, reaching normal on the seventeenth day, and, with the exception of a slight rise a few days later, remained normal. The pulse was fairly rapid, ranging from 80 to 98, and remained high for some time after the fever dropped. The blood pressure, taken on several occasions, was normal. During the first two weeks there was a moderately severe rhinitis, the secretions being at times blood tinged, and on two occasions a slight epistaxis occurred. There were no pains at any time, only a desire to be quiet and sleep a great deal, and occasionally there was slight nausea. Repeated physical examinations were

³This case is also reported by Lieut. Commander J. J. O'Malley, Medical Corps, U. S. Navy, in the *Journal of the American Medical Association*, 1922, vol. 78.

practically negative. The treatment was absolute rest in bed and careful feeding and nursing. He was discharged from the hospital November 29, having lost only 15 pounds in weight.

After returning home the patient spent a month resting most of the time. Temperature of about 100° was noted several times during the first 10 days at home. By the end of the month he could walk a half mile without much fatigue. The only special symptoms were the development at different times of localized hyperesthetic areas of the skin (the sensation being that of a mild burn, but with no visible lesion), and an attack of mild tympanitis lasting more or less continuously, except while patient slept, for about 48 hours.

He returned to work January 1, but for the first month usually went home at noon and spent most of the afternoon in bed. It was late in the spring before he had regained a condition approximating normal health. Transient pains in the calves of the legs, gradually becoming milder and occurring less frequently, have persisted for more than a year.

Laboratory examinations made on Case 3.

October 26: White cell count, 12,000; nasal secretions blood tinged injected into guinea pigs with negative results.

October 28: Blood culture for typhoid negative.

October 30: Blood culture for typhoid negative. Widal positive for typhoid, negative for paratyphoid A and B. (Patient had received three injections of single typhoid vaccine late in 1914.) Inoculation of a guinea pig with 5 c. c. blood introperitoneally resulted negatively.

October 31: White cell count, 8,300, red cells, 5,900,000, differential not significant.

October 30 to November 20: Several examinations of urine and feces for *B. typhosus* were made with negative result.

January 20, April 29, May 11, June 15, and September 30, 1921: Serological tests for tularæmia were all positive. (See Tables I to VI.)

CASE 4.

G. W. O., male, age 36, laboratory assistant in connection with investigations with experimental tularæmia. On April 9, 1921, after having been engaged in this work 98 days, he was taken suddenly ill. He had not felt well in the forenoon and at 3 p. m., while at work, was suddenly seized with a sharp pain over the right shoulder, radiating downward with the spine and localizing near the twelfth dorsal vertebra. On reaching home, only a short distance away, the pain radiated to the lumbar region and later to the muscles and joints of the legs. The pains continued to shift, at times involving the eyeballs, superciliary ridges, and occipital regions. He remained at home for a week, continuing to have shifting pains and temperature, which, after dropping to normal during the forenoon of the fourth day, gradually became higher, accompanied by a feeling of increasing

weakness. During this time physical examination was practically negative. On the seventh day he was taken to the hospital, where a carefully conducted and complete physical examination was negative, except that the areas in which he complained of pain were sensitive or tender, namely, occipital region, muscles of neck, superciliary ridges, and vertebral border in the lumbar region.

Treatment was absolute rest in bed and symptomatic. Temperature (see Chart 1, Case 4) reached normal on the twenty-first day. Patient continued to have pains in the head, muscles, and joints until the sixteenth day. During the febrile stage his pulse range was from 70 to 80, reaching 90 April 22. After the febrile stage, the average was about 75. (This patient normally has a slow pulse, which now averages about 66, when sitting.)

Laboratory examinations Case 4.

Feces: Examined for *B. typhosus* with negative result on May 4, 11, and 14.

Blood: White cell count 6,400 on April 15; 8,770 on April 23, when red cells were 5,000,000, differential about normal.

Blood cultures: Made April 15 and April 23, designed to show the presence of *Bacterium tularensis*, *B. typhosus*, streptococcus, etc., on the following mediums: Glucose blood agar slants and plates, 1 per cent glucose agar, special egg medium of McCoy and Chapin, Levinthal's cooked blood agar, and in graded amounts into a series of tall test tubes, each containing 50 c. c. of bouillon (great care being taken not to jar the tubes and disturb the filaments of fibrin). No growth was obtained on any of the mediums.

Inoculations of 7 guinea pigs April 15, and 5 guinea pigs April 23, each receiving intraperitoneally 4 c. c. of blood plus 4 c. c. of saline, all resulted negatively for tularæmia.

Immunological tests: Widal was slightly positive for *B. typhosus*, negative for paratyphosus A and B. (Patient had received three injections of single typhoid vaccine in November, 1913.) Agglutination and complement fixation tests for tularæmia, April 29, May 11, June 15, August 5, and September 30, 1921, were all positive. (See Tables II to VI.)

CASE 5.

J. A. S., male, age 29, succeeded G. W. O. (Case 4) as laboratory assistant with the tularæmia investigation. On April 28, 1921, the 17th day of his exposure to infected animals, after working till 11 a. m., he complained of not feeling well and of being chilly. Temperature, taken at once, was 103°, pulse 100, respirations 24; otherwise physical examination was negative. During the next half hour, while waiting for the ambulance to take him to the hospital, he had a fairly severe chill. History taken on his admission to hospital shows that he complained of headache, shifting pains in the muscles and joints, weakness, and anorexia. Physical examination was negative, except that the areas in which he complained of pain were found to be either hypersensitive or tender, and that there was a slight impair-

ment of resonance over the right scapular region. Blood pressure was normal.

Patient's temperature (see Chart 2, Case 5), after dropping almost to normal on the third day, continued high until the sixth day, after which there was a gradual drop to normal on the thirteenth day. This was the only one of our cases who was taken immediately to the hospital on the onset of symptoms, which may account for the shorter febrile stage. His pulse range during the febrile stage was from 80 to 100, and during the next two weeks about 80, after which it dropped to 70.

He complained of headache and muscular pains a great deal during the first few days, and, to some extent, for the first two weeks. He was discharged May 29, 18 days after his temperature became normal, and remained at home gradually improving until July 4, when he was almost instantly killed in a railway accident. A complete post-mortem examination failed to show any evidence of lesions of tularæmia either active or healed. All the organs and tissues were normal except for the crushing injuries produced by the accident.

Laboratory examinations made on Case 5.

Feces: Negative for *B. typhosus*, May 5, 11, and 14.

Blood: Cultures made on April 28, as was done in Case 4, except that in addition fermentation tubes were used, all negative.

Inoculations intraperitoneally of 7 guinea pigs on April 28, and 5 more guinea pigs May 10, each receiving 4 c. c. of defibrinated blood plus 4 c. c. of saline, gave negative results for tularæmia.

Immunological tests: Agglutination and complement fixation tests for tularæmia, made on May 10 and June 15, 1921, were positive. (See Tables III, IV, and V.)

CASE 6.

C. W. P., male, age 29, succeeded J. A. S. (Case 5) as laboratory assistant in tularæmia investigations. On July 17, 1921, 80 days after beginning this work, he felt a severe pain in his left elbow just after going to bed. This pain lasted only a few minutes and was followed by a chill lasting about 10 minutes. The following day he felt weak, had no appetite, had a headache of moderate severity, and was in this condition when first examined at his home, July 19. A partial physical examination conducted at the time revealed nothing of importance except temperature 101.8°, pulse 100, respiration normal. He was taken to the hospital the same afternoon, where a complete physical examination was also practically negative.

Examination of temperature curve (Chart 2, Case 6) shows that on the mornings of the third and fourth days patient's temperature reached normal. At this time he said that he did not feel sick enough to stay in bed. After that his temperature began to rise and remained fairly high (highest 102.7° on July 26) until the six-

teenth day, after which it began to fall, becoming normal on the twentieth day. His pulse during the febrile stage was variable, ranging from 80 to 100; after the febrile stage it averaged about 80. He complained of nothing at any time except weakness and occasionally some nausea. He was discharged August 21, 14 days after his temperature became normal. He remained at home slowly convalescing until October 1. For the next month he worked in the laboratory during the forenoons and rested most of the afternoons. Since that time he has been on duty full time. His only complaint since going to work has been that of a dull pain in the left side, which at first bothered him a great deal, but which has now almost entirely disappeared.

Laboratory examinations made on Case 6.

Blood: White cells 7,300, red cells 5,000,000, differential unimportant July 19.

Inoculations of 7 guinea pigs on July 22 and of 5 pigs August 5, each with 4 c. c. of defibrinated blood plus 4 c. c. of saline intraperitoneally, gave negative results for tularæmia.

Immunological tests for tularæmia made August 5 were positive. (See Table VI.) Further tests made September 30 by both agglutination and fixation methods were also positive. (Protocols not given.)

Appendix B.

SEROLOGICAL REPORTS.

DISCUSSION OF TABLE I.

On January 20, 1921, complement fixation tests were made (1) to determine whether serums collected after recovery from naturally infected human cases of tularæmia would give a definite reaction with *Bacterium tularensis* antigen; (2) to determine whether serums from human cases 1 and 3 originating in the laboratory would react positively; and (3) to determine whether serums from control persons, presumably uninfected, would fail to react.

The serums from the naturally infected cases definitely known to be tularæmia were collected by Francis September 28, 1920, and were from cases from which he had isolated *Bacterium tularensis* (see Public Health Reports, vol. 36, No. 30, July 29, 1921, pp. 1731-1738). These serums were heated 30 minutes at 56° C. at time of collection and preserved by adding an equal amount of glycerin. Serum from laboratory Case 1 was obtained January 19, 1921, about 17 months after the onset of illness; serum from laboratory Case 3 was obtained January 19, 1921, about three months after the onset of illness. The control serums used in this test were from samples sent in for routine Wassermann tests.

The antigens used were saline suspensions of *Bacterium tularensis* made by washing off the 72-hour growth on egg medium slants with small amounts of saline, care being taken to avoid breaking the

surfaces, and then heating the suspensions for 30 minutes at 54° C. No preservative was added. Three separate antigens were prepared; one was from a strain isolated from a ground squirrel by Passed Asst. Surg. W. T. Harrison in California in May, 1920, and the other two were isolated by Francis in Utah, one from a jack rabbit and one from a typical human case (G), whose serum was also used in the tests.

Tests had previously been made of other antigens prepared as above to determine whether fixation occurred with pooled Wassermann positive and pooled Wassermann negative serums, with negative results. The antigens used in this test had been titrated to determine suitable units for use in these experiments.

The results obtained are shown in Table I. It will be noted that very definite positive reactions were obtained with the four known positive serums and also with the serums from laboratory Cases 1 and 3 against all three antigens used. It is unfortunate that higher dilutions were not added, particularly in the series with the California strain antigen, so that the positive serums would be carried out to extinction of fixation; but even the old Utah serums, which were anticomplementary (see the no-antigen controls) in 1:20 dilutions, fixed complement in 1:540 dilution with at least one of the antigens. The nine control serums used gave negative results, with the exception of 7561, which can well be explained by the degree of anticomplementary effect present, and 7530, which gave a fairly strong fixation with one antigen and practically no fixation with the other two antigens. No more of serum 7530 was available for further tests. The positive serums all reacted definitely with suspensions of *Bacterium tularensis* of squirrel, rabbit, and human origin, suggesting that the organism from these three sources is the same.

DISCUSSION OF TABLE II.

On April 29, 1921, agglutination tests were made to determine (1) whether serums from laboratory Cases 1 and 3, positive by the complement fixation test in Table I, would be positive by the agglutination test, and (2) whether serum from laboratory Case 4, taken on the thirteenth day of his illness, contained agglutinins. Six serums from hospital patients suffering with mild disorders unrelated to tularæmia were used as controls.

The antigen used was prepared from human strain G, in the same manner as described in the discussion of Table I, except that the suspension was heated 30 minutes at 56° C. and then preserved by the addition of 0.3 per cent tricresol. This antigen, designated G-32, was sealed in glass ampules and used in all the subsequent tests for agglutination and complement fixation.

The results (Table II) show that serum from laboratory Case 4, taken on the thirteenth day of illness, was positive. Serums, both unheated and heated, from laboratory Cases 1 and 3, which had been kept in the ice box over three months, but in neither case with preservative, gave about the same degree of positive reaction as fresh serum from laboratory Case 3. The controls failed to give any agglutination.

DISCUSSION OF TABLE III.

On May 11, 1921, tests were made by both the complement fixation and agglutination reactions (1) to compare the results of these two methods and (2) to determine whether serum from laboratory Case 5 (onset of illness Apr. 27, 1921) was positive. Serums from laboratory Cases 3 and 4, already found positive by previous tests, served as positive controls, and serums from three other men in the laboratory served as negative controls. Control serum A was from the man who later was the sixth laboratory case of our series. He had been working with animals infected with *Bacterium tularensis* since April 28, 1921, but did not contract the disease until July 17, 1921. The results show that serum from laboratory Case 5 was positive on the fourteenth day of his illness. Both tests gave satisfactory results. The control serums were negative throughout.

DISCUSSION OF TABLE IV.

On June 15, 1921, serums from the five laboratory cases which had occurred up to that time were tested by the complement fixation method in comparison with (1) serums of several of the laboratory personnel, including serum A, from C. W. P., who, 32 days after this test, contracted tularæmia and became laboratory Case 6 of our series; (2) a serum from an immunized rabbit with high antityphoid titre, and a serum from a known case of typhoid with a positive Widal; and (3) 27 serums from ordinary hospital cases from two Government hospitals. The serums were collected on the day preceding the test and were not heated. The serums of the five laboratory cases were positive; Case 1 in dilutions up to 1 in 200; Cases 2, 3, and 5 in dilutions up to 1 in 400; Case 4 in dilutions up to 1 in 1,000.

The serum of Case 1 was taken 22 months after the attack of tularæmia. Of the 35 control serums, 27 were completely negative. Four, Nos. 6, 25, 31, and 34, can be classed as probably negative on account of being anticomplementary or reacting only in dilutions too low to be regarded as significant. The remaining four serums, Nos. 10, 13, 18, and 27, may be regarded as more or less positive, as the first three of them reacted in dilutions as high as our weakest positive control. These three, Nos. 10, 13, and 18, were therefore further

tested by the agglutination method (see Table V, with discussion). There was none of No. 29 remaining or it also would have been tested.

There is a possibility that some of the questionable positives with the complement fixation test would have been avoided had the serums been heated.

DISCUSSION OF TABLE V.

On June 16, 1921, serums Nos. 10, 13, and 18, which were found more or less positive by the complement fixation test on the preceding day and have been referred to in the discussion of Table IV, were submitted to the agglutination test. All serums tested were remaining portions of serums tested on the previous day; serums from laboratory Cases 1-5 served as positive controls; serums from controls 1-5 served as negative controls. The positive controls all reacted positively; the negative controls all reacted negatively, with the exception that control serum 1 gave some agglutination in the third and fourth dilutions, but not in the first two dilutions; the serums under investigation, Nos. 10, 13, and 18, all reacted negatively.

This result tends to confirm some previous observations (not recorded here) which we have made that the agglutination test is more reliable in that it is more specific than the complement fixation test for the detection of *Bacterium tularensis* antibodies.

DISCUSSION OF TABLE VI.

On August 5, 1921, agglutination tests (see Table VI) were carried out on serum of laboratory Case 6, 19 days after the onset of his illness. This serum, as well as those from positive controls (Cases 3 and 4) gave definitely positive results. Control serum A (see Tables III, IV, and V) was from the laboratory attendant who became laboratory Case 6 of our series. The tests show that his serum reacted negatively on the thirteenth and forty-eighth days of his exposure to infected laboratory animals; but, having contracted the infection on the eightieth day, his serum reacted positively to the agglutination test 19 days after the onset of illness. His serum, shown to be definitely positive by this test, was subsequently tested October 1 by both the complement fixation and agglutination tests (protocols not given) in comparison with three positive and nine negative control serums, all taken on the same date and heated 30 minutes at 55° C. His serum was at this time somewhat more strongly positive than that of the positive controls. The negative controls remained negative throughout.

The serological tests in Case 6 are particularly significant in that they were negative before his illness and positive afterwards, the same antigen being used in all the tests.

TABLE I.—Complement fixation tests of serums from four known positive cases of tularemia, two of the laboratory cases here reported, and nine negative human controls. Saline suspensions of *Bacterium tularense* of squirrel, rabbit, and human origin were used as antigens. Tests were made Jan. 20, 1921.

Serum.	Serum dilutions.																								
	California squirrel strain antigen.						Utah rabbit strain antigen.						Human strain G. antigen.						No-antigen controls.						
	No serum.	1:10	1:20	1:60	1:180	1:540	No serum.	1:10	1:20	1:60	1:180	1:540	No serum.	1:10	1:20	1:60	1:180	1:540	No serum.	1:10	1:20	1:60	1:180	1:540	
Utah human cases: ¹																									
C.....	-	4+	4+	4+	4+	-	4+	4+	4+	4+	4+	-	4+	4+	4+	4+	4+	4+	-	4+	4+	4+	4+	4+	
G.....	-	4+	4+	4+	4+	3+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	
Mok.....	-	4+	4+	4+	4+	2+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	
S.....	-	4+	4+	4+	4+	2+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	
Laboratory human cases: ²																									
Case 1.....	-	3+	3+	4+	4+	3+	2+	2+	3+	3+	3+	+	3+	3+	3+	3+	3+	3+	-	3+	3+	3+	3+	3+	
Case 3.....	-	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	
Negative controls: ³																									
7810.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7870.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7609.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7860.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7681.....	-	3+	+	-	-	-	3+	3+	-	-	-	-	3+	3+	+	-	-	-	-	2+	+	+	+	+	
7622.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7686.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7664.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7680.....	-	-	-	-	-	-	3+	3+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

¹ These serums were obtained in Utah on Sept. 28, 1920, from four recently recovered cases of tularemia which had received their infection in nature and from which *Bacterium tularense* had been isolated during their illness. The serums were heated at time of collection for 30 minutes at 56° C. and subsequently preserved by adding an equal amount of glycerin. In the lower dilutions of the no-antigen controls, these four serums were anticomplementary.

² Serums from laboratory cases 1 and 3 were taken on the day preceding the test, about 17 months and 3 months, respectively, after the onset of illness.

³ These control serums were from samples sent in for Wassermann tests.

TABLE II.—*Agglutination tests of serums from laboratory cases 1, 3, and 4, and six human controls, using Bacterium tularensis antigen G 32. Test made Apr. 29, 1921.*

Serum.	Date serums were obtained.	Serum dilutions.							Remarks.
		No serum.	1:10	1:20	1:50	1:100	1:500	1:1000	
Laboratory cases:									
Case 1.....	Jan. 19	—	+	+	+	+	—	—	Serum not heated. Do. Heated 56° ½ hour. Do. Serum not heated. Do.
Case 3.....	do.	—	+	+	+	—	—	—	
Case 1.....	Jan. 24	—	+	+	+	—	—	—	
Case 3.....	do.	—	+	+	+	—	—	—	
Case 3.....	Apr. 27	—	+	+	+	—	—	—	
Case 4.....	Apr. 22	—	+	+	+	—	—	—	
Control serums:									
No. 1.....	Apr. 26	—	—	—	—	—	—	—	Heated 56° ½ hour. Do. Do. Do. Do. Do.
No. 2.....	do.	—	—	—	—	—	—	—	
No. 3.....	do.	—	—	—	—	—	—	—	
No. 4.....	do.	—	—	—	—	—	—	—	
No. 5.....	do.	—	—	—	—	—	—	—	
No. 6.....	do.	—	—	—	—	—	—	—	

TABLE III.—*Comparison of complement fixation and agglutination tests made on laboratory cases 3, 4, and 5. Test made May 11, 1921. Antigen used, G 32.*

Serum.	Date collected.	Complement fixation.								
		Serum dilutions.								
		1:10	1:20	1:50	1:100	1:200	1:500	1:1000	1:2000	1:4000
Laboratory cases:										
Case 3.....	May 10	—	4+	4+	4+	4+	4+	—	—	—
Case 4.....	do.	—	4+	4+	4+	4+	2+	—	—	—
Case 5.....	do.	—	4+	4+	4+	4+	—	—	—	—
Control serums:¹										
A.....	do.	—	—	—	—	—	—	—	—	—
No. 1.....	do.	—	—	—	—	—	—	—	—	—
No. 2.....	do.	—	—	—	—	—	—	—	—	—

Serum.	Date collected.	Agglutination.						
		Serum dilutions.						
		1:10	1:20	1:50	1:100	1:200	1:500	1:1000	1:2000
Laboratory cases:								
Case 3.....	May 10	2+	2+	2+	2+	—	—	—
Case 4.....	do.	2+	2+	2+	2+	+	—	—
Case 5.....	do.	+	2+	2+	2+	+	—	—
Control serums:²								
A.....	do.	—	—	—	—	—	—	—
No. 1.....	do.	—	—	—	—	—	—	—
No. 2.....	do.	—	—	—	—	—	—	—

¹ No antigen in 1:10 dilution.

² Control serum A was from laboratory case 6 of our series 13 days after he began work with infected animals, but 67 days before he developed the disease.

TABLE IV.—Complement fixation test on serums of 5 laboratory cases of tularæmia, using 35 control serums. Antigen used, G 32. Test made June 15, 1921.

Serum.	Serum dilutions (no antigen in 1 : 10 dilution).							Results.	
	1 : 10.	1 : 20.	1 : 40.	1 : 100.	1 : 200.	1 : 400.	1 : 1,000.		1 : 2,000.
Laboratory cases:									
Case 1.....	—	4+	3+	+	+	—	—	—	Positive.
Case 2.....	—	4+	4+	3+	3+	+	—	—	Do.
Case 3.....	—	4+	4+	4+	4+	4+	—	—	Do.
Case 4.....	—	4+	4+	4+	4+	4+	+	—	Do.
Case 5.....	—	4+	4+	4+	3+	2+	—	—	Do.
Control serums:									
A ¹	—	—	—	—	—	—	—	—	Negative.
No. 1 ²	—	—	—	—	—	—	—	—	Do.
No. 2 ³	—	—	—	—	—	—	—	—	Do.
No. 3.....	—	—	—	—	—	—	—	—	Do.
No. 4.....	—	—	—	—	—	—	—	—	Do.
No. 5.....	—	—	—	—	—	—	—	—	Do.
No. 6 ⁴	4+	+	—	—	—	—	—	—	Negative (Ac). ⁷
No. 7 ⁵	—	—	—	—	—	—	—	—	Negative.
No. 8.....	—	—	—	—	—	—	—	—	Do.
No. 9.....	—	—	—	—	—	—	—	—	Do.
No. 10.....	—	4+	4+	4+	3+	—	—	—	Positive. ⁸
No. 11.....	—	—	—	—	—	—	—	—	Negative.
No. 12.....	—	—	—	—	—	—	—	—	Do.
No. 13.....	—	+	+	2+	+	—	—	—	Positive (?). ⁸
No. 14.....	—	—	—	—	—	—	—	—	Negative.
No. 15.....	—	—	—	—	—	—	—	—	Do.
No. 16.....	—	—	—	—	—	—	—	—	Do.
No. 17.....	—	—	—	—	—	—	—	—	Do.
No. 18 ⁶	+	4+	4+	4+	+	—	—	—	Positive. ⁸
No. 19.....	—	—	—	—	—	—	—	—	Negative.
No. 20.....	—	—	—	—	—	—	—	—	Do.
No. 21.....	—	—	—	—	—	—	—	—	Do.
No. 22.....	—	—	—	—	—	—	—	—	Do.
No. 23.....	—	—	—	—	—	—	—	—	Do.
No. 24.....	—	—	—	—	—	—	—	—	Do.
No. 25.....	+	+	+	—	—	—	—	—	Negative (Ac). ⁷
No. 26.....	—	—	—	—	—	—	—	—	Negative.
No. 27.....	—	—	—	—	—	—	—	—	Do.
No. 28.....	—	—	—	—	—	—	—	—	Do.
No. 29.....	—	3+	2+	+	—	—	—	—	Positive (?).
No. 30.....	+	—	—	—	—	—	—	—	Negative (Ac). ⁷
No. 31.....	+	+	—	—	—	—	—	—	Do.
No. 32.....	—	—	—	—	—	—	—	—	Negative.
No. 33.....	—	—	—	—	—	—	—	—	Do.
No. 34.....	2+	2+	3+	4+	4+	4+	—	—	Positive (?) Ac. ⁷

¹ Control serum A was taken 48 days after C. W. P. began work with infected animals. He developed tularæmia 32 days after this test.

² Control serum 1 is from C. W. C., who had a probable attack of tularæmia more than 10 years ago.

³ Control serums 2-5 were from other members of laboratory staff who have been slightly exposed to infection.

⁴ Control serum 6 was a high titre rabbit antityphoid serum.

⁵ The remainder of the serums are from two large local Government hospitals.

⁶ Control serum 18 was from a case of typhoid fever (in which *B. typhosus* was isolated), which, at this time, showed a positive Widal.

⁷ Ac=anticomplementary.

⁸ See Table V.

TABLE V.—*Agglutination tests to determine whether control serums 10, 13, and 18, found positive by the complement fixation test (see Table IV), would be negative by agglutination. Antigen used G 32. Test made June 16, 1921.*

Serum.	Serum dilutions.						Results.
	1:10	1:20	1:40	1:100	1:200	1:400	
Laboratory cases:							
Case 1.....	4+	4+	3+	+	—	—	Positive.
Case 2.....	4+	4+	3+	2+	—	—	Do.
Case 3.....	+	2+	4+	4+	2+	—	Do.
Case 4.....	4+	4+	4+	4+	3+	—	Do.
Case 5.....	+	3+	4+	3+	2+	—	Do.
Control serums:							
A.....	—	—	—	—	—	—	Negative.
No. 1.....	—	—	+	2+	—	—	Slightly positive (?).
No. 2.....	—	—	—	—	—	—	Negative.
No. 3.....	—	—	—	—	—	—	Do.
No. 4.....	—	—	—	—	—	—	Do.
No. 5.....	—	—	—	—	—	—	Do.
No. 10.....	—	—	—	—	—	—	Do.
No. 13.....	—	—	—	—	—	—	Do.
No. 18.....	—	—	—	—	—	—	Do.

TABLE VI.—*Agglutination test made Aug. 5, 1921, on serum of laboratory case 6 taken on the nineteenth day of his illness. This patient had furnished negative control serum A 51 and 87 days previously. (See Tables III, IV, and V.) All serums taken Aug. 5 and heated 30 minutes at 55° C. before using. Antigen used G 32.*

Serums.	Serum dilutions.							Results.
	No serum.	1:20	1:40	1:80	1:200	1:400	1:800	
Laboratory cases:								
Case 6.....	—	2+	3+	2+	2+	+	—	Positive.
Case 3.....	—	2+	2+	2+	+	—	—	Do.
Case 1.....	—	3+	3+	2+	+	—	—	Do.
Control serums:								
No. 1.....	—	—	—	—	—	—	—	Negative.
No. 2.....	—	—	—	—	—	—	—	Do.
No. 3.....	—	—	—	—	—	—	—	Do.
No. 4.....	—	—	—	—	—	—	—	Do.
No. 5.....	—	—	—	—	—	—	—	Do.
No. 6.....	—	—	—	—	—	—	—	Do.

RECORDS OF THE SMALL SICK-BENEFIT ASSOCIATION AS A SOURCE OF STATISTICS FOR THE FACTORY MEDICAL DEPARTMENT.¹

By DEAN K. BRUNDAGE, United States Public Health Service.

The keeping of adequate sickness records for the employees of an industrial establishment is no easy proposition. As a general rule the industrial physician finds it exceedingly difficult to obtain the fundamental information required for efficient administration of the factory health department. How, for example, can the ailments causing disability be ascertained for employees absent from work on account of illness? How can trustworthy sickness rates be obtained when such rates require as the dividend in the expression, *all cases*

¹ From the Statistical Office, United States Public Health Service.

lasting longer than a certain minimum length of time as, for example, all cases lasting longer than one day, or longer than two days, etc., and require as divisor the number of persons in the group under consideration?

The first difficulty has doubtless retarded the development of industrial morbidity statistics as much, if not more, than any other single factor. It is not an insurmountable obstacle, however, and becomes less of a problem the longer an illness lasts. When disability is continuous for several days or a week, a fairly accurate diagnosis generally is obtainable.

Both difficulties are largely obviated when some form of sickness insurance is provided for the employees of a company, for then a record must be kept of all cases of sickness and nonindustrial accidents lasting longer than a certain specified number of days called the waiting period. Since cases must be reported before benefits may be paid, an economic incentive insures the inclusion of practically all cases coming under the provisions of the association.²

In the reporting of cases a physician's certificate naming the ailment causing absence from work is almost always called for, so that fairly accurate diagnosis of disease generally may be assumed. Not only are the case reports of value, but what is of almost equal importance from the statistical standpoint is the fact that information concerning age, sex, nationality, occupation, and the duration of membership usually is shown on the application blank or membership register. Personnel data of this sort are of fundamental importance in studying and comparing the morbidity experience of different population groups.

With a record of the composition of membership and of certain cases of disability occurring among members, disease incidence and severity rates can be computed for different age, sex, and nationality groups and for different occupations, and the important factors affecting the frequency and duration of disability can be analyzed and evaluated. The industrial physician in a plant having an organization for sickness insurance therefore need not even temporarily dispense with morbidity statistics. The material available in the office of the benefit association can be used to advantage until a more complete sickness record system is devised for the study of industrial hygiene in its broader aspects. Exception to this statement is to be taken in the case of the small association composed of only a fraction of the plant personnel; for if the records of the association are to serve as a reliable index of the health of the entire working force, the membership of associations of less than 1,000 persons must constitute a high percentage of the number employed.

² Not all illnesses, however, are included, since most associations do not pay benefits for the venereal diseases, the results of intoxication, and for certain other causes of disability.

Assuming, however, that an adequate proportion of the employees of an establishment belong to the factory sick-benefit association, what useful information is to be obtained by analyzing the association's records?

An attempt is made in the following pages to answer this question in a specific instead of a general way. An analysis is presented of the monthly reports of a small employee sick-benefit association cooperating with the Public Health Service in the study of industrial morbidity. The association has a waiting period of four calendar days, and benefits may be paid for a period not longer than 52 weeks. A small association was selected in order to include in the problem of proper analysis the difficulty of dealing with small numbers. During 1920 the average membership was 540, which constituted about 90 per cent of the average number employed by the company during the year.

THE PROBLEM DEFINED.

When a condition or a situation has been evaluated and the facts have been expressed in figures, the problem may be considered as defined. Table I and Figure 1 afford a definition of the preventive problem of the industrial physician or nurse in the establishments covered by the reports of the employee sick-benefit association under consideration.

TABLE I.—*Diseases causing disability among the 540 members of an employee sick-benefit association during 1920: Number of cases and calendar days lost from disabilities lasting 5 days or longer.*

Rank.	Diseases and conditions causing disability. ^a	Calendar days lost in 1920.	Number of cases which began in 1920.	Calendar days lost from cases which began in 1920.	Calendar days lost per case.
	All diseases and conditions.....	2,526	154	2,538	16.5
1	Influenza and grippe.....	761	69	756	11.0
2	Appendicitis.....	217	5	229	45.8
3	Rheumatism.....	216	4	164	41.0
4	Nonindustrial accidents.....	107	10	107	10.7
5	Purulent infection (blood poison).....	100	4	100	25.0
6	Tonsillitis, sore throat, and quinsy.....	97	9	93	10.3
7	Heart trouble.....	82	2	82	41.0
8	Hernia.....	67	2	67	33.5
9	Colds.....	67	7	91	13.0
10	Skin diseases.....	65	8	65	8.1
11	Mumps.....	54	5	54	10.8
12	Lumbago and myalgia.....	49	5	49	9.8
13	Pneumonia.....	40	1	40	40.0
14	Stomach and intestinal disorders.....	35	4	85	21.3
15	Pleurisy.....	24	4	24	6.0
16	Neuralgia and neuritis.....	21	2	19	9.5
	All others.....	524	13	513	39.5

^a Includes nonindustrial accidents causing disability for 5 days or longer.

The calendar days lost in 1920 from sickness and nonindustrial accidents which disabled for 5 days or longer were 2,526, or 4.68 calendar days per person. Because all disabilities of less than 5 days' duration are excluded, it is impossible at this time to make

comparisons with illness rates which include all lost time. An estimate of the complete morbidity rate could be made by ascertaining from the sickness experience of other companies what percentage of the total lost time ordinarily is due to illnesses of less than 5 days' duration, if the available data were not so scanty. This is but one illustration of the extent to which the field of industrial morbidity statistics lies untilled. With the material so meager it has been impossible to establish with any degree of accuracy the average or normal morbidity rate among industrial employees, and only in a few isolated instances have any attempts been made to measure the effect

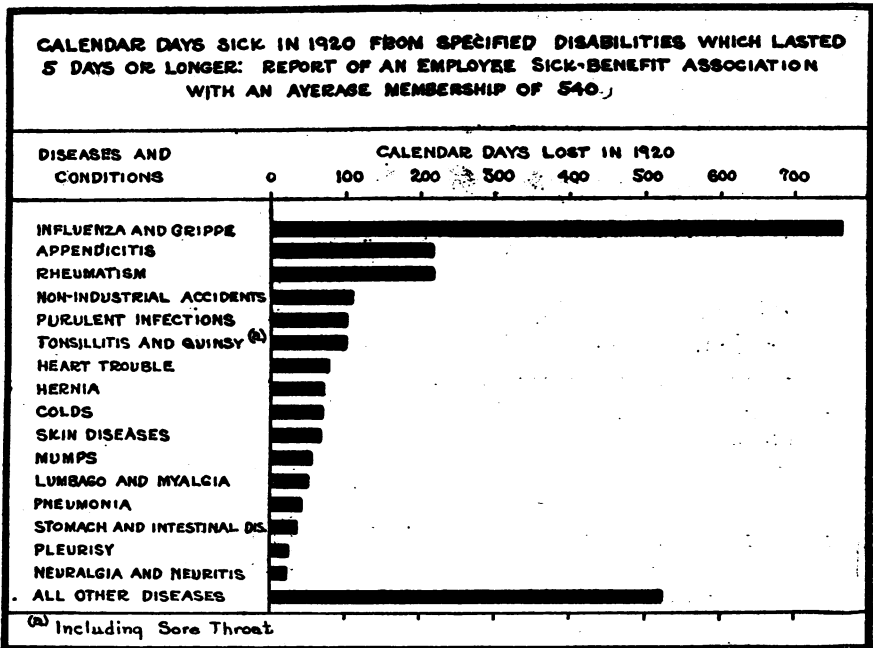


Fig. 1.

of industrial medical service. Recently a few statements have appeared concerning the accomplishment of establishment health work, as, for example: "Our statistics show a consistent reduction year by year of the average disability of nine days per man per year lost time to a little over four days per man, notwithstanding various epidemics that in recent years have resulted in such great morbidity."³ The Norton Company, of Worcester, Mass., claims a 75 per cent reduction in loss of time on account of illness since the establishment of their medical department.⁴

³ C. H. Lemon, chief surgeon, the Milwaukee Electric Railway & Light Co., in "Hospital Management" or October, 1920, p. 66.

⁴ Stated by L. W. Wallace in an address on "The Conservation of Labor," delivered before the American Engineering Council, at Washington, and printed in "The American Machinist" (New York).

But even if comparable morbidity statistics are lacking, the table and graph showing causes of disability in one industrial group are not without interest and value. A point of significance which the table brings out is the large proportion of lost time due to illnesses that are usually included in the category of preventable diseases.

SICKNESS ACCORDING TO MILLS.

The membership of the sick benefit association under discussion is composed of employees of four different paper manufacturing plants, all in the same community, with the exception of Mill C, which is located in a neighboring city about 20 miles distant. Table II shows the severity rates for specific diseases in each of these mills.⁵

TABLE II.—Sickness severity rates by mills for the principal diseases causing disability among the 540 members of an employee sick-benefit association during 1920.^a

Rank.	Diseases and conditions causing disability.	Calendar days lost per person in 1920.				
		All mills.	Mill A.	Mill B.	Mill C.	Mill D.
	All diseases and conditions.....	4.68	3.70	7.94	2.44	5.97
1	Influenza and grippe.....	1.41	1.40	1.43	.70	3.26
2	Appendicitis.....	.40	.28	1.07		
3	Rheumatism.....	.40	.45	.20	.55	
4	Nonindustrial accidents.....	.20	.06	.38	.12	.71
5	Purulent infection (blood poison).....	.19	.02	.33	.48	
6	Tonsillitis, sore throat, and quinsy.....	.18	.10	.42		.40
7	Heart trouble.....	.15		.61		
8	Hernia.....	.12	.14	.22		
9	Colds.....	.12	.12	.12	.18	
10	Skin diseases.....	.12	.16	.12		.16
11	Mumps.....	.10	.08	.21	.06	
12	Lumbago and myalgia.....	.09	.17	.04		
13	Pneumonia.....	.07				1.05
14	Stomach and intestinal disorders.....	.07	.11		.06	
15	Pleurisy.....	.05	.60			
16	Neuralgia and neuritis.....	.04	.68			
	All others.....	.97	.44	2.69	.29	.39
	Number of persons.....	540	265	134	104	38

^a Includes only those cases of sickness and nonindustrial accidents which disabled for five days or longer.

It will be noticed that there was considerable variation in the sickness rates of the four mills. Since these variations might have been due to differences in the severity of the influenza epidemic at each mill, the rate for influenza and grippe should be deducted from the rate for all diseases. The days of disability per person then become: Mill A, 2.30; Mill B, 6.51; Mill C, 1.74; Mill D, 2.71. The only conspicuous difference now is the high rate at Mill B. What diseases, then, were responsible for the excessive disability at this plant?

The table shows a considerable time loss on account of appendicitis at Mill B, but since the relatively high incidence of this disease was probably accidental and had no relation to employment, the rate for appendicitis, also, should be deducted for comparative purposes.

⁵ The sickness severity rate is usually expressed as the average number of days of disability from a certain disease or from all diseases per year per person included in the group or population under consideration.

When this is done, it is found that Mill B still has more than twice as much disability as any of the other three mills. From the table it is seen that rheumatism, colds, and skin diseases were not above the average at this plant; in fact, that none of the diseases listed were conspicuously above the average except heart trouble. In the group called "All others" is to be found most of the excess disability, indicating that the situation does not call for the elimination of a few specific diseases at this plant, but that the underlying causes of the high rate of sickness from a miscellaneous collection of diseases should be investigated. Possibly the age of the employees to some extent accounts for the situation. We know that under normal conditions, age is the largest single factor affecting the amount of time lost on account of illness. Since no data were collected on the age distribution of the membership and the age of persons sick, no adjustment for the age factor can be made in the present instance, but in a more complete analysis, this question should by all means be taken into account.

DISABILITY ACCORDING TO OCCUPATION.

The industrial physician is particularly interested in measuring the effect of work and working conditions upon the employees whom he endeavors to keep physically fit. In Table III are presented the number of new cases during the year and the amount of disability according to occupation. It is not intended even to suggest that this table measures adequately the influence of occupation upon health. It would only do so if all the persons considered were of the same physical and social status, the same age, if the extra-industrial environment were identical, and if transfers from one occupation to another during the year could be taken into account. Furthermore, it will be noticed that the number of persons engaged in some of the occupations specified is exceedingly small, a fact which accounts for some of the wide differences in the number of days lost per person in different occupations. The rate for the painters, for example, was 50 times the rate for the oilers; but inasmuch as there were only eight painters and five oilers, the figures of course greatly exaggerate the real difference in the health status of the two groups. With only a year's morbidity experience for a very small number of persons, most of the rates are not significant from the standpoint of representing morbidity that could be considered as typical of the group. Purely chance phenomena could account for wide fluctuations in the illness rates from year to year when a very small number of persons is involved. But for the purpose of furnishing a lead to the industrial physician, of the occupations or conditions of work which appear to be contributing to the disability occurring, morbidity rates for the principal occupations are of considerable value. It may be found in using the records of certain sick-benefit societies

that the leads are not always dependable, on account of the small number of persons involved; but if upon investigation it is found that the conditions of work do not account for the sickness occurring, it is important to establish that fact. In such cases the progressive employer will want to extend his activities beyond the confines of his factory and to cooperate with municipal authorities and civic associations to right whatever injurious conditions are found to be responsible for the excessive disability discovered.

TABLE III.—Disabilities lasting 5 days or longer, by occupation: Number of new cases and calendar days lost per person by the membership of an employee sick-benefit association during 1920.

Occupation.	Number of persons.	Number of new cases in 1920.						
		All diseases.	Rheumatism. ^a	Respiratory. ^b	Influenza and grippe.	Skin infections.	Hernia.	All others. ^c
All occupations.....	540	154	11	12	69	8	2	52
1. Yardmen (laborers).....	78	23	3	2	14	1		8
2. Wood-room workers.....	29	8			5			3
3. Firemen.....	14	2	1					1
4. Grinder men and block pilers.....	35	5	2		3			
5. Roll skimmers and wet-machine tenders.....	17	4		1	2		1	
6. Beater men.....	44	17		3	6	1		7
7. Paper-machine hands.....	85	20	2	1	5	1	1	10
8. Roll finishers and loaders.....	33	12	1	1	1			9
9. Oilers.....	5	1	1					
10. Painters.....	8	5			3			2
11. Cleaners.....	10	5		1	1			3
12. Paper-box machine hands.....	22	10		1	5	1		3
13. Mechanics and repair men.....	40	12		1	7	2		2
14. Clerks, foremen, and superintendents.....	57	10			8			2
15. Other occupations.....	50	11		1	6	2		2
16. All female workers.....	13	4	1		3			

Occupation.	Number of persons.	Calendar days lost per person in 1920.						
		All diseases.	Rheumatism. ^a	Respiratory. ^b	Influenza and grippe.	Skin infections.	Hernia.	All others. ^c
All occupations.....	540	4.68	0.53	0.24	1.41	0.12	0.13	2.25
1. Yardmen (laborers).....	78	4.86	.40	.14	2.01	.12		2.19
2. Wood-room workers.....	29	5.83			2.24			3.59
3. Firemen.....	14	3.29	2.86					.43
4. Grinder men and block pilers.....	35	1.63	.66		.97			
5. Roll skimmers and wet-machine tenders.....	17	4.41		1.53	1.18		1.70	
6. Beater men.....	44	5.39		.34	2.05	.14		2.86
7. Paper-machine hands.....	85	3.88	1.16	.06	.70	.12	.45	1.39
8. Roll finishers and loaders.....	33	5.91	1.73	.24	.52			3.42
9. Oilers.....	5	1.00	1.00					
10. Painters.....	8	50.00	2.37	.50	4.63			42.50
11. Cleaners.....	10	16.10		.70	1.60			13.80
12. Paper-box machine hands.....	22	6.50		1.82	2.36	.27		2.05
13. Mechanics and repair men.....	40	2.83	.05	.15	1.70	.40		.53
14. Clerks, foremen, and superintendents.....	57	1.72			1.42			.30
15. Other occupations.....	50	1.72		.18	.84	.36		.34
16. All female workers.....	13	2.46	.77		1.69			

^a Rheumatism (acute and chronic), lumbago, myalgia, neuralgia, and neuritis.

^b Not including influenza and grippe, nor tuberculosis.

^c Including nonindustrial accidents.

In the present instance (see Table III) the painters experienced by far the greatest amount of incapacitating illness. The rate of 42½ days of disability per person in this group for "all other" diseases was due, for the most part, to a case of lead poisoning which caused one person's absence from work for a year. The painters also lost considerable time in 1920 on account of rheumatism, influenza, and grippe, and other respiratory diseases. A rate so tremendous directs attention strikingly to the ill health of an occupational group and impresses one with the need of careful study and well-advised action for the purpose of correcting whatever conditions are found to be either wholly or partially responsible for the disability.

SEASONAL VARIATION IN DISEASE INCIDENCE.

Not only is it desirable to find out *where* disease occurs, but also to know *when* specific illnesses most frequently begin is information which the factory health organization wants. In Table IV and Figure 2, the seasonal variation in the occurrence of cases is shown, the well-defined peak being due, of course, to the influenza epidemic of 1920.

TABLE IV.—Disabilities lasting 5 days or longer by month of onset: Frequency of diseases specified among 540 members of an employee sick-benefit association during 1920.

Month.	Number of persons.	Number of new cases in 1920.						
		All dis-eases.	Rheu-ma-tism. ^a	Respi-ratory. ^b	Influ-enza and grippe.	Skin infec-tions.	Hernia.	All others. ^c
All months.....	540	154	11	12	69	8	2	52
January.....	457	23	2	.....	14	.....	2	5
February.....	487	50	1	3	39	.....	.....	7
March.....	486	20	.....	1	9	.....	.....	10
April.....	494	5	.....	.....	.....	.....	.....	4
May.....	542	5	4	.....	.....	.....	.....	1
June.....	558	4	.....	.....	.....	1	.....	3
July.....	548	5	1	.....	.....	1	.....	3
August.....	504	7	.....	1	.....	1	.....	5
September.....	571	5	.....	.....	.....	1	.....	4
October.....	583	6	.....	1	1	1	.....	3
November.....	596	10	3	.....	2	2	.....	3
December.....	599	14	.....	5	4	1	.....	4

Month.	Number of persons.	Number of new cases per 1,000 persons in 1920.						
		All dis-eases.	Rheu-ma-tism. ^a	Respi-ratory. ^b	Influ-enza and grippe.	Skin infec-tions.	Hernia.	All others. ^c
All months.....	540	285.2	20.4	22.2	127.8	14.8	3.7	96.3
January.....	457	50.3	4.4	.....	30.6	.....	4.4	10.9
February.....	487	102.7	2.1	6.2	80.1	.....	.....	14.4
March.....	486	41.2	.....	2.1	18.5	.....	.....	20.6
April.....	494	10.1	.....	2.0	.....	.....	.....	8.1
May.....	542	9.2	7.4	.....	.....	.....	.....	1.8
June.....	558	7.2	.....	.....	.....	1.8	.....	5.4
July.....	548	9.1	1.8	.....	.....	1.8	.....	5.5
August.....	564	12.4	.....	1.8	.....	1.8	.....	8.9
September.....	571	8.8	.....	.....	.....	1.8	.....	7.0
October.....	583	10.3	.....	1.7	1.7	1.7	.....	5.1
November.....	596	16.8	5.0	.....	3.4	3.4	.....	5.0
December.....	599	23.4	.....	8.3	6.7	1.7	.....	6.7

^a Rheumatism, acute and chronic, lumbago, myalgia, neuralgia, and neuritis.

^b Not including influenza and grippe, nor tuberculosis.

^c Including nonindustrial accidents.

The accompanying tables indicate what diseases caused the greatest amount of disability in the organization as a whole, in each mill and in the principal occupations. They show that if influenza and gripe, appendicitis, and rheumatism could have been eliminated, the rate would have been 2.47 instead of 4.68 days of disability per person. A saving of 10 per cent of the lost working time would have added about \$1,000 to the wages of the group, as the demand for labor was active in this community throughout the year 1920. A

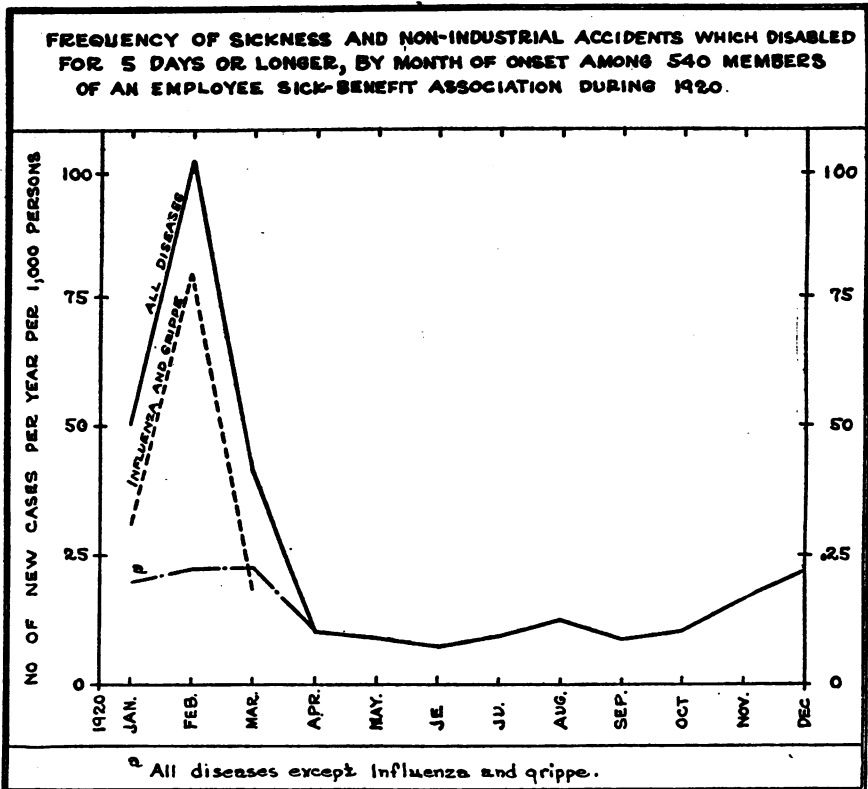


Fig. 2.

10 per cent reduction in the number of days of disability would have saved the association several hundred dollars in sickness benefits and medical aid, and would have added to the profits of the company.⁶ The tables therefore afford some idea of the economic loss which the disability from sickness and nonindustrial accidents occasioned and the saving in dollars which well-organized factory health work might reasonably achieve.

The tabulation of disease incidence by months tells the factory health department *when* corrective measures might be instituted to

⁶ For a discussion of the cost of absenteeism to the employer, the reader is referred to "Control of Absenteeism," by P. Sargent Florence, in the Administration Magazine for May, 1921.

the best advantage, and the analysis by plants and occupations shows *where* these diseases occurred, suggesting the groups to be studied in order to effect the greatest reduction in the disability rate.

These few tables do not by any means exhaust the possibilities for obtaining useful information from employee sick benefit association records. Other factors in disability, such as age, nationality, marital status, physical defects, etc., doubtless could be easily incorporated in the records of many sick benefit societies and used in a cooperative study of these factors by several sick benefit associations or by a group of associations in cooperation with the Public Health Service.

The exclusion of all cases which do not last as long as the waiting period of course prevents knowledge of the complete story, but a study of the more serious cases can not fail to yield information of value to the whole factory organization. To the plant physician such tables are a guide and a challenge.

CONTAMINATED OYSTERS SOURCE OF TYPHOID EPIDEMIC AT HAVRE, FRANCE.

The following account of an outbreak of typhoid fever at Havre, France, is taken from "Le Petit Havre" of January 21, 1922.

During the last four months of 1921 there was a marked increase in the number of cases of typhoid fever at Havre, amounting to over five times the number of cases reported during the preceding eight months. The cases were disseminated throughout the city, not being confined to any particular quarter.

The source of the outbreak was definitely traced by the Municipal Bureau of Hygiene to the consumption of contaminated oysters. It was ascertained that oysters from recognized sanitary oyster beds were being "freshened up" by immersion in sea water from the inner and outer harbor, both of which were known to be contaminated by impurities from the city. This practice was officially prohibited on December 24, 1921, and from that date to January 16, 1922, the number of cases fell to 6 as against 35 for the whole month of December. The records of the bureau of hygiene for the year 1921 show the occurrence of typhoid fever in Havre by months as follows: January, 0; February, 4; March, 5; April, 2; May, 5; June, 2; July, 1; August, 3; *September*, 17; *October*, 44; *November*, 26; *December*, 35—122 cases (with 28 deaths) from September to December as against 22 cases during the preceding eight months.

During the war, when oyster fishing was prohibited, the number of typhoid fever cases in the civilian population did not exceed seven or eight per annum. From 1918 the number increased, particularly during the autumn and winter (oyster season).

The Commission of Hygiene of the Medical Association of Havre, after a study of the conditions obtaining at the time of the epidemic, made the following statements:

1. The drinking water was not the cause.
2. The epidemic was caused by the consumption of oysters contaminated by being "freshened up" in the waters of the inner or outer harbor, which were known to be contaminated.
3. With 90 per cent reduction in the consumption of oysters, the epidemic was arrested.
4. The persons mostly attacked were women and children and men not vaccinated during the war, demonstrating the efficacy of anti-typhoid vaccination.

COURT DECISION ON QUARANTINE OF VENEREAL DISEASES.

PERSON SUSPECTED OF BEING VENEREALLY INFECTED NOT ENTITLED TO JUDICIAL HEARING PRIOR TO TIME OF TAKING AND DETENTION.

In habeas corpus proceedings brought before him, the chief justice of the Supreme Court of Montana has decided¹ that a person, who was detained by order of a health officer because reasonably suspected of being venereally infected, was not entitled to a judicial hearing prior to the time of taking and detention. The following is the opinion of the chief justice:

The complainant herein is held by the sheriff of Missoula County under an order of the health officer of the city and county of Missoula made under the quarantine regulations established by the State board of health, under chapter 106 of the laws of the sixteenth legislative assembly, on the ground that, according to the information of the health officer, she is affected with gonorrhoea, a disease declared by the statute to be contagious, communicable, and therefore dangerous to the public health. She has applied to me for a writ of habeas corpus to obtain her release on the grounds (1) that she was not granted a judicial hearing prior to the time she was taken and detained by the sheriff, and (2) that the facts do not exist showing that she is affected with the disease, and so conducts herself as to be dangerous to the public health.

1. Counsel have presented briefs in support of their several contentions, but I shall not undertake to enter here upon an examination of the numerous decisions cited by them. There is perhaps no authority to be found at this late day which denies that the legislature, under its police power, may enact laws authorizing the establishment of quarantine regulations and requiring the detention of persons affected with contagious diseases dangerous to the public health, without resort to a preliminary judicial proceeding to determine the character of the disease and the facts constituting the danger to public health. Under the statute before us the proper health officer may issue his warrant directing the arrest, without notice, of any person reasonably suspected of having a communicable disease, and his detention for a time being and until the existence and character of the disease can be determined; and in case his course of conduct or condition is such, in the judgment of the health officer, as to render it necessary, to protect the public health, to isolate such person until he recovers from the disease or until he may be released without further danger to the public. If, however, after his arrest, such person challenges the right of the authorities to continue his detention, he is entitled to have its legality inquired into upon

¹ *Ex parte Caselli.*

habeas corpus. The existence of the power of the health officer to detain anyone rests upon the existence of the facts making such detention necessary. The law does not deprive any citizen of the right to be heard on this question, but he is not entitled to a hearing in the first instance. "The detention of persons affected with or suspected of contagious disease in quarantine presents one of the cases where the police power is literally the law of self-defense—a paramount necessity." (Freund's Police Power, sec. 446.) If the contention of counsel for the complainant should be upheld, this law of self-defense—necessity—would be rendered entirely inoperative while the judicial proceeding would be in progress. In my opinion, the fourteenth amendment to the Constitution of the United States and sections 6 and 2 of article III of the Constitution of the State of Montana, relied on by complainant's counsel, have no application to this class of cases. I can not conclude that the makers of the two constitutions ever contemplated a situation where a State would be rendered powerless to protect itself by prompt and speedy action from the spread of a contagion which by neglect might reach to and affect any considerable number of people in a community.

2. Counsel for the State insists that the finding of the county health officer in such a case, declaring that the detained citizen is afflicted with a contagious disease and is therefore dangerous to the public health, is conclusive and not subject to review by the courts. There is some conflict of authority on this subject, but the great weight of it supports the rule stated at the outset of the opinion, namely, that the law does not tolerate the arrest and detention of any citizen without the right to challenge the existence of the facts upon which he is held.

The facts introduced at the hearing established clearly that the complainant is affected with gonorrhoea. This was ascertained by scientific means by the bacteriologist employed by the State board of health upon the application of the health officer of Missoula County. The only uncertainty I encounter upon the whole case is whether the complainant, in her present condition, would, in fact, be dangerous to the health of the community in which she lives if she were allowed to go at large. The testimony is not satisfactory, but it does disclose circumstances which justify the inference that the complainant, within a comparatively short time prior to her arrest, had been plying her trade of prostitute; that at one time during the past year she was found by the police occupying the same bed with a man other than her husband at a place which bears ill repute; that she has been found in the same place at other times since; that she has been a constant associate of other prostitutes; and that she has recently been found upon the streets of Missoula at all times of the night at places where women not engaged in prostitution would not under any circumstances be found. Upon this evidence I am constrained to the conclusion that the health officer was justified in directing her detention until she shall become cured or until she may be safely allowed to go at large.

I therefore discharge the writ and remand the complainant to the custody of the sheriff, to be held by him until she may be released according to law.

DEATHS DURING WEEK ENDED FEB. 11, 1922.

Summary of information received by telegraph from industrial insurance companies for week ended Feb. 11, 1922, and corresponding week, 1921. (From the Weekly Health Index, Feb. 14, 1922, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Feb. 11, 1922.	Corresponding week, 1921.
Policies in force.....	48, 908, 095	45, 626, 780
Number of death claims.....	10, 311	8, 364
Death claims per 1,000 policies in force, annual rate.....	11.0	9.6

Deaths from all causes in certain large cities of the United States during the week ended Feb. 11, 1922, infant mortality, annual death rate, and comparison with corresponding week of 1921. (From the Weekly Health Index, Feb. 14, 1922, issued by the Bureau of the Census, Department of Commerce.)

City.	Estimated population July 1, 1921.	Week ended Feb. 11, 1922.		Annual death rate per 1,000, corresponding week, 1921.	Deaths under 1 year.		Infant mortality rate, week ended Feb. 11, 1922. ³
		Total deaths.	Death rate. ¹		Week ended Feb. 11, 1922.	Corresponding week, 1921.	
Total.....	27,483,800	8,339	15.8	13.7	1,103	1,058	.....
Akron, Ohio.....	208,435	27	6.8	5.5	7	7	74
Albany, N. Y.....	115,071	49	22.2	20.8	6	2	135
Atlanta, Ga.....	207,473	69	17.3	16.6	8	13	.....
Baltimore, Md.....	750,864	218	15.1	18.1	20	38	56
Birmingham, Ala.....	186,133	58	16.2	13.2	13	6	.....
Boston, Mass.....	757,694	219	15.1	13.8	29	23	78
Bridgeport, Conn.....	* 143,555	41	14.9	10.8	4	1	50
Buffalo, N. Y.....	519,608	140	14.1	13.0	19	21	75
Cambridge, Mass.....	110,444	23	10.9	10.4	3	2	55
Camden, N. J.....	119,672	33	14.4	17.9	6	7	92
Chicago, Ill.....	2,780,655	693	13.0	13.3	85	134	.....
Cincinnati, Ohio.....	403,418	141	18.2	14.5	11	14	73
Cleveland, Ohio.....	831,138	158	9.9	12.8	19	32	49
Columbus, Ohio.....	245,358	71	15.1	15.5	7	7	74
Dallas, Tex.....	165,282	49	15.1	12.0	4	6	.....
Dayton, Ohio.....	* 152,559	33	11.3	9.2	3	3	51
Denver, Colo.....	263,152	89	17.6	13.9	8	9	.....
Detroit, Mich.....	1,070,450	248	12.1	10.2	57	45	110
Fall River, Mass.....	120,668	41	17.7	16.9	10	11	140
Fort Worth, Tex.....	111,423	30	14.0	.....	3	.....	.....
Grand Rapids, Mich.....	141,197	38	14.0	12.2	2	2	33
Houston, Tex.....	144,340	31	11.2	11.9	4	2	.....
Indianapolis, Ind.....	325,632	128	20.5	10.2	15	13	114
Jersey City, N. J.....	302,788	107	18.4	15.7	12	14	77
Kansas City, Kans.....	103,884	31	15.6	13.1	8	9	185
Kansas City, Mo.....	336,157	102	15.8	15.2	11	20	.....
Los Angeles, Calif.....	614,160	214	18.2	15.4	17	14	71
Louisville, Ky.....	236,083	91	20.1	12.1	5	5	54
Lowell, Mass.....	113,757	34	15.6	12.8	6	5	101
Memphis, Tenn.....	165,656	65	20.5	13.2	19	2	.....
Milwaukee, Wis.....	468,386	110	12.2	11.7	21	22	103
Minneapolis, Minn.....	392,815	102	13.5	13.0	6	16	33
Nashville, Tenn.....	122,036	30	12.8	16.2	2	5	.....
New Bedford, Mass.....	125,012	36	15.0	20.0	7	12	104
New Haven, Conn.....	167,007	51	15.9	11.9	4	6	49
New Orleans, La.....	394,657	146	19.3	20.1	24	22	.....
New York, N. Y.....	5,751,867	2,067	18.7	13.3	297	209	115
Newark, N. J.....	424,885	128	15.7	11.7	17	12	75
Norfolk, Va.....	121,230	22	9.5	13.8	1	4	18
Oakland, Calif.....	226,472	57	13.1	11.7	3	5	38
Omaha, Nebr.....	197,066	57	15.1	12.7	6	6	65
Paterson, N. J.....	137,463	63	23.9	10.6	8	3	123
Philadelphia, Pa.....	1,866,212	562	15.7	15.8	87	82	103
Pittsburgh, Pa.....	602,452	225	19.5	16.4	23	30	74
Portland, Oreg.....	264,859	67	13.2	11.0	8	11	79
Providence, R. I.....	239,645	69	15.0	14.8	16	9	127
Richmond, Va.....	175,686	59	17.5	15.1	2	7	24
Rochester, N. Y.....	305,229	69	11.8	15.9	8	20	62
St. Louis, Mo.....	786,164	217	14.4	14.3	13	26	.....
St. Paul, Minn.....	237,781	69	15.1	11.4	12	4	113
Salt Lake City, Utah.....	121,595	45	19.3	14.2	3	3	45
San Francisco, Calif.....	520,546	106	16.6	13.1	15	7	87
Seattle, Wash.....	* 315,312	76	12.6	8.4	7	7	59
Spokane, Wash.....	104,442	43	21.5	18.0	4	3	85
Springfield, Mass.....	135,877	26	10.0	13.4	3	2	45
Syracuse, N. Y.....	177,265	59	17.4	17.1	8	8	168
Toledo, Ohio.....	253,696	55	11.3	14.0	6	7	59
Trenton, N. J.....	122,760	70	29.7	13.2	14	4	214
Washington, D. C.....	* 437,571	140	16.7	11.7	15	10	86
Wilmington, Del.....	113,408	32	14.7	21.6	8	8	156
Worcester, Mass.....	184,972	85	24.0	14.7	13	8	141
Yonkers, N. Y.....	103,324	32	16.1	14.1	8	5	167
Youngstown, Ohio.....	139,432	34	12.7	9.7	6	6	79

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births—based on deaths under 1 year for the week and estimated births for 1921. Cities left blank are not in the registration area for births.

³ Enumerated population Jan. 1, 1920.

PREVALENCE OF DISEASE.

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

UNITED STATES.

CURRENT STATE SUMMARIES.

Telegraphic Reports for Week Ended Feb. 18, 1922.

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

ALABAMA.		CALIFORNIA—continued.	
	Cases.	Influenza:	Cases.
Chicken pox.....	58	Alameda.....	209
Diphtheria.....	12	Benicia.....	70
Hookworm disease.....	5	Berkeley.....	490
Influenza.....	29	Los Angeles County.....	94
Malaria.....	30	Oakland.....	184
Ophthalmia neonatorum.....	1	Petaluma.....	75
Pollagra.....	2	Pinole.....	54
Pneumonia.....	16	Sacramento.....	89
Scarlet fever.....	7	San Francisco.....	1,034
Smallpox.....	51	San Mateo.....	81
Tuberculosis.....	6	Santa Maria.....	51
Typhoid fever.....	16	Yolo County.....	92
		Scattering.....	1,783
		Lethargic encephalitis—Los Angeles.....	1
		Smallpox:	
		San Jose.....	23
		Scattering.....	65
		Typhoid fever.....	5
ARKANSAS.		COLORADO.	
		(Exclusive of Denver.)	
Chicken pox.....	35	Chicken pox.....	30
Diphtheria.....	2	Diphtheria.....	24
Influenza.....	158	Influenza.....	17
Malaria.....	15	Measles.....	4
Measles.....	2	Mumps.....	8
Pellagra.....	3	Ophthalmia neonatorum.....	1
Pneumonia.....	1	Pneumonia.....	43
Scarlet fever.....	7	Scarlet fever.....	63
Smallpox.....	4	Septic sore throat.....	1
Trachoma.....	1	Smallpox.....	32
Tuberculosis.....	13	Tuberculosis.....	24
Typhoid fever.....	5	Typhoid fever.....	6
Whooping cough.....	1	Whooping cough.....	1
CALIFORNIA.			
Cerebrospinal meningitis:			
Kern County.....	1		
San Francisco.....	1		
San Jose.....	1		

CONNECTICUT.		GEORGIA—continued.	
	Cases.		Cases.
Chicken pox.....	53	Measles.....	8
Diphtheria.....	54	Mumps.....	7
German measles.....	20	Paratyphoid fever.....	1
Influenza:		Pneumonia.....	39
Fairfield County.....	145	Scarlet fever.....	15
Hartford County.....	361	Septic sore throat.....	12
Litchfield County.....	10	Smallpox.....	56
Middlesex County.....	678	Tuberculosis (all forms).....	16
New Haven County.....	66	Typhoid fever.....	11
New London County.....	49	Whooping cough.....	18
Tolland County.....	1		
Windham County.....	15	ILLINOIS.	
Lethargic encephalitis.....	4	Cerebrospinal meningitis:	
Measles:		Chicago.....	2
Glastonbury.....	15	Chicago Heights.....	1
Hartford.....	31	Ogle County—Lynnville Township.....	1
New Haven.....	34	Diphtheria:	
Stamford.....	14	Chicago.....	147
Scattering.....	43	Scattering.....	119
Mumps.....	13	Influenza.....	633
Ophthalmia neonatorum.....	1	Lethargic encephalitis:	
Pneumonia (lobar).....	58	Chicago.....	2
Scarlet fever:		Oak Park.....	1
Bridgeport.....	14	Pneumonia.....	446
New Canaan.....	9	Poliomyelitis:	
New Haven.....	13	Lee County—Palmyra Township.....	1
Scattering.....	47	Scarlet fever:	
Septic sore throat.....	1	Chicago.....	153
Smallpox:		Du Page County—Lisle Township.....	24
Bridgeport.....	10	Rockford.....	9
Scattering.....	7	Scattering.....	199
Tuberculosis (all forms).....	21	Smallpox:	
Typhoid fever.....	2	Peoria.....	11
Whooping cough.....	18	Scattering.....	39
		Typhoid fever.....	21
		Whooping cough.....	63
		INDIANA.	
DELAWARE.		Cerebrospinal meningitis:	
Chicken pox.....	27	Knox County.....	1
Diphtheria.....	6	Lake County.....	3
Influenza.....	2	Diphtheria.....	70
Measles.....	7	Rabies in animals.....	1
Mumps.....	1	Scarlet fever.....	116
Pneumonia.....	3	Smallpox.....	28
Scarlet fever:		Typhoid fever.....	2
Newark.....	9		
Wilmington.....	73	IOWA.	
Scattering.....	17	Diphtheria.....	23
Tuberculosis.....	4	Scarlet fever.....	92
Typhoid fever.....	1	Smallpox.....	43
		KANSAS.	
FLORIDA.		Cerebrospinal meningitis.....	1
Diphtheria.....	26	Chicken pox.....	87
Influenza.....	123	Diphtheria.....	78
Malaria.....	4	German measles.....	1
Pneumonia.....	9	Influenza.....	480
Poliomyelitis.....	1	Measles.....	9
Scarlet fever.....	4	Mumps.....	18
Smallpox.....	6	Pneumonia.....	110
Typhoid fever.....	9	Poliomyelitis.....	1
		Scarlet fever.....	164
		Smallpox.....	59
		Tuberculosis.....	38
GEORGIA.		Typhoid fever.....	3
Cerebrospinal meningitis.....	1	Whooping cough.....	11
Chicken pox.....	19		
Diphtheria.....	12		
Dysentery (amebic).....	1		
Hookworm disease.....	18		
Influenza.....	128		
Malaria.....	9		

LOUISIANA.	
	Cases.
Diphtheria.....	20
Influenza.....	36
Scarlet fever.....	13
Smallpox.....	14
Typhoid fever.....	26

MAINE.	
	Cases.
Cerebrospinal meningitis.....	1
Chicken pox.....	18
Diphtheria.....	8
Influenza.....	131
Measles.....	1
Mumps.....	25
Pneumonia.....	44
Poliomyelitis.....	3
Scarlet fever.....	60
Tuberculosis.....	5
Whooping cough.....	4

MARYLAND. ¹	
	Cases.
Cerebrospinal meningitis.....	1
Chicken pox.....	103
Conjunctivitis.....	1
Diphtheria.....	45
German measles.....	4
Influenza.....	263
Measles.....	135
Mumps.....	152
Ophthalmia neonatorum.....	1
Paratyphoid fever.....	1
Pneumonia.....	145
Scarlet fever.....	121
Septic sore throat.....	8
Tuberculosis.....	77
Typhoid fever.....	9
Whooping cough.....	20

MASSACHUSETTS.	
	Cases.
Cerebrospinal meningitis.....	1
Chicken pox.....	153
Conjunctivitis (suppurative).....	2
Diphtheria.....	183
German measles.....	20
Influenza.....	1,764
Measles.....	512
Mumps.....	149
Ophthalmia neonatorum.....	10
Pneumonia (lobar).....	253
Poliomyelitis.....	1
Scarlet fever.....	265
Septic sore throat.....	2
Trachoma.....	1
Trichinosis.....	5
Tuberculosis (all forms).....	137
Typhoid fever.....	6
Whooping cough.....	127

MINNESOTA.	
	Cases.
Cerebrospinal meningitis.....	1
Chicken pox.....	28
Diphtheria.....	83
Influenza.....	10
Measles.....	25

MINNESOTA—continued.	
	Cases.
Pneumonia.....	8
Scarlet fever.....	215
Smallpox.....	64
Tuberculosis.....	96
Typhoid fever.....	5

MISSISSIPPI.	
	Cases.
Cerebrospinal meningitis.....	1
Diphtheria.....	10
Scarlet fever.....	5
Smallpox.....	19
Typhoid fever.....	1

MISSOURI.	
	Cases.
Chicken pox.....	126
Diphtheria.....	113
Epidemic sore throat.....	27
Influenza.....	234
Measles.....	3
Mumps.....	19
Ophthalmia neonatorum.....	1
Pneumonia.....	103
Scarlet fever.....	111
Smallpox.....	37
Tuberculosis.....	48
Typhoid fever.....	6
Whooping cough.....	27

MONTANA.	
	Cases.
Cerebrospinal meningitis.....	1
Diphtheria.....	5
Scarlet fever.....	14
Smallpox.....	15

NEBRASKA.	
	Cases.
Cerebrospinal meningitis—Omaha.....	1
Chicken pox.....	87
Diphtheria:	
Omaha.....	11
Scattering.....	18
Influenza.....	10
Measles:	
Fremont.....	9
Glenvil.....	32
Hastings.....	63
Omaha.....	44
Scattering.....	12
Mumps.....	72
Pneumonia.....	4
Poliomyelitis—Palmer.....	1
Scarlet fever:	
Cedar County.....	18
Lyons.....	65
Scattering.....	86
Septic sore throat.....	6
Smallpox.....	24
Tuberculosis.....	1
Whooping cough.....	1

NEW JERSEY.	
	Cases.
Cerebrospinal meningitis.....	3
Chicken pox.....	129
Diphtheria.....	162
Influenza.....	1,555

¹ Week ended Friday.

NEW JERSEY—continued.		SOUTH DAKOTA—continued.	
	Cases.		Cases.
Measles.....	214	Measles.....	4
Pneumonia.....	465	Pneumonia.....	10
Scarlet fever.....	334	Scarlet fever.....	72
Trachoma.....	2	Smallpox.....	35
Typhoid fever.....	6	Tuberculosis.....	5
Whooping cough.....	88	Typhoid fever.....	1
NEW MEXICO.		TEXAS.	
Chicken pox.....	11	Diphtheria.....	64
Conjunctivitis.....	1	Influenza.....	123
Diphtheria.....	13	Measles.....	68
Influenza.....	35	Pellagra.....	1
Measles.....	1	Pneumonia.....	42
Mumps.....	15	Smallpox.....	33
Pneumonia.....	25	Typhoid fever.....	16
Scarlet fever:		VERMONT.	
Albuquerque.....	11	Chicken pox.....	28
Scattering.....	7	Diphtheria.....	2
Tuberculosis.....	39	Influenza.....	12
Typhoid fever.....	3	Measles.....	8
Whooping cough.....	14	Mumps.....	28
NEW YORK.		Pneumonia.....	13
(Exclusive of New York City.)		Scarlet fever.....	53
Cerebrospinal meningitis.....	3	Whooping cough.....	13
Diphtheria.....	195	WASHINGTON.	
Influenza.....	1,577	Chicken pox.....	68
Lethargic encephalitis.....	2	Diphtheria.....	23
Measles.....	366	Influenza.....	902
Pneumonia.....	578	Measles.....	6
Poliomyelitis.....	2	Mumps.....	59
Scarlet fever.....	291	Pneumonia.....	14
Typhoid fever.....	16	Poliomyelitis—Seattle.....	1
Whooping cough.....	164	Scarlet fever:	
NORTH CAROLINA.		Seattle.....	10
Cerebrospinal meningitis.....	1	Spokane.....	8
Chicken pox.....	236	Scattering.....	21
Diphtheria.....	42	Smallpox:	
Measles.....	25	Spokane.....	22
Ophthalmia neonatorum.....	1	Tacoma.....	28
Scarlet fever.....	36	Scattering.....	29
Septic sore throat.....	18	Tuberculosis.....	1
Smallpox.....	35	Whooping cough.....	18
Typhoid fever.....	1	WISCONSIN.	
Whooping cough.....	90	Milwaukee:	
OREGON.		Cerebrospinal meningitis.....	1
Chicken pox.....	15	Chicken pox.....	68
Diphtheria:		Diphtheria.....	20
Portland.....	10	German measles.....	1
Scattering.....	8	Measles.....	3
Influenza.....	442	Pneumonia.....	9
Lethargic encephalitis.....	1	Scarlet fever.....	17
Measles.....	3	Smallpox.....	2
Mumps.....	3	Tuberculosis.....	14
Pneumonia.....	20	Whooping cough.....	44
Scarlet fever.....	13	Scattering:	
Smallpox:		Cerebrospinal meningitis.....	3
Portland.....	10	Chicken pox.....	90
Scattering.....	6	Diphtheria.....	63
Tuberculosis.....	17	German measles.....	8
Typhoid fever.....	1	Influenza.....	22
Whooping cough.....	5	Measles.....	18
SOUTH DAKOTA.		Pneumonia.....	5
Cerebrospinal meningitis.....	1	Poliomyelitis.....	2
Chicken pox.....	12	Scarlet fever.....	158
Diphtheria.....	6	Smallpox.....	56
Influenza.....	1	Tuberculosis.....	40
		Typhoid fever.....	5
		Whooping cough.....	26

¹ Deaths.

Delayed Reports for Week Ended Feb. 11, 1922.

DISTRICT OF COLUMBIA.		KENTUCKY—continued.	
	Cases.	Influenza—Continued.	Cases.
Chicken pox.....	49	McLean County.....	28
Diphtheria.....	27	Madison County.....	32
Influenza.....	9	Meade County.....	30
Measles.....	4	Todd County.....	41
Scarlet fever.....	13	Scattering.....	112
Smallpox.....	3	Measles:	
Tuberculosis.....	31	Jefferson County.....	97
Typhoid fever.....	1	Scattering.....	6
Whooping cough.....	8	Mumps.....	1
		Pneumonia.....	78
KENTUCKY.		Scarlet fever.....	9
Cerebrospinal meningitis:		Septic sore throat.....	4
Jefferson County.....	1	Smallpox:	
Chicken pox.....	3	Fulton County.....	14
Diphtheria:		Harlan County.....	11
Jefferson County.....	11	Scattering.....	4
Scattering.....	24	Tonsillitis.....	1
Influenza:		Trachoma.....	1
Clark County.....	23	Tuberculosis:	
Crittenden County.....	22	Jefferson County.....	19
Davies County.....	44	Scattering.....	3
Jefferson County.....	285	Typhoid fever.....	3
Logan County.....	23	Whooping cough.....	2

SUMMARY OF CASES REPORTED MONTHLY BY STATES.

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

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Polio-myelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
Arkansas (January, 1922).....	48	322	87	13	8	29	16	24		
Louisiana (January, 1922).....	1	108	36	41	18	9	55	45	96	
Washington (December, 1921).....	149	.....	15	.....	.....	9	124	348	35
Wisconsin (January, 1922).....	5	581	163	.....	130	3	817	297	26

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922.

ANTHRAX.

City.	Cases.	Deaths.
Rhode Island:		
Pawtucket.....	1	.....

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

CEREBROSPINAL MENINGITIS.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Feb. 4, 1922.		City.	Median for previous years.	Week ended Feb. 4, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Michigan:			
Birmingham.....	0	1		Detroit.....	0	1	
California:				Minnesota:			
Long Beach.....	0	1		St. Paul.....	0	1	
Los Angeles.....	0	5		Missouri:			
Connecticut:				St. Louis.....	0	1	
Stonington.....		1	1	New Jersey:			
Georgia:				Newark.....	0		1
Atlanta.....	0	1	1	West New York.....	0		1
Illinois:				New York.....	7	11	2
Chicago.....	2	3		Pennsylvania:			
Indiana:				Harrisburg.....	0	1	
Huntington.....	0	1	1	Reading.....	0	1	
Iowa:				Rhode Island:			
Des Moines.....	0	1		Pawtucket.....	0		2
Marshalltown.....		1	1	Tennessee:			
Kansas:				Memphis.....	0		1
Kansas City.....	0	1		Texas:			
Maine:				Fort Worth.....	0	1	1
Lewiston.....	0		1	Wisconsin:			
Maryland:				Milwaukee.....	1	1	
Baltimore.....	0	1	1				
Massachusetts:							
Belmont.....		1					
Boston.....	0	1					
Springfield.....	0		1				

DIPHTHERIA.

See p. 437; also Telegraphic weekly reports from States, p. 426, and Monthly summaries by States, p. 430.

INFLUENZA.

City.	Cases.		Deaths, week ended Feb. 4, 1922.	City.	Cases.		Deaths, week ended Feb. 4, 1922.
	Week ended Feb. 5, 1921.	Week ended Feb. 4, 1922.			Week ended Feb. 5, 1921.	Week ended Feb. 4, 1922.	
Alabama:				Georgia—Continued.			
Birmingham.....			1	Augusta.....		2	
Mobile.....			1	Brunswick.....		1	
Tuscaloosa.....		3		Rome.....	4	1	
Arkansas:				Savannah.....	4	5	
Fort Smith.....		9		Valdosta.....		1	1
California:				Illinois:			
Bakersfield.....	1			Centralia.....		2	
Berkeley.....		2		Chicago.....	24	67	9
Long Beach.....		1		Cicero.....		1	
Los Angeles.....	1	20	2	Danville.....	1		
Oakland.....		4	1	East St. Louis.....	1		
Sacramento.....	1			Jacksonville.....		4	
San Diego.....	1			La Salle.....		7	
San Francisco.....	10	29		Oak Park.....		2	
Connecticut:				Indiana:			
Bridgeport.....		28	2	Indianapolis.....			3
Fairfield.....		1		Kansas:			
Hartford.....	1	3		Atchison.....		3	
Meriden.....		2	1	Lawrence.....		4	
New Britain.....		10		Salina.....		1	
New Haven.....		3	1	Topeka.....		41	2
Waterbury.....		1		Wichita.....		1	
District of Columbia:				Kentucky:			
Washington.....	2	5	4	Covington.....		1	
Florida:				Lexington.....		17	
Tampa.....		1		Louisville.....		115	
Georgia:				Owensboro.....		15	
Albany.....		3		Louisiana:			
Atlanta.....	7	15	2	Baton Rouge.....	2		
				New Orleans.....	1		

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

INFLUENZA—Continued.

City.	Cases.		Deaths, week ended Feb. 4, 1922.	City.	Cases.		Deaths, week ended Feb. 4, 1922.
	Week ended Feb. 5, 1921.	Week ended Feb. 4, 1922.			Week ended Feb. 5, 1921.	Week ended Feb. 4, 1922.	
Maine:				New Jersey—Continued.			
Auburn.....		21		Summit.....		6	
Bath.....		3		Tronton.....	3	63	3
Lewiston.....		44	2	West New York.....		1	
Sanford.....		1		West Orange.....		1	
Maryland:				New York:			
Baltimore.....	56	51	2	Albany.....	5	23	
Cumberland.....	1	3		Binghamton.....	1		
Massachusetts:				Buffalo.....	1	10	2
Attleboro.....		5		Hudson.....	2		
Beverly.....		3		Ithaca.....		3	
Boston.....	8	148	3	Jamesstown.....	3	32	
Braintree.....		8		Lackawanna.....		2	
Brookline.....		3		Mount Vernon.....		212	2
Cambridge.....		32		New York.....	59	5,731	85
Chelsea.....		7		North Tonawanda.....		8	
Danvers.....		1		Peeckskill.....		6	
Everett.....		3		Port Chester.....		1	1
Gardner.....		1		Poughkeepsie.....		2	
Haverhill.....	1	16		Saratoga Springs.....	5	5	
Lawrence.....		1		Schenectady.....		1	1
Lowell.....		18		Syracuse.....		12	
Lynn.....		2		Troy.....		3	
Malden.....		3		Watertown.....		1	
Medford.....		4		Yonkers.....	1	4	1
New Bedford.....		2		Ohio:			
Newburyport.....		5		Akron.....	2	2	
Newton.....		3		Barberton.....		1	
North Adams.....	1			Canton.....			1
Northampton.....		3		Cincinnati.....	2	24	4
Peabody.....		18		Cleveland.....	1	15	
Pittsfield.....		2		Columbus.....	1		1
Salem.....		5		Norwood.....		1	1
Saugus.....	5	10		Springfield.....			1
Somerville.....		7	1	Oklahoma:			
Springfield.....		2		Oklahoma.....		3	2
Webster.....		4		Oregon:			
Winthrop.....		4		Portland.....		1	1
Worcester.....	3	140	1	Pennsylvania:			
Michigan:				Philadelphia.....	12	14	8
Benton Harbor.....		1		Rhode Island:			
Detroit.....		10	1	Pawtucket.....		5	1
Grand Rapids.....	1	1		Providence.....		16	1
Highland Park.....		1		South Carolina:			
Minnesota:				Charleston.....			2
Minneapolis.....	1	2		Columbia.....	2		
Winona.....		1	1	Greenville.....			1
Missouri:				South Dakota:			
Independence.....	1			Sioux Falls.....	1		
Joplin.....		1		Tennessee:			
Kansas City.....	3	4	3	Chattanooga.....		1	
St. Louis.....	4	2	1	Memphis.....			1
Montana:				Texas:			
Great Falls.....		1		Dallas.....	4		1
New Jersey:				Houston.....		1	
Ashbury Park.....		1		Vermont:			
Atlantic City.....	1			Parre.....		1	
Bayonne.....		8		Virginia:			
Bloomfield.....		3		Alexandria.....		3	
Clifton.....		1		Richmond.....	1		
East Orange.....		9		Roanoke.....	9	2	
Englewood.....		14		Washington:			
Garfield.....		5		Aberdeen.....		135	
Jersey City.....	2	21		Seattle.....		13	
Kearny.....	1	23		West Virginia:			
Montclair.....	1	4		Charleston.....		2	
Morristown.....		1		Fairmont.....		1	
Newark.....	1	44	10	Huntington.....		1	1
Orange.....		28		Wheeling.....		1	
Passaic.....		18		Wisconsin:			
Paterson.....		345		Milwaukee.....		3	
Phillipsburg.....	1			Wausau.....	2		

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

LETHARGIC ENCEPHALITIS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
California:			Wisconsin:		
San Francisco.....	5	2	Milwaukee.....	1	
Illinois:					
Freeport.....		1			

MALARIA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Florida:			Texas:		
Tampa.....	1		Dallas.....	1	
New Jersey:					
Newark.....	1				

MEASLES.

See p. 437; also Telegraphic weekly reports from States, p. 426, and Monthly summaries by States, p. 430.

PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Oklahoma:		
Birmingham.....	1	1	Oklahoma.....		1
Georgia:			Tennessee:		
Atlanta.....		1	Memphis.....	1	1
Augusta.....	2				
North Carolina:					
Raleigh.....		1			

PNEUMONIA (ALL FORMS).

Alabama:			Florida:		
Birmingham.....		12	Tampa.....		3
Mobile.....		1	Georgia:		
Tuscaloosa.....	2		Atlanta.....		18
Arizona:			Augusta.....	4	
Tucson.....		3	Rome.....	9	
Arkansas:			Savannah.....		4
Fort Smith.....		4	Illinois:		
California:			Alton.....		2
Alameda.....		1	Aurora.....	4	1
Berkeley.....	2		Chicago.....	200	63
Long Beach.....		1	Cicero.....	1	
Los Angeles.....	47	24	Decatur.....		1
Oakland.....		7	Elgin.....	1	
Pasadena.....	7	4	Evanston.....	1	
Riverside.....	1		Freeport.....	2	1
Sacramento.....	5	3	Galesburg.....		1
San Bernardino.....		2	Kewanee.....	4	1
San Diego.....	4	3	La Salle.....		1
San Francisco.....	21	9	Mattoon.....	1	
Colorado:			Oak Park.....	2	
Colorado Springs.....		6	Peoria.....		4
Denver.....		18	Quincy.....	2	
Pueblo.....		4	Rockford.....		2
Connecticut:			Springfield.....	8	4
Bridgport.....	3	2	Indiana:		
Bristol.....		1	Fort Wayne.....		2
Fairfield.....		2	Gary.....		1
Greenwich.....	2	1	Hammond.....	1	
Meriden.....	1		Huntington.....		1
Milford.....	2	1	Indianapolis.....		26
New Britain.....	2	1	La Fayette.....		3
New Haven.....		12	Logansport.....		1
Norwalk.....		3	Terre Haute.....		4
Norwich.....		1	Iowa:		
Waterbury.....	4	1	Burlington.....	7	2
Delaware:			Council Bluffs.....		1
Wilmington.....		9	Kansas:		
District of Columbia:			Coileyville.....	1	
Washington.....		21	Kansas City.....	5	

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Kansas—Continued.			Missouri:		
Lawrence.....	1	.....	Independence.....	.....	2
Topeka.....	33	12	Kansas City.....	42	22
Wichita.....	9	6	St. Joseph.....	.....	13
Kentucky:			Springfield.....	.....	3
Lexington.....	.....	4	Montana:		
Louisville.....	32	16	Anaconda.....	.....	1
Louisiana:			Billings.....	1	.....
New Orleans.....	10	4	Great Falls.....	4	3
Maine:			Missoula.....	10	1
Bangor.....	5	.....	Nebraska:		
Bath.....	4	.....	Lincoln.....	.....	1
Biddeford.....	.....	1	Omaha.....	.....	16
Lewiston.....	.....	2	New Hampshire:		
Portland.....	.....	5	Concord.....	.....	1
Maryland:			Keene.....	.....	2
Baltimore.....	57	27	New Jersey:		
Cumberland.....	5	1	Asbury Park.....	2	1
Massachusetts:			Atlantic City.....	5	.....
Arlington.....	.....	1	Bayonne.....	6	.....
Belmont.....	.....	1	Bloomfield.....	3	.....
Beverly.....	3	.....	Clifton.....	2	.....
Boston.....	50	30	East Orange.....	3	.....
Brookline.....	1	.....	Englewood.....	.....	1
Cambridge.....	.....	7	Garfield.....	2	1
Chelsea.....	.....	2	Harrison.....	1	.....
Clinton.....	.....	2	Hoboken.....	.....	7
Dodham.....	1	.....	Jersey City.....	29	.....
Fall River.....	.....	5	Kearny.....	2	1
Framingham.....	1	.....	Montclair.....	.....	1
Gardner.....	.....	3	Morristown.....	2	1
Greenfield.....	1	.....	Newark.....	149	23
Haverhill.....	4	3	Orange.....	14	.....
Holyoke.....	.....	5	Passaic.....	5	1
Lawrence.....	11	3	Paterson.....	30	.....
Leominster.....	4	2	Perth Amboy.....	.....	1
Lowell.....	6	4	Summit.....	2	.....
Lynn.....	4	.....	Trenton.....	.....	19
Malden.....	.....	3	West Hoboken.....	.....	1
Medford.....	3	1	New Mexico:		
Melrose.....	.....	1	Albuquerque.....	.....	1
New Bedford.....	5	1	New York:		
Newburyport.....	2	1	Albany.....	7	.....
Newton.....	2	.....	Buffalo.....	24	19
North Adams.....	1	.....	Hornell.....	4	.....
Northampton.....	.....	1	Hudson.....	1	.....
Peabody.....	1	.....	Ithaca.....	7	2
Pittsfield.....	7	4	Jamestown.....	6	1
Plymouth.....	.....	1	Lackawanna.....	.....	1
Salem.....	.....	1	Little Falls.....	.....	1
Saugus.....	2	.....	Lockport.....	3	.....
Somerville.....	3	1	Middletown.....	3	.....
Springfield.....	1	.....	Mount Vernon.....	14	6
Taunton.....	.....	1	Newburgh.....	1	.....
Waltham.....	4	4	New York.....	1,190	396
Westfield.....	.....	1	Niagara Falls.....	8	.....
Winthrop.....	.....	1	North Tonawanda.....	1	.....
Worcester.....	.....	15	Ogdensburg.....	.....	1
Michigan:			Peekskill.....	1	.....
Ann Arbor.....	5	1	Port Chester.....	1	.....
Battle Creek.....	1	.....	Poughkeepsie.....	4	3
Benton Harbor.....	.....	1	Rochester.....	28	6
Detroit.....	102	33	Saratoga Springs.....	2	.....
Grand Rapids.....	9	4	Schenectady.....	3	1
Highland Park.....	10	2	Syracuse.....	33	7
Holland.....	.....	1	Troy.....	4	1
Ishpeming.....	.....	1	White Plains.....	8	1
Jackson.....	4	2	Yonkers.....	26	8
Kalamazoo.....	.....	2	North Carolina:		
Marquette.....	2	.....	Charlotte.....	.....	5
Muskegon.....	4	1	Greensboro.....	.....	1
Pontiac.....	2	1	Raleigh.....	.....	1
Port Huron.....	2	.....	Rocky Mount.....	.....	1
Saginaw.....	2	.....	Salisbury.....	.....	1
Minnesota:			Winston-Salem.....	.....	1
Duluth.....	.....	3	Ohio:		
Faribault.....	.....	1	Akron.....	6	.....
Minneapolis.....	.....	6	Alliance.....	.....	2
Rochester.....	2	1	Barberton.....	5	1
St. Paul.....	.....	8	Canton.....	.....	3

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Ohio—Continued.			Texas—Continued.		
Cincinnati.....		17	Fort Worth.....		11
Cleveland.....	45	25	Galveston.....		1
Columbus.....		7	Houston.....		3
Dayton.....	1		Waco.....		2
Findlay.....		2	Utah:		
Lima.....		1	Salt Lake City.....		5
Mansfield.....		1	Vermont:		
Newark.....		1	Burlington.....		1
Niles.....	1		Rutland.....		1
Norwood.....		2	Virginia:		
Springfield.....		2	Alexandria.....	3	
Steubenville.....	1		Lynchburg.....		1
Toledo.....		7	Richmond.....		8
Youngstown.....		12	Roanoke.....	3	1
Oklahoma:			Washington:		
Oklahoma.....		12	Yakima.....	1	
Tulsa.....	2		West Virginia:		
Oregon:			Bluefield.....		2
Portland.....		4	Charleston.....		4
Pennsylvania:			Clarksburg.....		1
Philadelphia.....	106	77	Parkersburg.....	1	
Rhode Island:			Wheeling.....		5
Pawtucket.....		9	Wisconsin:		
Providence.....		10	Janesville.....		2
South Carolina:			Kenosha.....		1
Charleston.....		4	Milwaukee.....	12	
Tennessee:			Racine.....		3
Memphis.....		9	Wyoming:		
Texas:			Casper.....	4	
Beaumont.....		4			
Dallas.....		11			

POLIOMYELITIS (INFANTILE PARALYSIS).

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Feb. 4, 1922.		City.	Median for previous years.	Week ended Feb. 4, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Illinois:				Ohio:			
Chicago.....	1		1	Dayton.....	0	1	
Massachusetts:				Pennsylvania:			
Quincy.....	0	1		Philadelphia.....	0	2	
Minnesota:				Washington:			
Rochester.....		1	1	Spokane.....	0	1	
Missouri:							
St. Louis.....	0	1					

RABIES IN ANIMALS.

City.	Cases.
New Jersey:	
Hackensack.....	1

SCARLET FEVER.

See p. 437; also Telegraphic weekly reports from States, p. 426, and Monthly summaries by States, p. 430.

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922 - Continued.

SMALLPOX.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Feb. 4, 1922.		City.	Median for previous years.	Week ended Feb. 4, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Missouri:			
Mobile.....	0	13		Kansas City.....	6	6	4
California:				St. Louis.....	5	7	
Berkeley.....	0	2		Montana:			
Long Beach.....	0	1		Great Falls.....	2	8	
Oakland.....	0	2		North Dakota:			
Sacramento.....	0	1		Grand Forks.....	3	1	
San Francisco.....	4	5		Ohio:			
Stockton.....	0	2		Cincinnati.....	0	1	
Colorado:				Cleveland.....	6	1	
Denver.....	17	10	8	Columbus.....	2	1	
Connecticut:				Dayton.....	0	5	
Bridgeport.....	0	7	1	Fremont.....	0	1	
Fairfield.....		1		Hamilton.....	2	1	
District of Columbia:				Springfield.....	2	11	
Washington.....	1	4		Oklahoma:			
Georgia:				Oklahoma.....	4	10	
Albany.....		1		Oregon:			
Atlanta.....	0	2		Portland.....	4	43	
Augusta.....	0	4		Pennsylvania:			
Savannah.....	0	1		Chester.....	0	1	
Illinois:				Meadville.....	0	1	
Chicago.....	2	3	1	South Dakota:			
Peoria.....	4	15		Sioux Falls.....	2	3	
Quincy.....	1	1		Texas:			
Indiana:				Dallas.....	7	2	
Indianapolis.....	9	1		Fort Worth.....	2	1	
Terre Haute.....	2	1		Utah:			
Iowa:				Salt Lake City.....	0	5	
Burlington.....	0	5		Virginia:			
Des Moines.....	4	9		Danville.....	0	1	
Muscatine.....	0	14		Washington:			
Sioux City.....	2	6		Aberdeen.....	1	19	
Kansas:				Bellingham.....	0	6	
Hutchinson.....	1	9		Everett.....	0	1	
Kansas City.....	2	6		Seattle.....	3	2	
Topeka.....	0	2		Spokane.....	0	15	
Kentucky:				Tacoma.....	1	11	
Louisville.....	0	1		Yakima.....	0	1	
Louisiana:				West Virginia:			
New Orleans.....	8	2		Bluefield.....	0	1	
Maine:				Wisconsin:			
Waterville.....	4	1		Madison.....	3	1	
Michigan:				Manitowee.....	1	3	
Detroit.....	8	2		Milwaukee.....	4	5	
Saginaw.....	0	4		Superior.....	1	14	
Minnesota:				Waukesha.....		1	
Duluth.....	1	1		Wyoming:			
Hibbing.....	0	1		Casper.....		2	
Minneapolis.....	26	7					
Rochester.....		1					
St. Paul.....	9	17					

TETANUS.

City.	Cases.	Deaths.
Alabama:		
Tuscaloosa.....	1	
Georgia:		
Savannah.....		2

TUBERCULOSIS.

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

TYPHOID FEVER.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Feb. 4, 1922.		City.	Median for previous years.	Week ended Feb. 4, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				New York:			
Birmingham.....	2	1		Buffalo.....	2	1	
Arkansas:				Hudson.....	0		1
Hot Springs.....	0	1		Lackawanna.....	0	1	
California:				New York.....	12	5	
Los Angeles.....	1	1		Saratoga Springs.....	0		1
Oakland.....	0	2		North Dakota:			
Pasadena.....	0	1	1	Fargo.....	0	1	
San Francisco.....	1	2		Ohio:			
Colorado:				Chillicothe.....	0	1	1
Pueblo.....	0	1		Cincinnati.....	0	1	1
Florida:				Mansfield.....	0	1	
Tampa.....		2	1	Middletown.....	0	1	1
Illinois:				Oregon:			
Aurora.....	0	2		Portland.....	0	1	
Chicago.....	2	5	1	Pennsylvania:			
Kansas:				Bradford.....	0	1	
Leavenworth.....	0	1		Carbondale.....	0	1	
Kentucky:				Chambersburg.....	0	1	
Lexington.....	0	1		Coatesville.....	0	1	
Louisville.....	0	3	1	Philadelphia.....	7	2	2
Louisiana:				Reading.....	1	1	
New Orleans.....	3	5	2	Rhode Island:			
Maine:				Cranston.....	0	1	
Waterville.....	0	1		South Carolina:			
Maryland:				Charleston.....	0	1	
Baltimore.....	2	4		Tennessee:			
Massachusetts:				Memphis.....	0	1	
Boston.....	2	2		Texas:			
Newton.....	0	1		Dallas.....	2	1	
Michigan:				Galveston.....	0	5	1
Detroit.....	2	1		Waco.....	0	1	
Missouri:				Virginia:			
Independence.....	1	1		Alexandria.....	0	1	
St. Louis.....	2	2		Wisconsin:			
Nebraska:				Eau Claire.....	0	1	
Omaha.....	0	3		Green Bay.....	0		1
New Jersey:				Marinette.....	0	1	
Bayonne.....	0	1		Milwaukee.....	2	1	
Passaic.....	0	2	1				

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Population January 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Alabama:										
Birmingham.....	178,270	54			6		1		5	5
Mobile.....	60,151	22						1		2
Montgomery.....	43,464	17	1							3
Tuscaloosa.....	11,996		2							
Arizona:										
Tucson.....	20,292	20		1						9
Arkansas:										
Fort Smith.....	28,811	8								
Hot Springs.....	11,695	3	1							
Little Rock.....	64,997		1			2				
North Little Rock.....	14,048				1					
California:										
Alameda.....	28,806	12	2		1		2			2
Berkeley.....	55,886	5	6		2		8	1	1	2
Long Beach.....	55,593	24	9	1			1			

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

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

City.	Population January 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Illinois—Continued.										
Mattoon.....	13,552	3	1							
Oak Park.....	39,890	8	1		7	6				
Pekin.....	12,086					1				
Peoria.....	76,121	22	3			8				
Quincy.....	35,978	5	1			4			2	
Rockford.....	65,651	7	2		1	6				1
Rock Island.....	35,177	4				1			1	
Springfield.....	59,183	26	3			4			7	1
Indiana:										
Anderson.....	29,767	8				2				
Evansville.....	85,264	15	3							
Fort Wayne.....	86,549	26	4			2				1
Frankfort.....	11,585	2			1					
Gary.....	55,378	8	5							1
Hammond.....	36,004	10			3	3			1	
Huntington.....	14,000	4	1			2				
Indianapolis.....	314,194	118	12	1	4	3			2	5
Kokomo.....	30,067	8	2			2				4
La Fayette.....	22,486	14	1			1				1
Logansport.....	21,626	5				1				1
Mishawaka.....	15,195	3	4			2				
Muncie.....	38,624	9	1							1
Terre Haute.....	66,063	18	1			7				1
Iowa:										
Burlington.....	24,057	5								
Cedar Rapids.....	45,666		1							
Clinton.....	24,151		1			1				
Council Bluffs.....	36,162	10	2	1						
Davenport.....	56,727		2							
Des Moines.....	126,468		2			11				
Dubuque.....	39,141		1		1	4				
Marshalltown.....	15,731	1				2				
Mason City.....	20,065	7	1			1				1
Ottumwa.....	23,003					3				
Sioux City.....	71,227		4	1		2				
Waterloo.....	36,230					1				
Kansas:										
Atchison.....	12,630	1	2			2				
Coffeyville.....	13,452	2								
Hutchinson.....	23,293		1			3				
Kansas City.....	101,177		7			1				
Lawrence.....	12,456	5	1			1				
Leavenworth.....	16,912		2			1				
Parsons.....	16,028	5	1			1			1	
Salina.....	15,085	5	4			2				
Topeka.....	50,022	38	3	1	1	1				
Wichita.....	72,128	25	5		1	11				2
Kentucky:										
Covington.....	57,121	18	2		25	2	1	2		1
Lexington.....	41,534	18	1							2
Louisville.....	234,891	80	19	2	108	5		21		5
Owensboro.....	17,424		4			1				
Paducah.....	24,735					2		1		
Louisiana:										
New Orleans.....	387,219	139	29		1	16		37		9
Maine:										
Auburn.....	16,985	5				3				
Bath.....	14,731	1								
Biddeford.....	18,008	3								
Lewiston.....	31,791	16	1			1				1
Portland.....	69,272	23	5			20	1			
Sanford.....	10,691	1								
Waterville.....	13,351					1				
Maryland:										
Baltimore.....	733,826	236	42	5	104	59	1	18		23
Cumberland.....	29,837	6			1	1		5		2
Massachusetts:										
Adams.....	12,967	1				2		2		
Arlington.....	18,665	6			1	2				
Attleboro.....	19,731	2	1					1		
Belmont.....	10,749	2	2			1				
Beverly.....	22,561	5	1		1	2				
Boston.....	748,060	229	84	4	106	1	38	1	34	15

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

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

City.	Population January 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Massachusetts—Continued.										
Braintree.....	10,580	2					4			1
Brookline.....	37,748	10					3			
Cambridge.....	109,694	33	6	1	26		10		3	2
Chelsea.....	43,184	18	4				3		2	
Chicopee.....	33,214	6	3						2	
Clinton.....	12,579	5							2	
Danvers.....	11,108						1			
Dedham.....	10,792	2					1			1
Easthampton.....	11,261		1				2			
Everett.....	40,120	5	1		4		2		1	
Fall River.....	120,485	49	7	2			3			3
Framingham.....	17,033	4								
Gardner.....	16,971	7					7		1	
Greenfield.....	15,452	2			13		1			
Haverhill.....	53,884	17	3						4	1
Holyoke.....	60,203	22			5		1		1	1
Lawrence.....	94,270	37	7		43		1		3	3
Leominster.....	19,744	16	1				2		2	1
Lowell.....	112,479	23	4		5		2		2	1
Lynn.....	99,148	19	5				5		4	1
Malden.....	49,103	12	2	2	2		11			
Medford.....	39,038	8	1		7		4		1	1
Melrose.....	18,204	5	1						1	
New Bedford.....	121,217	27	18	1			4		9	4
Newburyport.....	15,618	8					1			
Newton.....	46,064	10					2			1
North Adams.....	22,282	5								
Northampton.....	21,951	8					3		1	
Peabody.....	19,552	3			18		3			
Pittsfield.....	41,751	12	1				3	1	5	1
Plymouth.....	13,045	2								
Quincy.....	47,876	8	3		47		4		1	1
Salem.....	42,529	16	2		2		5	1		1
Saugus.....	10,874	1	1				2			
Somerville.....	93,091	23	3		38		8		2	1
Southbridge.....	14,245	5							1	1
Springfield.....	129,563	34			3		3		2	3
Taunton.....	37,137	11	1				2			
Wakefield.....	13,025	5	2						1	1
Waltham.....	30,915	9			37		3		1	
Watertown.....	21,457	4	1		2					
Webster.....	13,258	6								2
West Springfield.....	13,443	2								
Westfield.....	18,604	4								
Weymouth.....	15,057	5								
Winthrop.....	15,455	4					1		2	
Woburn.....	16,574	4								
Worcester.....	179,754	61	6	2			8	1	9	2
Michigan:										
Alpena.....	11,101		2				2			
Ann Arbor.....	19,516	14	2							
Battle Creek.....	36,164		2		8		3			
Benton Harbor.....	12,233	8	1				3			
Detroit.....	993,739	216	73	2	226	2	82		41	20
Grand Rapids.....	137,634	41	6		2		8	1		
Highland Park.....	46,499	8			4		3			
Holland.....	12,166	2	1				5		1	
Ishpeming.....	10,500	2								
Jackson.....	48,374	23	2		1		6		2	
Kalamazoo.....	48,858	25	14				15		1	2
Marquette.....	12,718	2								
Muskegon.....	36,570	14	5				2			2
Pontiac.....	34,273	12			3				10	
Port Huron.....	25,944	8	1				1			
Saginaw.....	61,903	11	2	1					1	
Sault Ste. Marie.....	12,066	3								
Minnesota:										
Austin.....	10,118	3								
Duluth.....	98,917	20	1				7		3	2
Faribault.....	11,089	3	1				4			1
Hibbing.....	15,089	1	5							
Mankato.....	12,469						8		1	
Minneapolis.....	380,582	97	28	3	22		62	1	10	6

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

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

City.	Popula- tion Janu- ary 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Minnesota—Continued.										
Rochester.....	13,722	19								
St. Cloud.....	15,873		7				1			
St. Paul.....	234,595	52	6				31	2	11	3
Winona.....	19,143	9					3			
Missouri:										
Independence.....	11,686	8					1			
Joplin.....	29,855						1			
Kansas City.....	324,410	92	7		1		8	1	10	7
St. Joseph.....	77,939	43	4				6			5
St. Louis.....	772,897	228	59	1	3		15		43	14
Springfield.....	39,631	12								1
Montana:										
Billings.....	15,100	2	1							1
Great Falls.....	24,121	7	1		1				1	
Missoula.....	12,668	8							1	1
Nebraska:										
Lincoln.....	54,834	12			1		4		1	
Omaha.....	191,601	62	7		22		1			1
Nevada:										
Reno.....	12,016	5								
New Hampshire:										
Berlin.....	16,104	3					1			
Concord.....	22,187	9								
Dover.....	13,029	8	1		4					1
Keene.....	11,210	8								
New Jersey:										
Asbury Park.....	12,400	4							1	1
Atlantic City.....	50,682	9	1		1		6		2	2
Bayonne.....	76,754		4				5		2	
Belleville.....	15,660		1				2			
Bloomfield.....	22,019	4	1		2					
Clifton.....	26,470	3	2				2			1
East Orange.....	50,710	7			1		11			
Englewood.....	11,627	6					1			
Garfield.....	19,381	2					1			
Hackensack.....	17,667	9	1				3			1
Harrison.....	15,721						1			
Hoboken.....	68,166	24		1	3		4	1		
Jersey City.....	297,864		10		55		27		12	
Kearny.....	26,724	6	1						2	
Montclair.....	28,810	6					2		2	
Morristown.....	12,548	12	2		1					
Newark.....	414,216	145	37	4	63	5	76		29	14
Orange.....	33,268	6	6				10			
Passaic.....	63,824	13	4				6		1	1
Paterson.....	135,866		10		31		2		2	
Perth Amboy.....	41,707	9	4		2		2		2	
Phillipsburg.....	16,923	5		1			1			
Rahway.....	11,042	2	1							
Summit.....	10,174	5					2			
Trenton.....	119,289	56	6	1			8		5	2
Union.....	20,651		2				2		1	
West Hoboken.....	40,068	4			5		3		2	
West New York.....	29,926	4	2				3	1		
West Orange.....	15,573	3					3			
New Mexico:										
Albuquerque.....	15,157	9					11		3	1
New York:										
Albany.....	113,344		6		14		1		7	
Auburn.....	36,192	11	4				2		1	
Buffalo.....	506,775	129	43	5	3		34	1	22	10
Geneva.....	14,648	3								1
Hornell.....	15,025				1				2	
Hudson.....	11,745	5	1		14					
Ithaca.....	17,004	6	1				3			2
Jamestown.....	38,917	9	9	1	15		3			
Lackawanna.....	17,918	5	2				2		1	
Little Falls.....	13,029	3								
Lockport.....	21,308	5	1				3			
Middletown.....	18,420				1				1	
Mount Vernon.....	42,728	16	2				6		1	1
Newburgh.....	30,366	6								
New York.....	5,621,151	1,837	285	28	835	13	330	9	236	136

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

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

City.	Popula- tion Janu- ary 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New York—Continued.										
Niagara Falls.....	50,760	10	5	.....	2	.....	16	.....	.....	.....
North Tonawanda.....	15,482	4	5	.....	.....	.....	1	.....	.....	.....
Ogdensburg.....	14,609	5	.....	.....	.....	.....	.....	.....	.....	.....
Peekskill.....	15,868	6	.....	.....	.....	.....	.....	.....	1	.....
Port Chester.....	16,573	1	.....	.....	.....	.....	.....	.....	.....	.....
Peughkeapsie.....	35,000	14	.....	.....	27	1	.....	.....	.....	.....
Rochester.....	295,750	76	9	.....	2	.....	3	.....	28	3
Rome.....	26,341	12	8	1	8	.....	.....	.....	.....	1
Saratoga Springs.....	13,181	8	.....	.....	.....	.....	4	.....	1	1
Schenectady.....	88,723	15	9	.....	.....	.....	6	.....	2	1
Syracuse.....	171,717	59	15	.....	3	.....	20	1	5	4
Troy.....	72,013	32	2	.....	.....	.....	.....	.....	.....	.....
Watertown.....	31,285	9	1	.....	.....	.....	1	.....	.....	.....
White Plains.....	21,091	10	2	.....	8	.....	1	.....	1	.....
Yonkers.....	100,226	29	2	2	.....	.....	8	.....	.....	1
North Carolina:										
Charlotte.....	46,338	20	3	1	.....	.....	1	.....	6	.....
Durham.....	21,719	6	1	.....	.....	.....	1	.....	.....	3
Greensboro.....	19,861	15	.....	.....	.....	.....	.....	.....	.....	.....
Raleigh.....	24,418	8	2	.....	.....	.....	.....	.....	.....	.....
Rocky Mount.....	12,742	6	.....	.....	.....	.....	.....	.....	.....	.....
Salisbury.....	13,884	4	.....	.....	.....	.....	.....	.....	.....	.....
Wilmington.....	33,372	12	1	.....	1	.....	.....	.....	1	1
Winston-Salem.....	48,395	19	.....	.....	.....	.....	.....	.....	4	2
North Dakota:										
Fargo.....	21,961	0	.....	.....	.....	.....	1	.....	.....	.....
Ohio:										
Akron.....	208,435	25	10	.....	14	.....	16	.....	27	.....
Alliance.....	21,603	7	1	.....	1	.....	.....	.....	.....	.....
Ashtabula.....	22,082	6	1	1	.....	.....	.....	.....	1	.....
Barberton.....	18,811	3	5	.....	5	.....	.....	.....	4	.....
Bucyrus.....	10,425	1	.....	.....	.....	.....	.....	.....	.....	.....
Canton.....	87,091	22	10	.....	5	.....	.....	.....	1	1
Chillicothe.....	15,831	7	1	.....	.....	.....	.....	.....	.....	.....
Cincinnati.....	401,247	142	14	3	36	1	7	1	10	13
Cleveland.....	796,836	194	36	2	126	2	68	.....	44	21
Columbus.....	237,031	66	15	.....	1	.....	6	.....	5	6
Dayton.....	152,559	39	5	.....	.....	.....	2	.....	1	.....
Findlay.....	17,021	6	.....	.....	1	.....	.....	.....	.....	.....
Fremont.....	12,468	1	.....	.....	.....	.....	.....	.....	.....	.....
Hamilton.....	39,675	12	2	.....	1	.....	2	.....	.....	1
Idma.....	41,306	6	4	1	.....	.....	2	.....	.....	1
Lorain.....	37,295	1	1	1	.....	.....	5	.....	.....	.....
Mansfield.....	27,824	6	1	.....	.....	.....	2	.....	1	.....
Marion.....	27,891	4	4	1	.....	.....	.....	.....	.....	.....
Middletown.....	23,594	9	1	.....	.....	.....	2	.....	24	1
Nowark.....	26,718	7	6	2	1	.....	6	.....	3	.....
New Philadelphia.....	10,718	2	.....	.....	.....	.....	1	.....	.....	.....
Niles.....	13,080	0	.....	.....	.....	.....	2	.....	.....	.....
Norwood.....	24,966	14	.....	.....	1	.....	.....	.....	1	.....
Piqua.....	15,044	2	.....	.....	.....	.....	.....	.....	.....	1
Springfield.....	60,840	12	4	.....	.....	.....	2	.....	.....	1
Staubenville.....	28,508	11	1	.....	.....	.....	1	.....	.....	.....
Tiffin.....	14,375	2	.....	.....	.....	.....	.....	.....	.....	.....
Toledo.....	243,109	65	17	.....	3	.....	10	.....	2	9
Youngstown.....	182,358	45	4	2	2	.....	6	2	4	.....
Oklahoma:										
Oklahoma.....	91,258	39	1	.....	.....	.....	2	.....	.....	2
Tulsa.....	72,075	3	3	.....	1	.....	1	.....	.....	.....
Oregon:										
Portland.....	258,288	63	20	.....	.....	.....	3	.....	2	2
Pennsylvania:										
Allentown.....	73,502	.....	6	.....	1	.....	.....	.....	3	.....
Altoona.....	60,331	.....	2	.....	.....	.....	2	.....	.....	.....
Ambridge.....	12,730	.....	1	.....	1	.....	.....	.....	.....	.....
Berwick.....	12,181	.....	.....	.....	.....	.....	1	.....	.....	.....
Bradock.....	20,879	.....	1	.....	.....	.....	1	.....	.....	.....
Butler.....	23,778	.....	.....	.....	1	.....	.....	.....	1	.....
Canonsburg.....	10,632	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carnegie.....	11,516	.....	1	.....	.....	.....	1	.....	.....	.....
Chambersburg.....	13,171	.....	1	.....	.....	.....	.....	.....	.....	.....
Charleroi.....	11,516	.....	.....	.....	.....	.....	4	.....	.....	.....
Chester.....	58,030	.....	1	.....	2	.....	3	.....	4	.....

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

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

City.	Popu- lation Janu- ary 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Pennsylvania—Continued.										
Coatesville.....	14,515						1			
Dickson City.....	11,049		1							
Donora.....	14,131						1			
DuBois.....	15,681		3							
Dunmore.....	20,250		6				3			
Duquesne.....	19,011		2				1			
Easton.....	33,313				1		2			
Erie.....	93,372		9				7		9	
Farrell.....	15,566				3		4			
Greensburg.....	15,033		1				1			
Harrisburg.....	75,917		13		1		2			
Hazleton.....	32,277		1		4					
Johnstown.....	67,327		4		4		1		1	
Lancaster.....	53,150		7		6		8			
Lebanon.....	24,643		2				6			
McKeesport.....	45,975		3		3		2			
Mahanoy City.....	15,509		3		2					
Monessen.....	18,179						1			
Mount Carmel.....	17,469		1				1			
Nanticoke.....	22,614		1							
New Castle.....	44,938		1		4		4			
New Kensington.....	11,987				2					
Norristown.....	32,319		1				2			
North Braddock.....	14,928		2		1		3		2	
Oil City.....	21,274						1		5	
Old Forge.....	12,237		2							
Olyphant.....	10,226		1							
Philadelphia.....	1,823,158	493	62	4	10		151	1	61	41
Phoenixville.....	10,494						1			
Pittsburgh.....	568,183		51		41		71		33	
Plymouth.....	16,570		1		4					
Pottstown.....	17,431		1		1		6		1	
Pottsville.....	21,876		1		14					
Reading.....	107,754		13		4				2	
Scranton.....	137,753		3				8		5	
Shamokin.....	21,204		2		2				1	
Sharon.....	21,737				16		3			
Shenandoah.....	24,726		1				2			
Steelton.....	13,428						4			
Sanbury.....	15,721		2		8					
Uniontown.....	15,692		2				2			
Warren.....	14,256		1				1			
Washington.....	21,480		2						1	
West Chester.....	11,717						2			
Wilkes-Barre.....	73,833		9		15		4			
Wilkinsburg.....	24,493						2			
Williamsport.....	36,198		5		1		2			
Woodlawn.....	12,495				1					
York.....	47,512		9				2			
Rhode Island:										
Cranston.....	29,407	4	1				2			
Newport.....	30,255	5	3				5			
Pawtucket.....	64,248	29	3	1			1			2
Providence.....	237,595	73	14	1			1			
South Carolina:										
Charleston.....	67,957	20	1				1		1	1
Columbia.....	37,524								4	
Greenville.....	23,127	3	1							
South Dakota:										
Sioux Falls.....	25,176	2	3	1			3			
Tennessee:										
Chattanooga.....	57,895		1				3			
Knoxville.....	77,813		4		1				3	3
Memphis.....	162,351	72	2						4	3
Texas:										
Beaumont.....	40,422	13	2	1						3
Dallas.....	158,976	44	5		44	1	1		1	2
Fort Worth.....	106,482	32	4				2		2	2
Galveston.....	44,255	8	4							
Houston.....	138,076	40					2			2
Waco.....	38,500	14	1							4
Utah:										
Salt Lake City.....	118,110	34	2				4		3	4

CITY REPORTS FOR WEEK ENDED FEB. 4, 1922—Continued.

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

City.	Popula- tion Janu- ary 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Vermont:										
Burlington.....	22, 779	10	4				13			
Rutland.....	14, 954	4								
Virginia:										
Alexandria.....	18, 060	3								1
Danville.....	21, 539	8			2				2	1
Lynchburg.....	29, 956	8	2		1		1		2	
Petersburg.....	31, 002	8					1		1	1
Portsmouth.....	54, 387	11					1		1	1
Richmond.....	171, 667	73	9	1	36		8		17	7
Roanoke.....	50, 842	12	4						1	1
Washington:										
Everett.....	27, 644		9		1					
Seattle.....	315, 652				2		3		4	
Spokane.....	104, 437		6		1		5			
Tacoma.....	96, 965		1		1		1		10	
Walla Walla.....	15, 503		7				1		1	
Yakima.....	18, 539		2		1					
West Virginia:										
Bluefield.....	15, 282	4	3				1			
Charleston.....	39, 608	18			2		1			1
Clarksburg.....	27, 869	3	2				1			
Fairmont.....	17, 851		2				4			
Huntington.....	50, 177	11	1				1			3
Martinsburg.....	12, 515				4		1			
Morgantown.....	12, 127		2						2	
Moundsville.....	10, 669	3	2		3		1			
Parkersburg.....	20, 050	2	2				1			
Wheeling.....	54, 322	19	5				1			
Wisconsin:										
Appleton.....	19, 561		1				1			
Beloit.....	21, 284	4					12			
Eau Claire.....	20, 890		3							
Fond du Lac.....	23, 427	2	2							
Green Bay.....	31, 017		1							
Janesville.....	18, 293	3	2							
Kenosha.....	40, 472	7	3		2		5			
La Crosse.....	30, 363								3	
Madison.....	38, 378		2				1			
Manitowoc.....	17, 563								1	
Milwaukee.....	457, 147		26		2		23		11	
Oshkosh.....	33, 162	4	3				2		1	
Racine.....	58, 593	9	4		1		15	2	5	
Sheboygan.....	30, 955		3						1	
Superior.....	39, 624	11					2			
Waukesha.....	12, 558						9		1	
Wausau.....	18, 661		1							
West Allis.....	13, 765		2							
Wyoming:										
Casper.....	11, 447	3							1	
Cheyenne.....	13, 829	2					2			

FOREIGN AND INSULAR.

SMALLPOX ON VESSEL.

Steamship "West O'Rowa"—At Kobe from Shanghai.

On January 5, 1922, the steamship *West O'Rowa* arrived at Kobe, Japan, from Shanghai, China, with a case of illness on board in a member of the crew. The case terminated fatally on January 6. On the same day a second case developed in a member of the crew and was declared to be malignant smallpox. On January 8 a third case developed in a member of the crew. The vessel was refused bill of health until the period of incubation for smallpox provided by the quarantine laws and regulations of the United States had expired.

The *West O'Rowa* left Kobe January 9, 1922, for San Francisco, Calif., arriving February 6, 1922.

BRAZIL.

Leprosy—Para.

Under date of January 23, 1922, 900 cases of leprosy were reported present at Para, Brazil.

CANADA.

Communicable Diseases—Winnipeg, Manitoba—1921.

Communicable diseases were reported at Winnipeg,¹ Manitoba, Canada, during the year 1921, as follows:

Disease.	Cases.	Deaths.	Disease.	Cases.	Deaths.
Cerebrospinal meningitis.....	11	8	Measles.....	157	.....
Chicken pox.....	813	.....	Mumps.....	1,649	.....
Diphtheria.....	1,084	48	Scarlet fever.....	1,171	28
Erysipelas.....	57	5	Smallpox.....	71	.....
Influenza.....	21	15	Tuberculosis.....	220	100
Lethargic encephalitis (sleeping sickness).....	26	13	Typhoid fever.....	49	10
			Whooping cough.....	124	7

¹Population, officially estimated, 183,378.

Smallpox—Niagara Falls.

Under date of February 2, 1922, six cases of smallpox were stated to be under quarantine at Niagara Falls, Ontario, Canada. The form of the disease was stated to be mild.

CUBA.**Alastrim—Manzanillo.**

Information received under date of January 28, 1922, through the quarantine department of Jamaica, West Indies, shows that an American bill of health from Manzanillo, Cuba, stated the occurrence of 244 cases of alastrim with 43 deaths.

Malaria—Santiago.

During the month of January, 1922, 75 cases of malaria with 6 deaths were reported at Santiago de Cuba.

DOMINICAN REPUBLIC.**Smallpox—Puerta Plata.**

Under date of January 13, 1922, smallpox was reported present at Puerta Plata, Dominican Republic, with about 100 cases with 5 deaths. In the surrounding country several thousand cases were stated to be present, with about 100 fatalities from the disease. Smallpox was stated to have first appeared in the district in September, 1921, in a group of laborers from Haiti employed at the sugar central at Monte Llano.

MEXICO.**Plague-Infected Rodents—Tampico.**

The finding of 3 plague-infected rodents was reported at Tampico, Mexico, during the period February 5 to 11, 1922, making a total of 8 infected rodents found at that place from January 1 to February 11, 1922.

PERU.**Plague—Department of Callao-Lima.**

During the period December 16 to 31, 1921, 31 cases of plague with 13 deaths, and during the period January 1 to 15, 1922, 28 cases with 12 deaths, were reported in the Department of Callao-Lima, Peru. During the month of November, 1921, 2 deaths from plague were reported at Callao.

POLAND.**Typhus Fever—November 20–December 10, 1921.**

The following information with regard to the prevalence of typhus fever in Poland has been received by reference from the Ministry of Health of Poland:

Typhus fever, Poland, Nov. 20-Dec. 10, 1921.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
District—			Nowogrod.....	249	15
Białystok.....	116	3	Polesie.....	83	5
Kielce.....	31	8	Stanisławow.....	88	8
Krakow.....	45	6	Tarnopol.....	86	17
Lodz.....	67	.....	Volhynia.....	89	4
Lublin.....	59	.....	Warsaw.....	81	2
Lwow.....	121	16	Warsaw City.....	47	5

Typhus Fever—Lemberg—January, 1922.

Press reports dated January 3, 1922, showed 229 cases of typhus fever in the Lemberg hospital for epidemic diseases.

Typhus Fever—Warsaw—January, 1922.

Under date of January 11, 1922, an unofficial statement gave the total number of cases then present at Warsaw as 50. It was stated that public notices had been posted ordering all persons coming into Russia to report immediately to the health authorities and advising the people to keep clean in order to prevent spread of typhus fever.

RUSSIA.

Communicable Diseases—Esthonia—December, 1921.

During the month of December, 1921, communicable diseases were reported in Esthonia,¹ Russia, as follows:

Disease.	Cases.	Disease.	Cases.
Chicken pox.....	11	Scarlet fever (scarlatina).....	139
Diphtheria.....	62	Smallpox.....	9
Measles.....	401	Tuberculosis.....	155
Paratyphoid fever.....	4	Typhoid fever.....	116
Recurrent fever.....	10	Typhus fever.....	38

¹ Population, officially estimated, 1,300,000.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.**Reports Received During Week Ended Feb. 24, 1922.¹**

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Oct. 23-29, 1921: Deaths, 4,168.
Calcutta.....	Dec. 25-31.....	9	9	
Do.....	Jan. 1-7.....	6	5	
Madras.....	Jan. 1-14.....	5	4	
Rangoon.....	Dec. 11-31.....	9	9	
Do.....	Jan. 1-7.....	1	1	
Philippine Islands:				
Manila.....	do.....	30	6	
Provinces—				
Zambales.....	Dec. 11-31.....	31	18	

¹ 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 Week Ended Feb. 24, 1922—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Russia:				
Kharkoff.....	Jan. 23.....			Present.
Kieff.....	Dec. 15-Jan. 11.....	259		
Latvia—				
Riga.....				At quarantine station in October, 1921: One case.
Odessa.....	Jan. 28.....			Present.
Siam:				
Bangkok.....	Dec. 4-10.....	1		

PLAGUE.

Azores:					
Island—					
Fayal.....	Jan. 16-22.....	2	2		
St. Michael.....					Jan. 1-21, 1921: Cases, 13; deaths, 8.
Arrifes.....	Jan. 1-7.....	1			3 miles from Ponta Delgada (port).
Fenaes da Luz.....	Jan. 15-21.....	3	2		6 miles from port.
Ribeira Grande.....	Jan. 8-14.....	9	6		9 miles from port.
British East Africa:					
Uganda.....	Oct. 1-31.....	5	3		Reported by native chiefs, 201 deaths; by native inspectors, 10 deaths.
Ceylon:					
Colombo.....	Dec. 25-31.....	3	1		Dec. 18-24, 1921: One plague rat.
Ecuador:					
Guayaquil.....	Jan. 1-15.....	12	6		Rats examined, 3,000; found plague-infected, 83.
India:					Dec. 18-24, 1921: Cases, 849; deaths, 625.
Bombay.....	Dec. 18-24.....	1	1		
Karachi.....	Jan. 1-7.....	2	1		
Madras Presidency.....	do.....	377	288		
Rangoon.....	Dec. 11-31.....	65	59		
Do.....	Jan. 1-7.....	10	9		
Mexico:					
Tampico.....					Feb. 5-11, 1922: Three plague-infected rodents found.
Peru:					
Callao.....	Nov. 1-30.....		2		Year 1920: Deaths, 30.
Callao-Lima (Department).....	Dec. 16-31.....	31	13		
Do.....	Jan. 1-15.....	28	12		
Siam:					
Bangkok.....	Dec. 4-10.....	4	4		

SMALLPOX.

Arabia:					
Aden.....	Jan. 8-14.....		1		
Brazil:					
Rio de Janeiro.....	Dec. 25-31.....	2			
Do.....	Jan. 1-14.....	6	1		
Canada:					
Manitoba—					
Winnipeg.....					Year, 1921: Cases, 71.
Ontario—					
Niagara Falls.....	Feb. 2.....	6	1		
Ottawa.....	Feb. 5-11.....	3			
China:					
Harbin.....	Dec. 26-Jan. 1.....	2			
Cuba:					
Antilla.....	Jan. 29-Feb. 4.....	1			At Preston.
Santiago.....	Jan. 1-31.....	5			
Dominican Republic:					
Fuerta Plata.....	Jan. 13.....	100	5		In district, widely diffused, with 1,000 estimated cases with 100 deaths.
San Pedro de Macoris.....	Jan. 14-27.....	63			In city and vicinity.

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

Reports Received During Week Ended Feb. 24, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ecuador:				
Guayaquil.....	Jan. 1-15.....	1		
Egypt:				
Cairo.....	Nov. 26-Dec. 2....	2		
Haiti:				
Cape Haitien.....	Jan. 22-29.....	5	1	
India:				Oct. 23-29, 1921: Deaths, 43.
Karachi.....	Jan. 1-7.....	7	2	
Madras.....	do.....	51	18	
Rangoon.....	Dec. 11-31.....	4		
Mexico:				
Chihuahua.....	Jan. 23-29.....		1	
Saltillo.....	Jan. 29-Feb. 4....		1	From San Salvador, Zacatecas.
Torreon.....	Jan. 1-31.....		78	
Rumania:				
Bucharest.....	Nov. 1-30.....	23		
Russia:				
Esthonia.....	Dec. 1-31.....	9		
Straits Settlements:				
Singapore.....	Dec. 18-24.....	6	4	
Syria:				
Aleppo.....	Jan. 8-14.....			Many cases. Present in vicinity.
Cilicia.....	do.....			Present.
Diatbekir.....	do.....			Do.
Urfa.....	do.....			Do.
Yugoslavia:				July 3-9, 1921: Cases, 11.
Bosnia Herzegovina.....	July 3-9.....	2		
Croatia Slavonia.....	do.....	1		
Dalmatia.....	do.....	1		
Serbia.....	do.....	3		
Slavonia.....	do.....	1		
Voivodina.....	do.....	3		
On vessel:				
S. S. West O'Rowa.....	Jan. 5-8.....	3	3	At Kobe, Japan, from Shanghai, China.

TYPHUS FEVER.

Algeria:				
Algiers.....	Jan. 11-20.....	1		
Austria:				
Vienna.....	Dec. 25-31.....	8		
China:				
Harbin.....	Dec. 26-Jan. 1....	1		
Egypt:				
Alexandria.....	Jan. 15-21.....	4		
Cairo.....	Nov. 19-Dec. 2....	2	3	
Germany:				
Breslau.....	Dec. 25-31.....	2	1	
Do.....	Jan. 1-15.....	37	4	
Italy:				
Palermo.....	Jan. 15-28.....	3	1	
Palestine:				
Jerusalem.....	Jan. 10-16.....	1		
Poland:				Nov. 20-Dec. 10, 1921: Cases, 1,162; deaths, 89.
District—				
Bialystok.....	Nov. 20-Dec. 10..	116	3	
Galicia—				
Lemberg.....	Jan. 3.....	229		
Kielce.....	Nov. 20-Dec. 10..	31	8	
Krakow.....	do.....	45	6	
Lodz.....	do.....	67		
Lublin.....	do.....	59		
Lwow.....	do.....	121	16	
Nowogrod.....	do.....	249	15	
Polesia.....	do.....	83	5	
Stanislawow.....	do.....	88	8	
Tarnopol.....	do.....	86	17	
Volhynia.....	do.....	89	4	
Warsaw.....	do.....	81	2	
Warsaw City.....	do.....	47	5	
Do.....	Jan. 11.....	50		
Portugal:				
Oporto.....	Jan. 22-28.....	1	1	

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

Reports Received During Week Ended Feb. 24, 1922—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Rumania:				
Bucharest.....	Nov. 1-30.....	3		
Chisinau.....	do.....	7		
Russia:				Nov. 28-Dec. 10, 1921: In Soviet Russia, cases, 7,661.
Esthonia.....	Dec. 1-31.....	38		Oct. 1-31, 1921: Cases, 839; Nov. 1-30, 1921: Cases, 2,399.
Perm.....	Nov. 23-Dec. 10.....	1,406		
Turkey:				
Constantinople.....	Jan. 8-14.....	7		
Yugoslavia:				July 3-9, 1921: Cases, 3.
Bosnia Herzegovinia.....	July 3-9.....	1		
Croatia—				
Zagreb.....	Jan. 8-14.....	1		
Montenegro.....	July 3-9.....	2		

Reports Received from Dec. 31, 1921, to Feb. 17, 1922.

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Oct. 2-22, 1921: Deaths, 15,017.
Bombay.....	Oct. 30-Nov. 5.....	1		
Calcutta.....	Oct. 23-Dec. 24.....	62	51	
Karachi.....	Nov. 6-12.....	1	1	
Madras.....	Dec. 11-31.....	3	1	
Rangoon.....	Oct. 1-Dec. 10.....	21	15	
Indo-China:				
Saigon.....	Nov. 6-12.....	1	1	
Java:				
West Java—				
Batavia.....	Nov. 1-7.....	2	2	At Lebak.
Philippine Islands:				
Manila.....	Nov. 13-Dec. 31.....	49	18	
Potand.....				Aug. 14-Sept. 10, 1921. Cases, 4; deaths, 1.
Siam:				
Bangkok.....	Oct. 23-Nov. 26.....	4	3	

PLAGUE.

Asia Minor:				
Smyrna.....	Nov. 27-Dec 3.....	1	1	
Australia:				
New South Wales—				
Sydney.....	do.....	2	1	Dec. 7-13, 1921: Four plague rats.
Do.....	Jan. 29-Feb. 11.....	2		
Queensland—				
Brisbane.....	Oct. 30-Dec. 24.....	27	18	Total, Aug. 22-Dec. 24, 1921: Cases, 39; deaths, 25. Total infected rats, 53.
Do.....	Jan 21-28.....	3		
Cairns.....	Oct. 30-Dec. 10.....	6	3	Plague rats: Eight.
Cooktown.....	Oct. 30-Nov. 5.....	1		Pestis minor.
Ingham.....				Nov. 6-Dec. 24, 1921: Plague rats, 14.
Inisfail.....				Nov. 27-Dec. 3, 1921: One plague rat.
Ipswich.....	Dec. 11-17.....	1	1	
Port Douglas.....	Nov. 13-19.....	1	1	
Townsville.....	Nov. 20-Dec. 3.....	2	2	Total cases, 27; deaths, 18.
Azores:				
St. Michael Island.....				Nov. 27-Dec. 31, 1921: Cases, 23; deaths, 9.
Arrifes.....	Dec. 25-31.....	1	1	
Fenais d'Ajuda.....	Nov. 27-Dec. 3.....			Present.
Ribeira Grande.....	Nov. 13-Dec. 10.....	19	8	
Livramento.....	Dec. 4-10.....	2		Vicinity of Ponta Delgada.
Ponta Delgada.....	do.....	1		

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

Reports Received from Dec. 31, 1921, to Feb. 17, 1922—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Bahia.....	Oct. 30-Dec. 17....	9	9	
British East Africa:				
Uganda.....	Aug. 1-Sept. 30....	85	58	Reports of inspectors, deaths, 142; reports of chiefs, deaths, 641.
Ceylon:				
Colombo.....	Oct. 30-Dec. 17....	10	9	Oct. 30-Dec. 10, 1921: Rodent plague, 5.
China:				
Hongkong.....	Nov. 20-Dec. 17....	6		
Ecuador:				
Guayaquil.....	Nov. 16-Dec. 31....	18	6	Rats examined, 2,958; found infected, 90. Total, July-Dec. 15, 1921: Cases, 28. Jan. 1-Dec. 31, 1921: Cases, 356; deaths, 133. Jan. 1-12, 1922: Cases, 5; deaths, 2.
Egypt.....				
City—				
Alexandria.....	Dec. 5-30.....	7	2	
Port Said.....	Dec. 20.....	1		
Suez.....	Nov. 22-Dec. 31....	16	9	
Do.....	Jan. 2.....	1		
Provinces—				
Girgeh.....	Jan. 12.....	1		Septicemic.
Keneh.....	Dec. 1.....	1		Do.
India.....				Oct. 23-Dec. 10, 1921: Cases, 6,918; deaths, 3,122.
Bombay.....	Oct. 23-Dec. 17....	6	5	
Karachi.....	Nov. 6-Dec. 31....	5	5	
Madras.....	Dec. 11-17.....	1		
Madras Presidency.....	Nov. 13-Dec. 31....	2,047	1,438	
Rangoon.....	Oct. 1-Dec. 10....	74	70	
Indo-China:				
Saigon.....				Nov. 6-Dec. 10, 1921: Rodent plague, 7.
Italy:				
Catania.....	Nov. 27.....	1	1	Total, Oct. 16-Nov. 27, 1921: Cases, 8 (of which 1 doubtful); deaths, 5.
Naples (Province)—				
Torre Annunziata.....	Oct. 22-Dec. 27....	2		17 miles from city of Naples.
Venice.....	Oct. 27.....	1		
Java.....				Islands of Java and Madoera, Nov. 1-30, 1921: Deaths, 763.
East Java—				
Soerabaya.....	Oct. 30-Dec. 10....	11	12	
Madagascar:				
Tananarive.....	Feb. 4.....			Present.
Mauritius (Island).....	Oct. 30-Nov. 5....	37	31	
Mesopotamia:				
Bagdad.....	Oct. 1-31.....	1	1	
Mexico:				
Tampico.....				Dec. 18-31, 1921: Infected rodents found, 5; total, Jan. 1-Dec. 31, 1921, infected rodents, 322; Jan. 1-21, 1922, 5 plague-infected rodents.
Vera Cruz.....				One infected rodent caught Dec. 5, 1921.
Peru.....				Nov. 17-Dec. 15, 1921: Cases, 63; deaths, 22. Occurring in Callao, Huacho, Huaras, Lima, Magdalena Vieja, Paita, Salaverry, and Sechura.
Portugal:				
Lisbon.....	Dec. 15.....	1	1	
Portuguese West Africa:				
Angola—				
Loanda.....	Oct. 9-Nov. 5.....		2	
Rhodes (Island) (Aegean Sea).....	Oct. 13.....	3	1	
Siam:				
Bangkok.....	Oct. 23-Nov. 5....	1	1	
Straits Settlements:				
Singapore.....	Nov. 6-12.....	2	2	
Syria:				
Beirut.....	Oct. 9-Nov. 20....	10	4	

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

Reports Received from Dec. 31, 1921, to Feb. 17, 1922—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Turkey:				
Constantinople.....	Jan. 1-7.....	1		
Union of South Africa:				
Orange Free State—				
Bothaville.....	Nov. 19.....			Plague-infected mouse found. In native herd boy.
Hoopstead.....	Dec. 4-10.....	1		
On vessels:				
S. S. Polycarp.....	Feb. 3.....	1		At Para, Brazil, from Coara, via Manaos, Maranham, and Para for New York.

SMALLPOX.

Arabia:				
Aden.....	Dec. 25-31.....		1	
Bolivia:				
La Paz.....	Aug. 1-Oct. 31.....	42	28	
Brazil:				
Bahia.....	Nov. 6-Dec. 17.....	4		
Rio de Janeiro.....	Nov. 13-Dec. 24.....	11	2	
Sao Paulo.....	Oct. 31-Nov. 20.....	2		
British East Africa:				
Uganda.....	Aug. 1-Sept. 30.....	7		Reports of inspectors, cases, 4.
Canada:				
Manitoba—				
Winnipeg.....	Nov. 20-Dec. 3.....	2		
New Brunswick—				
Charlotte County.....				Dec. 17, 1921: 31 cases previously reported, occurring at Ander- sonville and Blacks Harbor. Dec. 18-24, 1921: Cases, 3. Dec. 25-31, 1921: Cases, 2.
St. Stephen.....	Dec. 11-17.....	2		
Restigouche County.....	Dec. 11-31.....	3		
York County.....	Dec. 11-17.....	1		
Ontario—				
Fort William and Port Arthur.....	Jan. 1-21.....	3		
Hamilton.....	Jan. 22-28.....	3		
Kingston.....	Jan. 17-23.....	3		Jan. 16-20, 1922: Two cases re- ported.
Niagara Falls.....	Dec. 11-24.....	2		A larger number unofficially re- ported.
Do.....	Jan. 15-Feb. 4.....	11		
Ottawa.....	Dec. 21-24.....	17		
Do.....	Jan. 1-Feb. 4.....	21		
Sault Ste. Marie.....	Jan. 15-21.....	1		
Toronto.....	Dec. 11-24.....	4		
Do.....	Jan. 1-28.....	36		
Windsor.....	Jan. 8-14.....	1		
Quebec—				
Montreal.....	Dec. 11-24.....	1		
Saskatchewan—				
Regina.....	Jan. 1-7.....	1		
Saskatoon.....	Dec. 1-18.....	6		
Ceylon:				
Colombo.....	Nov. 27-Dec. 3.....	1		Port case.
Chile.....				Nov. 15-21, 1921: Diffused in southern provinces; not epi- demic.
Concepcion.....	Nov. 23-Dec. 19.....		22	Nov. 15-21, 1921: Present. In vicinity, at Hualqui, cases 32; deaths, 5. Dec. 4-17, 1921: Present.
Coronel.....	Nov. 15-Dec. 17.....			Present.
Curanilahue.....	Nov. 15-21.....	4		
Talcahuano.....	Nov. 15-Dec. 24.....	6		
Temuco.....	Nov. 15-21.....	9		
Valparaiso.....	Oct. 23-Dec. 31.....		24	
China:				
Amoy.....	Nov. 16-Dec. 31.....		7	Nov. 23-29, 1921: Present:
Antung.....	Nov. 23-Dec. 18.....	4	1	
Chungking.....	Nov. 6-Dec. 10.....			Present.
Foochow.....	Nov. 6-Dec. 31.....			Do.
Do.....	Jan. 1-7.....			Do.
Hankow.....	Nov. 13-Dec. 31.....			Do.
Harbin.....	Nov. 14-Dec. 11.....	5		

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

Reports Received from Dec. 31, 1921, to Feb. 17, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China—Continued				
Hongkong.....	Dec. 3-31.....	5		
Mukden.....	Nov. 20-Dec. 31.....			Present.
Nanking.....	Nov. 20-Dec. 17.....			Do.
Shanghai.....	Oct. 31-Dec. 31.....	67	194	Cases, foreign: Deaths, Chinese and foreign. Jan. 14, 1922: Conditions serious.
Do.....	Jan. 2-8.....	6	43	Cases, foreign, deaths, native. Jan. 14, 1922: Seriously prevalent.
Tientsin.....	Dec. 11-17.....	2		In Mission Hospital.
Colombia:				
Cartagena.....	Nov. 22-28.....		1	
Cuba.				
Antilla.....	Dec. 12-31.....	3		Dec. 4-10, 1921: Cases, 151; in two provinces.
Do.....	Jan. 8-28.....	12	1	At Preston.
Cienfuegos.....	Jan. 22-28.....	1		From outside city limits.
Czechoslovakia:				
Prague.....	Dec. 18-24.....		42	
Dominican Republic:				
San Pedro de Macoris.....	Nov. 20-Dec. 31.....	31	1	Estimate of about 500 cases of smallpox in the district of Macoris: of this amount 50 within the city limits.
Santo Domingo.....	Nov. 15-Dec. 5.....			In district 401 cases estimated. Dec. 17-24, 1921: Present in vicinity. Jan. 9-16, 1922: In surrounding country, 1,745 cases (estimated).
Flume.....				
Ecuador:				
Guayaquil.....	Nov. 16-Dec. 31.....	7		Dec. 27, 1921-Jan 2, 1922: Cases, 2, and vicinity.
Egypt:				
Alexandria.....	Nov. 26-Dec. 2.....	1	1	
Port Said.....	Dec. 20-26.....	1		
Finland.....				
Great Britain:				
Manchester.....	Jan. 1-7.....	4		
Nottingham.....	Dec. 4-31.....	18		
Do.....	Jan. 8-14.....	2		Nov. 16-30, 1921: 1 case.
Haiti.....				
Cape Haitien.....	Dec. 11-24.....	8		Jan. 22-28, 1922: A few cases.
Do.....	Jan. 1-14.....	8		
Port au Prince.....	Dec. 11-31.....			Present.
Do.....	Jan. 15-21.....	2		
India.....				
Bombay.....	Oct. 23-Dec. 10.....	2	1	Oct. 2-8, 1921: Deaths, 28.
Calcutta.....	Nov. 13-Dec. 24.....	26	19	
Karachi.....	Nov. 11-Dec. 31.....	28	9	
Madras.....	Nov. 13-Dec. 31.....	183	59	
Rangoon.....	Oct. 1-Nov. 19.....	2		
Italy:				
Genoa.....	Nov. 10-20.....	1		
Messina—				
Messina.....	Nov. 28-Dec. 4.....	1		
Pettineo.....	Nov. 14-Dec. 4.....	2		
Japan:				
Taiwan Island.....	Dec. 1-20.....	2	1	
Java:				
West Java—				
Bandoeng.....	Nov. 18-Dec. 8.....	2		
Batavia.....	Nov. 18-Dec. 22.....	11	9	City and province.
Buitenzorg.....	Nov. 25-Dec. 8.....	7	1	13 cases with 3 deaths not locally stated.
Krawang.....	Nov. 18-24.....	1		
Lebak.....	Nov. 18-Dec. 8.....	7	4	
Pandeglang.....	Nov. 25-Dec. 1.....	1	1	
Tangerang.....	Nov. 18-Dec. 8.....	5	1	
Mesopotamia:				
Bagdad.....	Oct. 1-Nov. 30.....	117	50	Epidemic with high mortality in November, 1921.
Mexico:				
Chihuahua.....	Dec. 5-11.....		1	
Guadalajara.....	Nov. 1-Dec. 31.....	6		
Mexico City.....	Nov. 23-Dec. 24.....	51		
San Luis Potosi.....	Dec. 18-24.....		2	
Do.....	Jan. 8-14.....		2	
Torreón.....	Dec. 1-31.....	134		

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

Reports Received from Dec. 31, 1921 to Feb. 17, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Panama:				
Ancon.....				Admitted to hospital by transfer from Panama, Nov. 20, 1921, 1 case. Arrived on sailing vessel from a village on south coast.
Bocas del Toro Province—				
Suraba.....	Jan. 18.....	10		Village 24 miles from Almirante. Present.
Chiriqui Province.....	Dec. 22.....			
Do.....	Jan. 26.....			Present with center of prevalence at Bosquete Bajo.
Panama.....	Dec. 14.....	1		On Dec. 21, 1921: 1 additional case from country district of Sabanas, admitted to hospital. Total admissions, Jan. 1-Dec. 21, 1921, 207.
Peru:				
Lima.....	Nov. 1-30.....		2	
Poland.....				Aug. 14-Oct. 8, 1921: Cases, 161; deaths, 33. Exclusive of Brest-Litovsk, Minsk, and Wilno districts.
Portugal:				
Lisbon.....	Nov. 13-Dec. 31.....	48	12	
Portuguese East Africa:				
Lourenco Marques.....	Oct. 1-Nov. 5.....	2	4	
Portuguese West Africa:				
Angola—				
Loanda.....	Oct. 9-Nov. 3.....		3	
Russia:				
Estonia.....	Oct. 1-Nov. 30.....	29		
Latvia.....	do.....	55		Corrected report.
Serbia:				
Belgrade.....	Oct. 2-Nov. 26.....	16	4	
Siam:				
Bangkok.....	Oct. 23-Nov. 5.....	1		
Spain:				
Barcelona.....	Jan. 8-14.....		1	
Huelva.....	Oct. 1-Nov. 30.....		2	
Malaga.....	Nov. 1-Dec. 31.....		60	
Seville.....	Nov. 16-Dec. 31.....		7	
Do.....	Jan. 8-14.....		1	
Straits Settlements:				
Singapore.....	Nov. 6-Dec. 17.....	43	9	
Switzerland:				
Glarus, Canton.....	Dec. 10.....			Epidemic.
Zurich.....	do.....	2		In vicinity.
Syria:				
Adana.....	Dec. 18-24.....			Present.
Do.....	Jan. 1-7.....			Do.
Aleppo.....	Dec. 18-24.....			Do.
Do.....	Jan. 1-7.....			Present.
Alexandretta.....	Jan. 1-7.....			Do.
Beirut.....	Oct. 9-Nov. 13.....	5	2	
Diarbekir.....	Dec. 18-24.....			Do.
Do.....	Jan. 1-7.....			Do.
Mersina.....	Dec. 18-24.....			Do.
Do.....	Jan. 1-7.....			Present.
Urfa.....	do.....			Do.
Do.....	Jan. 1-7.....			Do.
Tunis:				
Tunis.....	Nov. 26-Dec. 23.....	17	15	
Do.....	Jan. 1-7.....		1	
Turkey:				
Constantinople.....	Nov. 27-Dec. 24.....	20	4	
Union of South Africa:				
Cape Province.....	Nov. 5-Dec. 10.....			Outbreaks.
Natal.....	Oct. 23-Nov. 12.....			Do.
Orange Free State.....	Oct. 23-29.....			Do.
Transvaal.....	Oct. 23-Dec. 10.....			Do.
Yugoslavia.....				July 24-30, 1921: Cases, 26.

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

Reports Received from Dec. 31, 1921, to Feb. 17, 1922—Continued.

TYPHUS FEVER.

Place.	Date.	Cases.	Deaths.	Remarks.
Algeria:				
Algiers.....	Nov. 1-Dec. 31....	8		
Oran.....	Dec. 21-31.....	1		
Do.....	Jan. 1-10.....		1	
Austria:				
Vienna.....	Dec. 4-10.....	2		
Bolivia:				
La Paz.....	Aug. 1-Oct. 31....	83	65	
Bulgaria:				
Sofia.....	Dec. 18-24.....	1		
Chile:				
Valparaiso.....	Oct. 22-Nov. 26....		6	
Concepcion.....	Nov. 22-Dec. 4....		2	
China:				
Harbin.....	Nov. 7-Dec. 25....	12		Jan. 23, 1922: Reported extending from Soviet Russia, along railway line to maritime Provinces.
Egypt:				
Alexandria.....	Nov. 19-Dec. 31....	3	1	
Cairo.....	Oct. 1-Nov. 4.....	7	3	
Germany:				
Hamburg.....	Dec. 11-17.....	4		
Great Britain:				
Glasgow.....	Dec. 25-31.....	1		
Mesopotamia:				
Bagdad.....	Oct. 1-Nov. 30....	2	9	
Mexico:				
Mexico City.....	Nov. 29-Dec. 24....	260		Including municipalities in Federal District.
San Luis Potosi.....	Dec. 18-24.....		1	Dec. 25-31, 1921: Present.
Do.....	Jan. 8-28.....			Present.
Palestine:				
Jerusalem.....	Dec. 27-Jan. 2....	4		
Portugal:				
Oporto.....	Jan. 8-14.....	1	1	
Poland:				
				Aug. 14-Oct. 8, 1921: Cases, 1,431; deaths, 167. Exclusive of Brest-Litovsk, Minsk, and Wilno districts.
Russia:				
Esthonia.....	Oct. 1-Nov. 30....	15		
Latvia.....	do.....	127		
Serbia:				
Belgrade.....	Oct. 2-Nov. 26....	3	2	
Siberia:				
Chita.....	Dec. 26.....			Jan. 23, 1922: Present in western districts. Epidemic.
Turkey:				
Constantinople.....	Nov. 20-Dec. 31....	19		
Do.....	Jan. 1-7.....	6		
Union of South Africa:				
Cape Province.....				Oct. 23-Dec. 10, 1921: Outbreaks. One death in European at Jenseville, Dec. 6, 1921.
East London.....	Oct. 30-Nov. 5....	1		Outbreaks. Stated to be prevalent only in Newcastle District. Outbreaks.
Natal.....	Nov. 5-Dec. 10....			
Orange Free State.....	Nov. 13-Dec. 3....			
Venezuela:				
Maracaibo.....	Dec. 20-26.....		1	
Yugoslavia:				
Zagreb.....	Jan. 1-7.....	1		July 24-30, 1921: Cases, 10.

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

Reports Received from Dec. 31, 1921, to Feb. 17, 1922—Continued.

YELLOW FEVER.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico.....				Year 1921: Cases, 115; deaths, 53.
Colima (State).....				Total: Cases, 7; deaths, 4.
Colima.....	Oct. 27.....	4	3	
Manzanillo.....	Aug. 21.....	3	1	
Jalisco (State).....				Total: Cases, 13; deaths, 7.
Guadalajara.....	Nov. 1-30.....	1	1	Imported.
Puerta Vallarta (Las Penas). Tonila.....	Oct. 5.....	11	5	Dec. 19, 1921: Present.
Quintana Roo (Territory)— Payo Obispo.....	Aug. 31.....	1	1	
Sinaloa (State).....	Aug. 8.....	1	1	Total: Cases, 18; deaths, 9.
Culliacan.....	Sept. 17.....	4	1	
Guamuchil.....	Oct. 10.....	1	1	
Mazatlan.....	Aug. 21.....	1	1	Imported.
Palmar de los Leales.....	Sept. 30.....	12	7	
Tamaulipas (State).....				Total: Cases, 1; deaths, 1.
Tampico.....	Jan. 11.....	1	1	
Vera Cruz (State).....				Total: Cases, 75; deaths, 31.
Alamo.....	June 21.....	4	1	Oil camp.
Alvarado.....	July 3.....	1	1	
Barra de Penn.....	July 18.....	1	1	
Cordoba.....	Sept. 22.....	5	3	
Cosamalospam.....	July 18.....	14	6	
Nogales.....	Oct. 28.....	1	1	
Orizaba.....	do.....	1	1	
Papantla.....	Jan. 14.....	6	3	
Providencia.....	Oct. 28.....	3	1	
Purga.....	Feb. 7.....	1	1	
Rancho de Santa Rosa.....	Oct. 8.....	2	2	
Rancho "El Jaguey".....	Sept. 14.....	2	2	
San Pablo (Papantla).....	Sept. 12.....	1	1	
San Ildefonso.....	Oct. 17.....	2	2	
Tierra Blanca.....	Sept. 24—Nov. 12.....	4	3	
Tlacotalpan.....	Sept. 14.....	1	2	
Tuxpan.....	Jan. 3.....	8	2	
Vera Cruz.....	Jan. 15.....	18	7	Two of these cases imported. Dec. 20-26, 1921: Cases, 1; deaths, 1. Imported.