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AGGLUTINATION, CROSS-AGGLUTINATION, AND AGGLUTININ ABSORPTION IN TULARÆMIA

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Abbreviations:

To avoid the constant repetition of the technical names in their nomenclatorial forms, we adopt in this paper the following abbreviations:

tularense=*Bacterium tularense* McCoy and Chapin, 1912.

melitensis=*Brucella melitensis* variety *melitensis* [A] (Bruce, 1893) —Evans, 1923, Public Health Reports, Vol. 38, p. 1943.

abortus=*Brucella melitensis* variety *abortus* (Bang, 1897) —Evans, 1923, Public Health Reports, Vol. 38, p. 1943.

Only these two varieties of *Brucella melitensis* are considered in the present paper because they are the only varieties known to occur commonly in the United States.

The final diagnosis in tularæmia rests on the isolation of a culture of *tularense* or on agglutination of a stock culture of this organism by the patient's blood serum. The latter is a reliable test and has been employed in the Hygienic Laboratory of the United States Public Health Service at Washington, D. C., for several years as a routine test of suspected serums submitted for diagnosis.

Tularæmia serums have been received from 24 States, from the District of Columbia, and from Japan. A study of these serums has been supplemented by a study of the agglutinin reactions in experimental animals; the results are presented under the following heads:

A. Agglutination:
   (1) Agglutination of *tularense* by human tularæmic serums.
   (2) Nonagglutination of various organisms by human and animal tularæmic serums.
   (3) Nonagglutination of *tularense* by nontularæmic human and animal serums.
   (4) Nonagglutination of *abortus* and *melitensis* by human and animal serums.

B. Cross agglutination:
   (1) Cross agglutination of *abortus* and *melitensis* by human and animal tularæmic serums.
   (2) Cross agglutination of *tularense* by serums from cases of undulant fever and by serums of animals immunized against *abortus* and *melitensis*.

C. Agglutinin absorption:
   (1) Agglutinin absorption reactions of human and animal tularæmic serums.
   (2) Reciprocal agglutinin absorption reactions of four *tularense* strains.
   (3) Reciprocal agglutinin absorption of *tularense*, *abortus* and *melitensis*.

Technique.
Summary.
Conclusions.

(1) AGGLUTINATION OF *TULARENSE* BY HUMAN TULARÆMIC SERUMS

Table 1 presents agglutination titers of 120 cases of tularæmia. In 28 of these cases the initials of the patient's name are given and tests of his serum taken at intervals are recorded, showing the rise and fall of agglutinin titer in the individual as time progressed; in 92 cases no initials are given and only a single sample of serum was tested for each case; hence no two records are for the same individual.

Analysis of Table 1 shows: A complete absence of agglutinins for *tularense* in the first week of tularæmia; the constant presence of agglutinins in the second week; an abrupt rise in titer in the third week, reaching its maximum in the fourth, fifth, sixth, or seventh week; a fall of titer in the eighth week; a gradual decline thereafter until at the end of the first year the average titer of 17 cases was 1:136; a persistence of agglutinins in long-recovered cases; and the failure of agglutinins entirely to disappear in any case even 10, 14, and 18 years after recovery.

Five market men who showed agglutinin titers of 80, 80, 40, 40, and 40, respectively, were not included in Table 1 because the date of onset of their illness could not be determined. These men had been engaged annually in the rabbit season in skinning and dressing rabbits, but were without knowledge of an attack which could be definitely ascribed to tularæmia. It is believed that the maintenance of their agglutinin titer was not due to annual exposure to infection but to a persistence of agglutinins from their first attack; for it has been observed that, in laboratory workers, the degree of persistence of agglutinins is no greater in those exposed daily to infection than in those who have not been exposed since their attack of tularæmia.

TABLE 1.—*Agglutination titers of blood serums of 120 cases of tularæmia*

Cases	Week of illness								Months		Years after onset of illness								
	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	3	6	1	2	3	4	5	6	10	14	18
28 cases, tested 2 or more times each:																			
B. F. T.	3 days; 0	9 days; 80	16 days; 320	23 days; 320		320													
O. E. V.	4 days; 0	10 days; 10		22 days; 160	160				160										
E. W. M.	5 days; 0	11 days; 160	18 days; 320	25 days; 1,280			[2]		320										
J. F. S.	5 days; 0		17 days; 640																
"S" [1]	6 days; 0	12 days; 40																	
W. C. G.	6 days; 0	14 days; 80																	
R. R. P.	6 days; 0	14 days; 640	21 days; 1,280							320	160								
S. T. M.	6 days; 0			26 days; 1,280															
"B" [1]	7 days; 0		17 days; 160							80	160								
N. G.		8 days; 20	16 days; 160																
H. F.		9 days; 20	17 days; 640																
C. I.		10 days; 20	18 days; 80	25 days; 160		320													
C. F. K.		11 days; 80	21 days; 1,280																
A. M.		11 days; 160		24 days; 2,560	1,280				640										
J. C. C.		12 days; 40	21 days; 640																
"R" [1]		14 days; 10					80		160	320	160								
J. C. D.		15 days; 80		23 days; 640															
R. R. S.			18 days; 640	26 days; 1,280						640	320								
C. W. P.			19 days; 320								160	80	80	40					
S. S. M.				25 days; 1,280			640												
C. W. C.					1,000												[3]		
J. W. G.						640		640											
E. N.										320	160								
G. W. O.									160		160		160	80					
G. C. L.											320	160	160	80	160				
E. F.											100	40	40	40	40	40			
B. M.											100				20				
E. W. T.																		40	

[1] Case in the Lister Institute, London, England.

[2] Positive.

TABLE 1.—*Agglutination titers of blood serums of 120 cases of tularæmia*—Continued

Cases	Week of illness								Months		Years after onset of illness								
	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	3	6	1	2	3	4	5	6	10	14	18
92 cases, tested only once each		12 days; 40	15 days; 160	23 days; 640	80	160	40	320	160	80	20	20	60	----	----	----	40	----	20
		12 days; 640	16 days; 80	24 days; 320	80	320	80	320	320	160	20	20	80	----	----	----	----	----	----
		14 days; 20	17 days; 320	24 days; 320	320	640	320	320	320	160	40	40	----	----	----	----	----	----	----
		14 days; 640	17 days; 320	24 days; 640	640	640	320	640	320	----	40	----	----	----	----	----	----	----	----
		----	17 days; 320	25 days; 320	640	640	1,280	640	320	----	80	----	----	----	----	----	----	----	----
		----	17 days; 640	25 days; 1,280	640	640	1,280	640	320	----	160	----	----	----	----	----	----	----	----
		----	17 days; 1,280	26 days; 640	1,280	1,280	2,560	----	320	----	160	----	----	----	----	----	----	----	----
		----	18 days; 160	27 days; 320	1,280	1,280	2,560	----	320	----	----	----	----	----	----	----	----	----	----
		----	19 days; 320	27 days; 320	1,280	1,280	----	----	320	----	----	----	----	----	----	----	----	----	----
		----	20 days; 160	27 days; 320	----	2,560	----	----	640	----	----	----	----	----	----	----	----	----	----
		----	20 days; 320	28 days; 320	----	----	----	----	640	----	----	----	----	----	----	----	----	----	----
		----	21 days; 320	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
		----	21 days; 320	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
		----	21 days; 320	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
		----	21 days; 640	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Average	0	155	450	720	723	824	916	540	340	260	136	60	96	60	73	40	40	40	20

(2) NONAGGLUTINATION OF VARIOUS ORGANISMS BY HUMAN AND ANIMAL TULARÆMIC SERUMS

Human tularæmic serums of high titer have been tested for agglutination of the following organisms with negative results: *B. typhosus*, paratyphoid A, paratyphoid B, *B. dysenteriæ*, *B. pestis*, meningococcus, pneumococcus, and Proteus X_{19}.

The serum of a rabbit immunized against *tularense* strain 12, agglutinated *tularense* in all dilutions from 1:10 to 1:2,560, but failed to agglutinate *B. typhosus* or *B. pestis* in dilutions of from 1:10 to 1:320.

The serum of a rabbit immunized against *tularense* strain 38, agglutinated *tularense* in all dilutions from 1:10 to 1:2,560, but failed to agglutinate *B. typhosus*, paratyphoid A or paratyphoid B in dilutions of from 1:10 to 1:160.

The serums of five rabbits immunized against *tularense* strains 38, 45, 26, 13, and 12, and having anti-*tularense* titers of 1,280, 2,560, 2,560, 5,120, and 5,120, respectively, failed to agglutinate *B. typhosus* in dilutions from 1:10 to 1:160.

(3) NONAGGLUTINATION OF *TULARENSE* BY NONTULARÆMIC HUMAN AND ANIMAL SERUMS

Of 500 serums received for routine Wassermann examination and tested also for agglutination of *tularense* in dilutions of 1:10, 20, and 40, 15 agglutinated in maximum dilution of 1:10, but were negative to the Wassermann test; 5 agglutinated in maximum dilution of 1:20, 2 of which gave a strong Wassermann; none agglutinated in dilution of 1:40; 61 serums positive to the Wassermann and 419 serums negative to the Wassermann failed to agglutinate in dilutions of 1:10 and higher.

The following human serums also failed to agglutinate *tularense* in dilutions of 1:10 and higher; 4 typhoid serums having titers of 40, 80, 320, and 640, respectively, and 2 typhus serums having titers of 2,000 and 160, respectively, for Proteus X_{19}.

The serum of a rabbit immunized against *B. typhosus* agglutinated *B. typhosus* in all dilutions from 1:10 to 1:5,120, but failed to agglutinate *tularense* in dilutions from 1:10 to 1:320. Serums of 10 rabbits immunized by intravenous injection of commercial typhoid vaccines agglutinated *B. typhosus* up to 1:1,600, but failed to agglutinate *tularense* in dilutions from 1:10 to 1:160.

Serums of 11 rabbits immunized against washed red cells of a sheep while preparing hemolytic amboceptor failed to agglutinate *tularense* in dilutions of 1:10, 20, and 40.

Serums of 14 normal rabbits failed to agglutinate *tularense* in dilutions of 1:10, 20, 40, and 80.

Through the cooperation of Dr. William Charles White a tularense suspension was submitted to Dr. David Perla, of the Henry Phipps Institute, to whom we are indebted for making agglutination tests with the sera of 51 cases of pulmonary tuberculosis.

At the time when the agglutinations were made the tuberculo-complement fixation, the Wassermann, the Caulfield inhibitive test, and, in some cases, the agglutination test with tubercle bacilli were carried out.

The sera were tested in dilutions of 1:5, 10, 20, 40, and 80. Thirteen sera agglutinated tularense completely in dilution of 1:5, one agglutinated completely in dilution of 1:10; none agglutinated completely in dilution of 1:20 or higher. In a few instances a trace was recorded in dilutions as high as 1:40.

There seemed to be no relation between the agglutination with tubercle bacilli and that with tularense when tested with human tuberculous sera.

Dr. Stuart Mudd, of the Henry Phipps Institute, very courteously tested for agglutination of tularense with antitubercle rabbit sera prepared by Dr. J. Furth, also of that institute, with the following results: (1) Of two rabbits immunized against two human strains, respectively, one agglutinated tularense partially in dilutions of 1:10, 20, and 40, while the other failed to agglutinate in all dilutions; (2) of two rabbits immunized against a bovine strain, one agglutinated tularense completely in dilution of 1:10 and partially in 1:20, while the other failed to agglutinate in all dilutions.

(4) NONAGGLUTINATION OF *ABORTUS* AND *MELITENSIS* BY HUMAN AND ANIMAL SERUMS

Of 100 human tularæmic serums tested for agglutination of *tularense*, *abortus*, and *melitensis*, 63 failed to agglutinate *abortus* or *melitensis*, although they agglutinated *tularense* (see Table 2). The 37 which agglutinated all three organisms are discussed under the next heading.

Of 500 human serums received for routine Wassermann examination and tested also for agglutination of *melitensis* by Evans,[1] 11 agglutinated in maximum dilution of 1:10, 2 agglutinated in maximum dilution of 1:20, 2 in maximum dilution of 1:40, and 1 in maximum dilution of 1:320; 484 failed to agglutinate in dilutions of 1:10 or higher.

Serums of the 14 normal rabbits which failed to agglutinate *tularense*, failed also to agglutinate *abortus* and *melitensis* in dilutions of 1:10, 20, 40, and 80.

TABLE 2.—*One hundred human tularæmia serums tested for cross agglutination of abortus and melitensis*

Tularense titer of serums	Number showing cross agglutination of *abortus* and *melitensis*	Number showing no cross agglutination of *abortus* and *melitensis*
10	0	0
20	0	3
40	0	8
80	0	7
160	0	9
320	15	16
640	12	12
1,280	7	7
2,560	3	1
Total	37	63

TABLE 3.—*Cross agglutination by human tularæmia serums from 37 cases*

Case	Time after onset	*Tularense*	*Abortus*	*Melitensis*	Treatment of serum
R. R. S.	18 days	640	40	40	Unheated, glycerin.
	26 days	1,280	1,280	640	Do.
	7 months	640	320	320	55°, no preservative.
	9 months	640	320	320	Do.
	1 year	320	320	320	55°, trikresol.
	1 year 4 months	640	320	320	Do.
B. F. T.	3 days	0	0	0	Unheated, glycerin.
	9 days	80	0	0	Do.
	16 days	1,280	160	320	Do.
	23 days	320	160	320	Unheated, paracresol.
	42 days	320	160	160	Unheated, trikresol.
E. W. M.	5 days	0	0	0	Unheated, glycerin.
	11 days	160	0	0	Do.
	18 days	320	160	160	Do.
	25 days	1,280	320	160	Unheated, paracresol.
	71 days	320	80	160	Unheated, trikresol.
	87 days	320	80	80	Unheated, glycerin.
J. W. G.	40 days	640	160	160	Do.
	53 days	640	160	160	Unheated, trikresol.
A. M.	11 days	160	0	----	Unheated, no preservative.
	24 days	2,560	160	----	Do.
	33 days	1,280	80	80	55°, no preservative.
	79 days	640	80	40	Do.
R. D.	23 days	640	80	160	Do.
F. C.	49 days	1,280	80	80	Do.
S. S. M.	25 days	1,280	80	----	Unheated, glycerin.
	46 days	640	40	80	Do.
A. L.	45 days	2,560	80	80	Do.
G.	56 days	640	80	160	Unheated, trikresol.
S. T. M.	26 days	1,280	80	160	Do.
J. W. M.	21 days	640	80	80	Do.
D. B.	10 days	1,280	80	80	Unheated, glycerin.
L. R. B.	32 days	1,280	80	80	55°, no preservative.
(Dr. F)	17 days	640	80	80	Do.
S. H.	32 days	320	80	40	Unheated, trikresol.
D. F.	24 days	320	80	160	Do.
J. J.	do	640	40	20	Do.
R. McK.	28 days	1,280	40	80	Do.
A. S.	14 days	640	----	40	Unheated, glycerin.
J. W. H.	43 days	2,560	20	40	Do.
H. D.	44 days	1,280	40	40	Unheated.
A.	24 days	320	40	40	Phenol.
Y.	31 days	320	40	40	Do.
T.	27 days	320	40	40	Do.
C. W.	19 days	320	20	10	Unheated.
J. B. K.	56 days	640	20	----	Do.
St. F. H.	----	320	20	40	Trikresol.
E. C. W.	37 days	640	20	20	Unheated.
F. B.	do	640	20	10	Do.
L. F.	36 days	1,280	20	----	Do.
G. H.	42 days	320	20	20	Do.
J. B.	64 days	320	20	----	Do.
C. R. W.	28 days	320	10	----	Do.
J. N.	56 days	320	10	----	Do.
W. F. S.	21 days	320	10	----	Unheated, glycerin.
C. I.	36 days	320	10	----	Do.

(5) CROSS AGGLUTINATION OF *ABORTUS* AND *MELITENSIS* BY HUMAN TULARÆMIA SERUMS

Cross agglutination of *abortus* (the cause of contagious abortion of animals) and *melitensis* (the cause of undulant fever) was noted in dilution of 1 : 10 or higher in 37 of 100 cases of tularæmia as set forth in Tables 2 and 3.

Analysis of these tables shows the following: No serum with a tularense titer less than 320 gave cross agglutination of *abortus* or *melitensis*; of serums showing anti-*tularense* titers of 320, 640, 1280, and 2560, the number which gave cross agglutination of *abortus* and *melitensis* was 37, while the number which gave no cross agglutination was 36, thus showing a failure of high-titer serums consistently

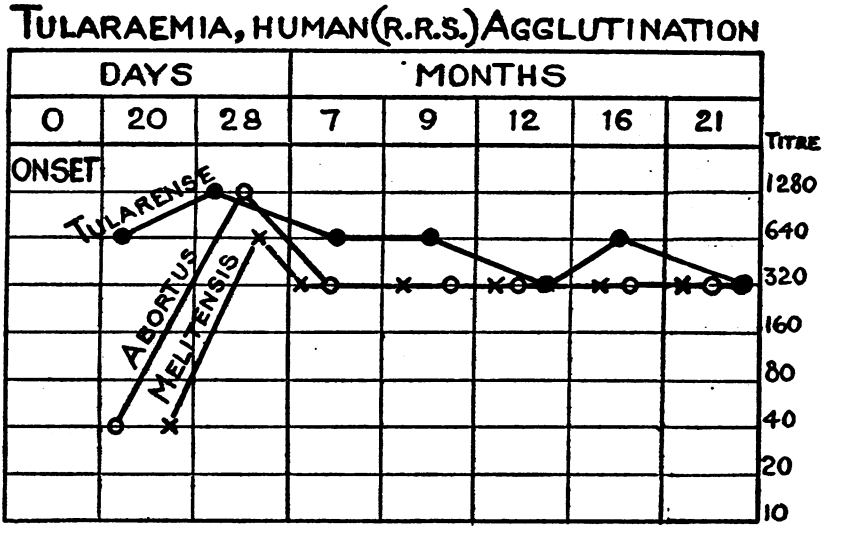

CHART 1.—Showing agglutination of *tularense*, *abortus*, and *melitensis* to the same, or nearly the same, degree by a human tularæmic serum

to show cross agglutination; as a rule, a tularæmia serum agglutinated *tularense* in much higher dilution than it agglutinated *abortus* or *melitensis*; exceptions to that rule were noted in the first three serums listed in Table 3, in which tests are seen where *tularense* serums agglutinated *tularense*, *abortus*, and *melitensis* to the same or nearly the same degree.

The significance of these observations, from the viewpoint of diagnosis, is that a suspected tularæmia serum should be tested, not only for agglutination of *tularense* but also for agglutination of either *abortus* or *melitensis*. It has been established by Evans [1] that a serum which agglutinates one of the latter two organisms will also agglutinate the other.

[1] Evans, Alice C.: Studies on Brucella (Alkaligenes) Melitensis: Hyg. Lab. Bull. 143, United States Public Health Service, 1925.

If the *tularense* titer of a serum is much higher than the *abortus* or *melitensis* titers, no doubt is left as to the diagnosis of tularæmia; moreover, at the end of one hour's incubation, a tularæmia serum will have nearly reached its maximum *tularense* titer, while the *abortus* amd *melitensis* reactions will be just beginning.

Serums showing a very high degree of cross agglutination (see Chart 1) must be subjected to agglutinin absorption tests, by which it will be found that a tularæmia serum, after absorption by *tularense*, will no longer agglutinate *tularense*, *melitensis*, or *abortus*; but a tularæmia serum, after absorption by either *melitensis* or *abortus*, will still agglutinate *tularense* to the full titer at which it agglutinated *tularense* before being absorbed.

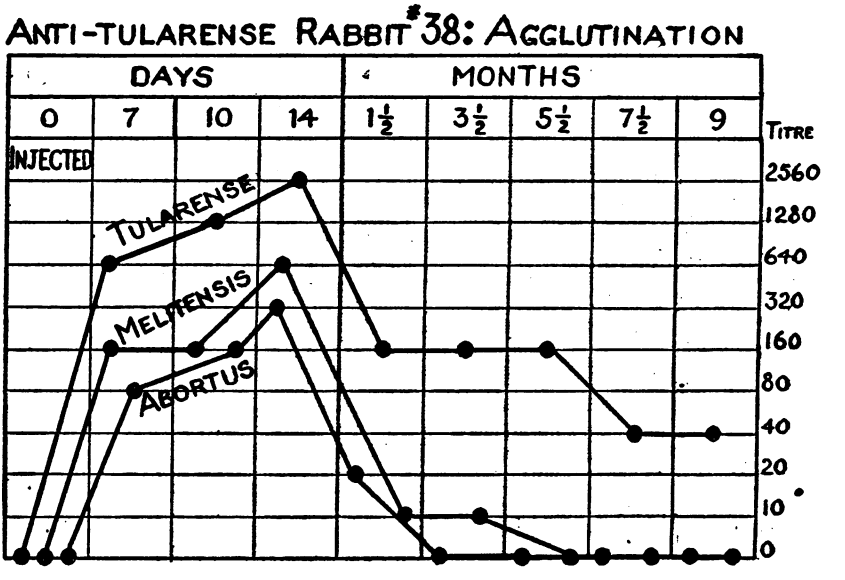

CHART 2.—Showing agglutination of *tularense*, *abortus*, and *melitensis* by the serum of a rabbit immunized against *tularense*

(6) CROSS AGGLUTINATION OF *ABORTUS* AND *MELITENSIS* BY SERUMS OF RABBIT, SHEEP, HORSE, AND ROOSTER AFTER IMMUNIZATION AGAINST TULARENSE

Table 4 shows that there is the same agglutinin response in animals immunized in the laboratory against *tularense* that there is in man after acquiring the disease in nature.

Animals immunized against *tularense* developed agglutinins for *tularense*, *abortus*, and *melitensis*, but the degree of agglutination for *tularense*, was, as a rule, much higher than that for *abortus* or *melitensis*. In sheep 2, however, the titer for *tularense* and *abortus* reached the same height (1 : 320). Chart 2 shows that in rabbit 38

TABLE 4.—*Cross agglutination of abortus and melitensis by antitularense serums of rabbit, sheep, horse, and rooster*

Antitularense serums	Date injected	Date bled	Date tested	Agglutination titers			Treatment of serum
				Tularense	*Abortus*	*Melitensis*	
Rabbit 38, injected intravenously; strain 38	Mar. 13, 1925	Mar. 27, 1925	Apr. 5, 1925	2,560	320	320	55°, trikresol.
	Mar. 20, 1925						
	Mar. 23, 1925						
Rabbit 45-1, injected intravenously; strain 45	Mar. 13, 1925	Mar. 30, 1925	Apr. 5, 1925	2,560	160	160	Do.
	Mar. 20, 1925						
	Mar. 23, 1925						
Rabbit J-5, injected subcutaneously; strain J	Feb. 10, 1926	Feb. 27, 1926	Feb. 27, 1926	1,280	160	320	Unheated, no preservative.
Rabbit 7, injected subcutaneously; strain M	June 26, 1923	July 31, 1923	Aug. 8, 1923	640	160	80	55°, trikresol.
Sheep 2, injected subcutaneously; strain 13, 26, 38	July 25, 1922	Aug. 9, 1922	Jan. 26, 1924	320	320	160	Do.
Sheep 4, injected subcutaneously; strain V	Mar. 10, 1924	Mar. 25, 1924	Oct. 26, 1925	1,280	320	640	Do.
Sheep 4, serum before injection		Mar. 10, 1924	Oct. 26, 1925	10	0	10	Do.
Horse 1, injected subcutaneously; strain V	Mar. 4, 1924	Mar. 25, 1924	Oct. 29, 1925	320	80	80	Do.
	Mar. 11, 1924						
Horse 1, serum before injection		Mar. 4, 1924	Oct. 29, 1925	20	80	80	Do.
Horse 2, injected subcutaneously; strain V	Apr. 1, 1924	Apr. 25, 1924	Oct. 29, 1925	320	80	160	Unheated, no preservative.
	Apr. 8, 1924						
	Apr. 15, 1924						
Horse 2, serum before injection		Mar. 25, 1924	Oct. 29, 1925	10	20	20	55°, trikresol.
Rooster L, injected intravenously; strain 26	Apr. 23, 1925	May 4, 1925	July 12, 1925	1,280	160	320	Unheated, no preservative.
	Apr. 24, 1925						
	Apr. 26, 1925						
Rooster R, injected intravenously; strain 38	Apr. 23, 1925	May 4, 1925	May 30, 1925	640	80	80	Do.
	Apr. 24, 1925						
	Apr. 26, 1925						
Rooster M, injected intravenously; strain 13	Apr. 23, 1925	May 4, 1925	May 30, 1925	640	80	80	Do.
	Apr. 24, 1925						
	Apr. 26, 1925						

NOTE.—Blood serum collected from rabbits 38 and 45-1 and from sheep 2 before immunization failed to agglutinate *tularense*, *abortus*, or *melitensis* in dilutions of 1 : 10, 20, and 40. Blood serum of rabbits 7 and J-5 was not tested for agglutinins before immunization. Blood serum of the roosters collected before immunization failed to agglutinate *abortus* and *melitensis* in dilutions from 1 : 10 to 1 : 320.

the persistence of agglutinins was longer for *tularense* than for *abortus* or *melitensis*.

(7) CROSS-AGGLUTINATION OF *TULARENSE* BY SERUMS FROM CASES OF UNDULANT OR MALTA FEVER

Cross agglutination of *tularense* by serums from cases of undulant fever was noted in three of eight serums tested (see Table 5); but the degree of cross agglutination was so small as to leave no doubt as to the diagnosis. In the case of D. Z., when his *melitensis* titer was 2,560 his *tularense* titer was 80; but six months later, when his *melitensis* titer had fallen to 160 his *tularense* titer was zero. In the case of B. T. S., when his *melitensis* titer was 1,280 his *tularense* titer was 20; in the case of – W., when his *melitensis* titer was 640, his *tularense* titer was 10.

TABLE 5.—*Cross agglutination by serums of cases of undulant fever*

Case	Time after onset	*Tularense*	*Abortus*	*Melitensis*	Treatment of serum
D. Z.	30 days	80	2,560	----------	Unheated, no preservative.
	7 months	0	160	160	Do.
B. T. S.	8 days	20	640	1,280	56° C. 1 hour.
D. C. F.	2 months	0	640	640	Unheated, no preservative.
St. L [1]	9 weeks	0	160	640	No preservative.
—J. [1]	Several weeks	0	320	320	Do.
M. W. E [1]	19 weeks	0	80	20	Do.
M. C. [1]	About 2 months	0	320	160	0.2% trikresol.
—W [1]	A few weeks	0	320	----------	No preservative.
	8 days after first test	10	640	----------	Do.

[1] The method of carrying out the test of these serums differed somewhat from that generally used. The antigens were twice as dense, and incubation was at 56° C. for four hours.

The serum from case D. C. F. is of special interest to the diagnostic laboratory in that the serum came to us with a request for an agglutination of *tularense*. The attending physician had suspected tularæmia because the patient had been dressing rabbits; but he had overlooked the occupation of his patient, which was that of butcher. Had we merely complied with the request and tested the serum against *tularense* we would have missed the diagnosis. We tested the serum, as is our routine procedure, against both *tularense* and *abortus* and found agglutinins for *abortus* but none for *tularense*, thus reaching the correct diagnosis in the case.[1]

(8) CROSS AGGLUTINATION OF *TULARENSE* BY SERUMS OF RABBITS IMMUNIZED AGAINST *ABORTUS* AND *MELITENSIS*

Table 6 shows that rabbits immunized against *abortus* and *melitensis* developed agglutinins for *tularense* just as man and animals

[1] Evans, Alice C.: Studies on Brucella (Alkaligenes) Melitensis: Hyg. Lab. Bull. 143, United States Public Health Service, 1925.

immunized against *tularense* develop agglutinins for *abortus* and *melitensis*, but the agglutinin titer for *abortus* and *melitensis* was higher and persisted longer than for *tularense* (see Chart 3).

(9) AGGLUTININ ABSORPTION OF HUMAN TULARÆMIA SERUMS

Table 7 presents the agglutinin absorption reactions of four tularæmia serums and shows that they reacted as follows:

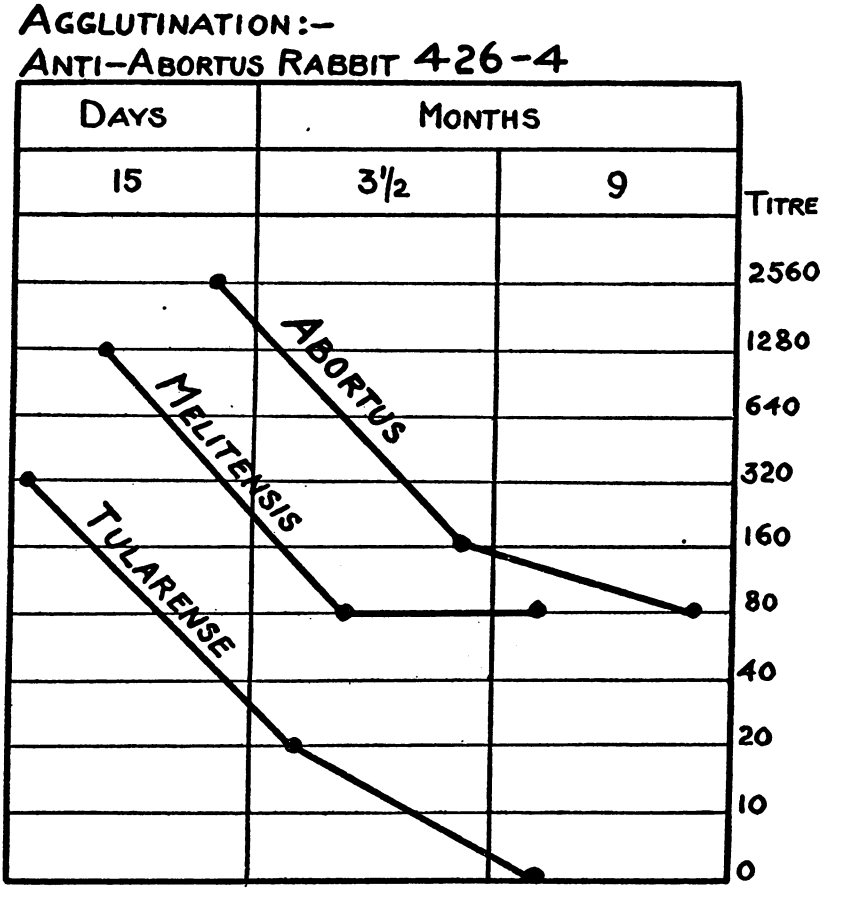

CHART 3.—Showing agglutination of *tularense*, *abortus*, and *melitensis* by the serum of a rabbit immunized against *abortus*

(1) After absorption by *tularense* they lost all agglutinins for *tularense*, *abortus*, and *melitensis;* (2) after absorption by *abortus*, they retained all agglutinins for *tularense*, but lost all agglutinins for *abortus* and *melitensis;* (3) after absorption by *melitensis* they retained all agglutinins for *tularense*, lost all agglutinins for *melitensis*, and showed a reduction of agglutinins for *abortus* to at least 6 per cent.

TABLE 6.—*Cross agglutination of tularense by serums of rabbits immunized against abortus and melitensis*

Rabbit	Date injected	Date bled	Date tested	Agglutination titers			Treatment of serum
				Tularense	*Abortus*, 426,	*Melitensis*, 428	
426-4, injected intravenously with abortus, 426	June 30, 1925 July 7, 1925	July 15, 1925	July 24, 1925	320	2,560	1,280	55° C. ½ hour, trikresol.
456-50, injected intravenously with abortus, 456	Aug. 4, 1925 Aug. 8, 1925	Aug. 12, 1925	Aug. 16, 1925	160	1,280	1,280	55° C. trikresol.
456-53, injected intravenously with abortus, 456	Aug. 4, 1925 Aug. 8, 1925	Do.	Do.	160	1,280	2,560	Do.
428-3 injected intravenously with melitensis, 428	June 30, 1925 July 7, 1925	July 15, 1925	Aug. 9, 1925	80	2,560	2,560	Do.

NOTE.—None of the above rabbits were tested for agglutinins before immunization. Serums 456-50 and 456-53 failed to agglutinate *B. typhosus* in dilutions of 1:10, 20, 40 and 80.

TABLE 7.—*Agglutinin absorption reactions of four human antitularense serums*

Antitularense serums	Agglutination of cultures																									Absorbing dose of antigen per 0.5 c. c. of serum	Treatment of antigen
	Tularense, strain V										*Abortus* No. 426										*Melitensis* No. 428									
Dilutions, 1 in	10	20	40	80	160	320	640	1, 280	2, 560		10	20	40	80	160	320	640	1, 280	2, 560		10	20	40	80	160	320	640	1, 280	2, 560		
(1) Case R. R. S., bled July 30, 1924:[1]																															
Not absorbed	4	4	4	4	4	4	4	3	0		4	4	4	4	4	4	4	3	0		4	4	4	4	4	4	4	3	0		
Absorbed by tularense V	0	0	0	0	0	0	---	-----	-----		--	2	0	0	0	0	---	-----	-----		--	1	0	0	0	0	---	-----	-----	12 c. c. of 10,000 turbidity	0. 1 per cent formalin.
Reabsorbed by tularense V	-----	-----	-----	-----	-----	-----	-----	-----	-----		3	1	0	0	0	-----	-----	-----	-----		0	0	0	0	-----	-----	-----	-----	-----	do	Do.
Absorbed by abortus No. 426	4	4	4	4	4	4	4	4	0		0	0	0	0	0	0	0	0	-----		0	0	0	0	0	0	0	0	-----	15 c. c. of 40,000 turbidity	0. 2 per cent formalin.
Absorbed by melitensis No. 428	--	4	4	4	4	4	4	3	0		--	4	4	4	0	0	0	-----	-----		--	3	3	0	0	0	-----	-----	-----	do	Living.
Reabsorbed by melitensis No. 428	--	--	4	4	4	4	4	1	0		4	4	4	0	0	0	---	-----	-----		0	0	0	0	0	---	-----	-----	-----	do	Do.
(2) Case B. F. T., bled June 12, 1925:[2]																															
Not absorbed	4	4	4	4	4	4	1	0	0		4	4	4	4	4	1	0	0	-----		4	4	4	4	4	4	0	0	-----		
Absorbed by tularense V	0	0	0	0	0	0	0	0	-----		0	0	0	0	0	0	-----	-----	-----		---	---	---	---	---	---	---	---	-----	4 c. c. of 10,000 turbidity	0. 1 per cent formalin.
Absorbed by abortus No. 426	4	4	4	4	4	4	1	0	0		0	0	0	0	0	0	-----	-----	-----		---	---	---	---	---	---	---	---	-----	3.5 c. c. of 40,000 turbidity	0. 2 per cent formalin.
Serum third day of illness	0	0	0	0	0	0	---	-----	-----		0	0	0	0	0	0	---	-----	-----		0	0	0	0	0	0	---	-----	-----		
(3) Case E. W. M., bled June 5, 1925:[3]																															
Not absorbed	4	4	4	4	4	4	0	0	-----		4	4	4	4	4	0	0	-----	-----		4	4	4	4	4	0	0	-----	-----		
Absorbed by tularense V	0	0	0	0	0	0	0	0	-----		0	0	0	0	0	0	-----	-----	-----		0	---	---	---	---	---	---	---	-----	6 c. c. of 10,000 turbidity	0. 1 per cent formalin.
Absorbed by abortus No. 426	4	4	4	4	4	3	0	0	-----		0	0	0	0	0	0	-----	-----	-----		0	---	---	---	---	---	---	---	-----	8 c. c. of 40,000 turbidity	0. 2 per cent formalin.
Serum fifth day of illness	0	0	0	0	0	0	---	-----	-----		0	0	0	0	0	0	---	-----	-----		0	0	0	0	0	---	0	-----	-----		
(4) Case J. W. G., bled May 19, 1925:[4]																															
Not absorbed	4	4	4	4	4	4	4	0	-----		4	4	4	4	4	0	0	-----	-----		4	4	4	4	4	2	0	0	-----		
Absorbed by tularense V	0	0	0	0	0	0	0	0	-----		0	0	0	0	0	0	-----	-----	-----		0	0	0	0	0	0	0	0	-----	8 c. c. of 10,000 turbidity	0. 1 per cent formalin.
Absorbed by abortus No. 426	4	4	4	4	4	4	4	0	-----		0	0	0	0	0	0	-----	-----	-----		0	0	0	0	0	0	0	0	-----	10 c. c. of 40,000 turbidity	0. 2 per cent formalin.
Absorbed by melitensis No. 428	4	4	4	4	4	4	4	0	-----		0	0	0	0	0	0	0	-----	-----		0	0	0	0	0	0	0	0	-----	16 c. c. of 25,000 turbidity	Do.

[1] Unheated, preserved by addition of an equal amount of pure neutral glycerin; tested Aug. 14, 1925.
[2] Unheated, preserved with paracresol; tested June 20, 1925.
[3] Unheated, preserved by addition of an equal amount of pure neutral glycerin; tested July 5, 1925.
[4] Unheated, preserved with trikresol; tested July 6, 1925.

TABLE 8.—*Agglutinin absorption reactions of antitularense serums of rabbit, sheep, and rooster*

Antitularense serums	Agglutination of cultures																										Absorbing dose of antigen per 0.5 c. c. of serum	Treatment of antigen
	Tularense, strain V										*Abortus* No. 426										*Melitensis* No. 428									
Dilutions, 1 in	10	20	40	80	160	320	640	1, 280	2, 560	5, 120	10	20	40	80	160	320	640	1, 280	2, 560	5, 120	10	20	40	80	160	320	640	1, 280	2, 560	5, 120		
(1) Rabbit No. 38, strain 38, bled Mar. 27, 1925:[1]																																
Not absorbed	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	0	0	0	0	4	4	4	4	4	4	0	0	0	0		
Absorbed by tularense V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 c. c. of 10,000 turbidity	0.1 per cent formalin.
Absorbed by abortus 426	4	4	4	4	4	4	4	4	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	15 c. c. of 30,000 turbidity.	0.2 per cent formalin.
Absorbed by melitensis 428	4	4	4	4	4	4	4	4	3	0	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24 c. c. of 20,000 turbidity.	Do.
Reabsorbed by melitensis 428								4	3	0	4	4	4	4	3	0	0	0	0	0	0	0	0	0	0	0					do	Living.
Serum before immunization	0	0	0								0	0	0								0	0	0									
(2) Sheep No. 2, strains 38, 26, 13, bled Aug. 9, 1922:[2]																																
Not absorbed	4	4	4	4	4	3	0	0			4	4	4	4	4	0	0				4	4	4	4	3	0	0	0				
Absorbed by tularense V	0	0	0	0	0	0	0	0			3	0	0	0	0	0	0				0	0	0	0	0	0	0	0			10 c. c. of 10,000 turbidity.	0.1 per cent formalin.
Absorbed by abortus 426					4	1	0	0			4	2	0	0								2	0	0							12.5 c. c. of 40,000 turbidity.	Living.
Reabsorbed by abortus 426		4	4	4	4	0	0	0			0	0	0	0	0	0	0				2	0	0	0	0	0	0				do	Do.
Absorbed by melitensis 428					4	1	0	0				4	4	0							3	0	0	0							do	Do.
Reabsorbed by melitensis 428		4	4	4	4	0	0	0			4	2	0	0	0	0	0				0	0	0	0	0	0	0				do	Do.
Serum before immunization	0	0	0	0	0						0	0	0	0	0	0					0	0										
(3) Rooster L, strain 26, bled May 4, 1925:[3]																																
Not absorbed	4	4	4	4	4	4	4	3	0		4	4	4	4	3	0	0	0			4	4	4	4	4	3	0	0				
Absorbed by tularense V	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0			10 c. c. of 10,000 turbidity.	0.1 per cent formalin.
Absorbed by abortus 426	4	4	4	4	4	4	4	3	0		0	0	0	0	0	0	0	0			4	4	3	0	0	0	0	0			12.5 c. c. of 40,000 turbidity.	0.2 per cent formalin.
Absorbed by melitensis 428	4	4	4	4	4	4	4	1	0		0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0			20 c. c. of 25,000 turbidity.	Do.
Serum early in immunization	4	0	0	0	0	0					0	0	0	0	0	0					0	0	0	0	0	0						

[1] Heated 55°, ½ hour preserved with trikresol; tested July 19, 1925.
[2] Heated 55°, ½ hour preserved with trikresol; tested Aug. 12, 1925.
[3] Unheated, no preservative; tested July 12, 1925.

(10) AGGLUTININ ABSORPTION OF ANTITULARÆMIC SERUMS OF RABBIT, SHEEP, AND ROOSTER

Table 8 shows that antitularæmic serums of the rabbit, sheep, and rooster reacted as follows: (1) After absorption by *tularense* they lost all agglutinins for *tularense*, *abortus*, and *melitensis;* (2) after absorption by *abortus* they retained all agglutinins for *tularense*, but lost all agglutinins for *abortus* and *melitensis*, except that in case of the rooster some agglutinins for *melitensis* remained which probably would have been removed by reabsorption; (3) after absorption by *melitensis* they retained all agglutinins for *tularense*, lost all agglutinins for *melitensis*, and showed a reduction of agglutinins for *abortus* to 50 per cent in the rabbit, to 12.5 per cent in the sheep, and to at least 6 per cent in the rooster.

(11) RECIPROCAL AGGLUTININ ABSORPTION REACTIONS OF FOUR *TULARENSE* CULTURES

Table 9 shows that three strains of American origin (V, M, and 38) were compared with each other by reciprocal agglutinin absorption and that no differences between them were found. In addition, strain M was similarly compared with strain J, which was of Japanese origin, and no difference between them was found.

(12) RECIPROCAL AGGLUTININ ABSORPTION REACTIONS OF *TULARENSE*, *ABORTUS*, AND *MELITENSIS*

Anti-*tularense* rabbit 38 was immunized against strain 38, anti-*abortus* rabbit 426 was immunized against strain 426, and anti-*melitensis* rabbit 428 was immunized against strain 428. In carrying out the absorption tests, *tularense* strain V was substituted for *tularense* strain 38, no difference having been found between them by reciprocal agglutinin absorption tests (see Table 9).

Table 10 shows the following: (1) A *tularense* serum, after absorption by *tularense*, lost all agglutinins for *tularense*, *abortus*, and *melitensis*; after absorption by *abortus*, lost all agglutinins for *abortus* and *melitensis* but retained all agglutinins for *tularense*; after absorption by *melitensis*, lost all agglutinins for *melitensis*, retained all agglutinins for *tularense*, but shows a reduction to only 50 per cent of agglutinins for *abortus*, even after reabsorption by *melitensis*. (2) An *abortus* serum, after absorption by *tularense*, lost all agglutinins for *tularense*, but retained all agglutinins for *abortus* amd *melitensis*; after absorption by *abortus*, lost all agglutinins for *tularense*, *abortus*, and *melitensis*; after absorption by *melitensis*, lost all agglutinins for *tularense* and *melitensis* and showed a reduction to 12.5 per cent of agglutinins for *abortus*. (3) A *melitensis* serum, after absorption by *tularense*, lost all agglutinins for *tularense* but retained all agglu-

tinins for *abortus* and *melitensis*; after absorption by *abortus*, lost all agglutinins for *tularense* and *abortus* and showed a reduction to about 12.5 per cent of agglutinins for *melitensis*; after absorption by *melitensis*, lost all agglutinins for *tularense*, *abortus*, and *melitensis*.

TECHNIQUE

Sources of cultures.—Six *tularense* cultures isolated by Francis were employed. Five of these came from cases of tularæmia and one from a rabbit. Their histories are as follows: V came from the spleen of a woman who died in Washington, D. C., December 30, 1923; M from the liver of a rabbit obtained from the Washington, D. C., market in January, 1923; 38 from an inguinal gland of a girl seen in Utah in September, 1920; 26 from the blood of man seen in Utah in July, 1920; 13 from a cervical gland of a boy seen in Utah in July, 1920; and J from a human gland received January 5, 1926, from Dr. H. Ohara, Fukushima City, Fukushima, Japan.

Abortus 426 is without definite history other than that Dr. K. F. Meyer obtained it from the Royal Army Medical Corps, London, England. It is not certain whether it was isolated in Austria.

Melitensis 428 was obtained from Dr. K. F. Meyer, who, in turn, received it from Dr. E. Sergent, Institut Pasteur d'Algérie, Tunis. It is not certain whether it was isolated in Tunisia.

Antiserums.—The human tularæmia serums studied were recieved at the Hygienic Laboratory, United States Public Health Service, Washington, D. C., for routine testing for the diagnosis of tularæmia.

The rabbit, sheep, and horse are available for the production of antitularæmic serums. The rabbit is the animal of choice on account of the well-established absence of agglutinins in its normal serum. If a sheep is to be used, its serum should be tested for agglutinins before immunization. The horse is the least desirable on account of the presence of agglutinins in the normal blood. Data relative to the preparation of the various antiserums used in this work will be found in the tables.

The human serums were usually tested without preliminary heating to 55°, although throughout the tables numerous instances are noted where the serums were heated.

Heating the serums was regarded as immaterial, it having been noted that heat did not reduce the titer of the specific agglutinins or of the cross agglutinins.

Preservation of the serum with trikresol or by the addition of an equal amount of pure, undiluted, neutral glycerine was without effect on the the agglutinins. The clouding effect of too large an amount of trikresol was avoided by adding not more than 0.1 per cent. Glycerin has the advantage of clearing the serum.

TABLE 9.—*Reciprocal agglutinin absorption reactions of four tularense strains V, M, 38, and J*

Antitularense serums	Agglutination of cultures																										Absorbing dose of antigen per 0.5 c. c. of serum	Treatment of antigen
	Tularense, strain V										*Tularense*, strain M										*Tularense*, strain 38											
Dilutions, 1 in	10	20	40	80	160	320	640	1,280	2,560	5,120	10	20	40	80	160	320	640	1,280	2,560	5,120	10	20	40	80	160	320	640	1,280	2,560	5,120		
(1) Sheep No. 4, strain V, bled Mar. 27, 1924:[1]																																
Not absorbed	4	4	4	4	4	4	4	4	1	0	4	4	4	4	4	4	0	4	0	0	4	4	4	4	4	4	4	4	1	0		
Absorbed by tularense V	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	12 c. c. of 10,000 turbidity	0.1% formalin.
Absorbed by tularense M	2	0	0	0	0	0	0	0	----	----	2	0	0	0	0	0	0	0	----	----	2	0	0	0	0	0	0	0	----	----	do	Do.
Absorbed by tularense 38	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	do	Do.
Serum before immunization	4	0	0	0	----	----	----	----	----	----	4	0	0	0	----	----	----	----	----	----	4	0	0	0	----	----	----	----	----	----		
(2) Rabbit No. 11, strain M, bled Aug. 11, 1923:[2]																																
Not absorbed	4	4	4	4	4	4	4	4	0	0	4	4	4	4	4	4	4	4	0	0	4	4	4	4	4	4	4	4	0	0		0.1% formalin.
Absorbed by tularense V	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	12 c. c. of 10,000 turbidity	Do.
Absorbed by tularense M	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	do	Do.
Absorbed by tularense 38	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	0	0	0	0	0	0	0	0	----	----	do	Do.
(3) Rabbit No. 38, strain 38, bled Mar. 27, 1925:[3]																																
Not absorbed	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4	4	4	0		0.1% formalin.
Absorbed by tularense V	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	12 c. c. of 10,000 turbidity	Do.
Absorbed by tularense M	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	do	Do.
Absorbed by tularense 38	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	do	Do.
Serum before immunization	0	0	0	0	----	----	----	----	----	----	0	0	0	0	----	----	----	----	----	----	0	0	0	0	----	----	----	----	----	----		
	Tularense strain J																															
(4) Rabbit J, strain J, bled February 4, 1926:[4]																																
Not absorbed	4	4	4	4	4	4	4	0	0	----	4	4	4	4	4	4	4	3	0	0	----	----	----	----	----	----	----	----	----	----		0.1% formalin.
Absorbed by J	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	12 c. c. of 10,000 turbidity	Do.
Absorbed by M	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	do	Do.
(5) Rabbit No. 11, strain M, bled Aug. 11, 1923:[5]																																
Not absorbed	4	4	4	4	4	4	4	1	0	----	4	4	4	4	4	4	4	3	0	0	----	----	----	----	----	----	----	----	----	----		0.1% formalin.
Absorbed by M	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	12 c. c. of 10,000 turbidity	Do.
Absorbed by J	0	0	0	0	0	0	----	----	----	----	0	0	0	0	0	0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	do	Do.

[1] Unheated, preserved with trikresol; tested Sept. 21, 1925.
[2] Heated 55° C., ½ hr., preserved with trikresol; tested Sept. 23, 1925.
[3] Heated 55° C., ½ hr., preserved with trikresol; tested Sept. 25, 1925.
[4] Heated 55° C., ½ hr., preserved with trikresol; tested Feb. 12, 1926.
[5] Heated 55° C., ½ hr., preserved with trikresol; tested Feb. 13, 1926.

TABLE 10.—*Reciprocal agglutinin absorption reactions of tularense, abortus, and melitensis*

Rabbit antiserums	Agglutination of cultures																													Absorbing dose of antigen per 0.5 c. c. of serum	Treatment of antigen
	Tularense, strain V										*Abortus*, strain 426										*Melitensis*, strain 428										
Dilutions, 1 in	10	20	40	80	160	320	640	1,280	2,560	5,120	10	20	40	80	160	320	640	1,280	2,560	5,120	10	20	40	80	160	320	640	1,280	2,560	5,120	10,240		
(1) Antitularense 38, bled Mar. 27, 1925:[1]																															
Not absorbed	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	0	0	0	0	4	4	4	4	4	4	0	0	0	0			
Absorbed by tularense V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9. c. c. of 10,000 turbidity.	0.1% formalin.
Absorbed by abortus 426	4	4	4	4	4	4	4	4	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0		15 c. c. of 30,000 turbidity.	0.2% formalin.
Absorbed by melitensis 428.	4	4	4	4	4	4	4	4	3	0	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		24 c. c. of 20,000 turbidity.	Do.
Reabsorbed by melitensis 428.	---	---	---	---	---	---	---	4	3	0	4	4	4	4	3	0	0	0	0	-----	0	0	0	0	0	0	0	-----	-----	-----	-----	-----do-----	Living.
Serum before immunization.	0	0	0	---	---	---	---	-----	-----	-----	0	0	0	---	---	---	---	-----	-----	-----	0	0	0	---	---	---	---	-----	-----	-----	-----		
(2) Antiabortus 426, bled July 15, 1925:[2]																															
Not absorbed	4	4	4	4	4	3	0	0	0	0	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4	4	2	0			
Absorbed by tularense V	0	0	0	0	0	0	0	-----	-----	-----	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4	4	1	0		9 c. c. of 10,000 turbidity.	0.1% formalin.
Absorbed by abortus 426.	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		15 c. c. of 30,000 turbidity.	0.2% formalin.
Absorbed by melitensis 428.	---	0	0	0	0	0	0	0	0	0	---	4	4	4	4	4	4	0	0	0	---	4	4	4	0	0	0	0	0	0		22.5 c. c. of 20,000 turbidity.	Do.
Reabsorbed by melitensis 428.	---	---	---	---	---	---	---	-----	-----	-----	4	4	4	4	4	4	0	0	0	-----	0	0	0	0	0	0	0	0	0	-----	-----	-----do-----	Living.
(3) Antimelitensis 428, bled July 15, 1925:[3]																															
Not absorbed	4	4	4	3	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4	4	4	2	0		
Absorbed by tularense V	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	0	2	4	4	4	4	4	4	4	4	2	0	10 c. c. of 10,000 turbidity.	0.1% formalin.
Absorbed by abortus 426.	0	0	0	0	0	0	0	0	0	0	---	4	4	0	0	0	0	0	0	0	---	4	4	4	4	3	0	0	0	0	0	12.5 c. c. of 40,000 turbidity.	Living.
Reabsorbed by abortus 426.	---	---	---	---	---	---	---	-----	-----	-----	0	0	0	0	0	0	0	0	-----	-----	---	4	4	3	0	0	0	0	-----	-----	-----	-----do-----	Do.
Absorbed by melitensis 428.	0	0	0	0	0	0	0	0	0	0	---	4	4	0	0	0	0	0	0	0	---	4	4	0	0	0	0	0	0	0	0	-----do-----	Do.
Reabsorbed by melitensis 428.	---	---	---	---	---	---	---	-----	-----	-----	0	0	0	0	0	0	0	0	0	-----	0	0	0	0	0	0	0	0	-----	-----	-----	-----do-----	Do.

[1] Heated 55° C. ½ hour and preserved with trikresol; tested July 19, 1925.
[2] Heated 55° C. ½ hour and preserved with trikresol; tested July 26, 1925.
[3] Heated 55° C. ½ hour and preserved with trikresol; tested Aug. 9, 1925.

Antigens.—*Tularense, abortus,* and *melitensis* cultures were grown on the same medium—glucose cystine agar—in Blake bottles; at the end of 72 hours the growth was washed off in normal saline solution by rocking the bottle in the hands; the suspension was thrown down in the centrifuge, and the sediment was taken up in normal saline solution to which formalin was added in the proportion of 0.1 per cent for *tularense* and 0.2 per cent for *abortus* and *melitensis,* although in a few instances living *abortus* and *melitensis* antigens were used as noted in the tables. In no instance was an antigen killed by heat.

Turbidity standard.—The density of antigens is expressed in terms of the turbidity standard described in the Standard Methods of Water Analysis, published by the American Public Health Association. This standard is described on page 4 of the editions of 1917, 1920, 1923, and 1925.

"For preparation of the Standard, dry Pears' precipitated fuller's earth and sift it through a 200-mesh sieve. One gram of this preparation in 1 liter of distilled water makes a stock suspension which should have a turbidity of 1,000.

"Standards for comparison shall be prepared from this stock suspension by dilution with distilled water."

A silica standard having a turbidity of 500, sealed in a glass ampule 10 millimeters in diameter and of 2 c. c. capacity, has been found satisfactory in determining the turbidity of bacterial suspensions. This turbidity was chosen because ordinary type is just legible through this standard. The sample in question is tested in a tube of the same size. Comparison is made by viewing ordinary type through standard and sample.

For example, if 0.1 c. c. of a bacterial suspension requires dilution with 1.9 c. c. of water before its turbidity, when compared in a 10-millimeter tube, becomes the same as the 500 silica standard, then the turbidity of the heavy suspension is considered to be 10,000; if 2.7 c. c. saline solution were required, the turbidity would be 14,000; if 8.8 c. c. of saline solution were required, the turbidity would be 44,500, etc.

For the agglutinin absorption tests it is desirable to have the turbidity of the stock antigens adjusted to some convenient number, such as 10,000, 20,000, 30,000, or 40,000; for example, to adjust a turbidity of 13,500 to 10,000, one would add 3.5 c. c. of saline solution to 10 c. c. of the antigen; to adjust a turbidity of 44,500 to 20,000, one would add 24.5 c. c. of saline solution to 20 c. c. of the antigen, or 12.25 c. c. of saline solution to 10 c. c. of the antigen, etc. It is immaterial at what turbidity the stock antigens are kept, so long as the turbidity is known.

For making agglutination tests, the stock antigens were diluted with normal saline solution to a turbidity of 500 and then added in

0.5 c. c. amount to each agglutination tube containing 0.5 c. c. of diluted serum so that agglutination took place in a turbidity of antigen of 250.

Serum dilutions.—The following scheme was followed:

(1) 0.5 c. c. of serum + 2.0 c. c. saline = 1 : 5
0.5 c. c. of (1) + 0.5 c. c. antigen = 1:10.
(2) 1 c. c. of (1) + 1 c. c. of saline = 1:10
0.5 c. c. of (2) + 0.5 c. c. antigen = 1:20, etc.

Incubation.—Agglutination tests, except as noted in Table 5, were carried out in the water bath at 37° C. for two and one-half hours, after which the tubes were placed overnight in the cold room at a temperature of about 10° C. and readings were recorded the next morning.

Reading the results.—A reading of 4 denotes complete sedimentation and a water-clear supernatant fluid; 3 denotes a supernatant turbidity equal to that in a control tube containing 25 per cent as much antigen as in the tubes in which the test was carried out; 2 denotes a supernatant turbidity equal to that in a control tube containing 50 per cent of the antigen; 1 denotes a supernatant turbidity equal to that in a control tube containing 75 per cent of the antigen.

Absorption.—The minimal absorbing dose of an antigen for its homologous antiserum must be sufficient to reduce the agglutinin content to 3 per cent or less. The absorbing dose is determined by a series of titrations and was found to vary enormously between *tularense* on the one hand and *abortus* and *melitensis* on the other. The removal of agglutinins for *abortus* and *melitensis* required 4 to 6 times as much antigen as for the removal of agglutinins for *tularense*.

Measurement of the absorbing dose was based on turbidity comparison. The necessary amount of stock antigen was placed in a centrifuge tube and thrown down in a centrifuge running at high speed for 1¼ hours; the supernatant fluid was poured off and the packed bacteria were thoroughly mixed with a 1 : 5 dilution in saline of the serum to be absorbed. The centrifuge tubes were not calibrated nor was any correction made for saline remaining in the packed bacteria mass, as the error from that source was considered to be not only very small but constant for all tests.

The time of absorption was 9 hours in the water bath at 37° C., followed by 12 hours in the cold room at 10° C. The tube containing the absorbed serum was then placed in a centrifuge running at high speed for 1¼ hours and the cleared serum was removed with a pipette. It was considered important that throughout the time of absorption and time in the centrifuge the centrifuge tube be covered with a rubber dam to prevent evaporation.

During absorption in the water bath the mixtures were agitated several times.

Reabsorption was carried out by the same procedure as outlined for absorption.

SUMMARY

A study of the blood serums of 120 cases of tularæmia tested for agglutination of *Bacterium tularense* shows (1) a complete absence of agglutinins for *tularense* in the first week of illness; (2) the constant presence of agglutinins in the second week; (3) an abrupt rise in titer in the third week, reaching its maximum in the fourth, fifth, sixth, or seventh week; (4) a fall in titer in the eighth week; (5) a gradual decline thereafter until at the end of the first year the average titer of 17 cases was 1 : 136; (6) a persistence of agglutinins in long-recovered cases; and (7) the failure of agglutinins entirely to disappear in any case, even 10, 14, and 18 years after recovery.

Human and animal *tularense* serums of high titer failed to agglutinate *B. typhosus*, *B. pestis*, paratyphoid A, paratyphoid B, *B. dysenteriae*, meningococcus, pneumococcus, and Proteus X_{19}. *Bacterium tularense* was not agglutinated by 480 of 500 serums received at the Hygienic Laboratory for Wassermann test, nor by normal rabbit serums, nor by serums from cases of typhoid fever, typhus fever, and syphilis, nor by the serums of rabbits immunized against *B. typhosus*.

Cross agglutination of *abortus* and *melitensis* by human and animal *tularense* serums was noted as follows: (1) Of 100 serums from human cases of tularæmia, 37 showed cross agglutination which, in three instances, reached the same titer for the three organisms, while the remaining 63 serums, some of which were of high anti-*tularense* titer, failed to show any cross agglutination; (2) anti-*tularense* serums of rabbit, sheep, horse, and rooster showed cross agglutination which, in one instance (sheep), reached the same titer for *abortus* and *tularense*, but, as a rule, the cross agglutination titers were not only much lower than the *tularense* titers but were slower in developing in the water bath.

Cross agglutination of *tularense* was noted (1) by three of eight serums from cases of undulant fever, but the degree of cross agglutination was small; (2) by three serums of rabbits immunized against *abortus* and by the serum of a rabbit immunized against *melitensis*.

Agglutinin-absorption tests with serums from four cases of tularæmia and serums of three anti-*tularense* animals (rabbit, sheep, and rooster) resulted as follows: (1) After absorption by *tularense*, they failed to agglutinate *tularense*, *abortus*, and *melitensis*; (2) after absorption by *abortus* they failed to agglutinate *abortus* and *melitensis*, but agglutinated *tularense* to the original *tularense* titer of the unabsorbed serum; (3) after absorption by *melitensis* they failed to agglutinate *melitensis*, agglutinated *tularense* to the titer of the

unabsorbed serum, and varied in their behavior toward *abortus* as follows: One human case and one rooster failed to agglutinate *abortus;* in the rabbit the titer for *abortus* was reduced to only 50 per cent; in the sheep the titer for *abortus* was reduced to 12.5 per cent; and in one human serum the titer for *abortus* was reduced to 6 per cent.

Reciprocal agglutinin absorption tests carried out with three strains of *tularense* isolated in the United States and one strain isolated from human virulent tissue received from Japan showed no difference between the strains.

Reciprocal agglutinin absorption tests carried out with a culture of *tularense,* a culture of *abortus,* a culture of *melitensis,* and their antiserums prepared from rabbits resulted as follows: (1) *Tularense* was readily differentiated from *abortus* and from *melitensis:* (2) *abortus* was readily differentiated from *melitensis;* and (3) an unexpected development was that the *tularense* serum differentiated *abortus* and *melitensis,* reacting as an *abortus* serum. The same tendency to react as an *abortus* serum was noted in the absorption reactions of one human *tularense* serum.

CONCLUSIONS

The conclusions reached are—(1) That, on account of the frequent cross agglutination between *tularense,* on the one hand, and *abortus* and *melitensis,* on the other, serums from suspected cases of tularæmia and undulant fever should be tested for agglutination of *tularense* and either *abortus* or *melitensis,* unless the clinical history points definitely to a recognized source of infection for tularæmia or undulant fever.

(2) That a serum which shows a marked difference in titer for *tularense,* on the one hand, and for *abortus* or *melitensis,* on the other, can usually be classed by the higher titer as due either to tularæmia or to one of the varieties of *Brucella melitensis.*

(3) That a serum which agglutinates all three organisms to the same or nearly the same titer should be subjected to agglutinin absorption tests.

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT ISSUED APRIL 15, 1926, BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT [1]

An outbreak of influenza occurred in England and Wales toward the end of March; it reached its maximum in the second week of April and rapidly diminished in the succeeding two weeks. This is the second outbreak to occur in England during the past winter, the former outbreak having occurred in December. The Epidemiological

[1] From the Office of Statistical Investigations, U. S. Public Health Service.

Report notes that "the interval between the outbreak which took place at the beginning of December and the present one has been of 16 weeks, which is exactly the interval between maxima of the epidemics of July, 1908, November, 1918, and March, 1919." During the recent outbreak the general mortality in 105 towns in England and Wales rose from 12.8 per 1,000 in the week ended March 20, to 15.0 in the week ended April 10, and the deaths from influenza increased from 136 in the week ended March 20, to 302 in the week ended April 17. The increase in mortality was not so sharp as that which accompanied the December outbreak, when the death rate in the towns rose to 17.9 per 1,000.

Glasgow, Scotland, suffered severely from an influenza outbreak at the time when England was affected, and the general mortality rate rose to the high point of 30 per 1,000 in the week ended April 3, considerably higher than for any week during the December outbreak. Edinburgh gave no indication of any unusual prevalence of influenza in March or April, although it is less than 50 miles from Glasgow.

General mortality and deaths from influenza in 105 towns in England and Wales, in London, and in Glasgow

Week ended—	Deaths in 105 towns		Deaths in London		Deaths in Glasgow	
	All causes, rate per 1,000	Number from influenza	All causes, rate per 1,000	Number from influenza	All causes, rate per 1,000	Number from influenza
March 20	12.8	136	13.1	----------	18.1	----------
27	13.9	136	13.9	27	23.7	24
April 3	15.0	223	15.2	48	31.0	67
10	15.1	294	15.3	74	25.6	81
17	14.3	302	14.3	59	22.8	45
24	13.2	209	12.8	35	17.9	20
May 1	12.6	166	12.6	28	16.7	13

The reports available from the large continental European towns for March and the early part of April did not indicate any general increase in influenza coincident with that in England.

Influenza deaths and the general mortality declined during April in the United States. The peak of the influenza outbreak was reached in the week ended March 27, when the death rate from all causes for 68 large cities was 19.4 per 1,000, after which a continuous decline in mortality was reported. The death rate for the 68 cities had dropped to 14.4 per 1,000 during the week ended May 1.

Plague.—The number of plague deaths in India during February was nearly double that reported for the previous four weeks. About 60 per cent occurred in the eastern section of the Punjab and in the United Provinces, "where the season of maximum incidence is April and March, respectively." The total deaths numbered slightly more than in February, 1925. "The rainfall, which had been deficient

during the previous months throughout Northern India," says the Report, "exceeded the normal in the United Provinces and the Eastern Punjab during February and the beginning of March. High atmospheric humidity at this season of the year in these areas is favorable to the extension of plague."

Deaths from plague in the Provinces of India

Province	1926		1925
	Jan. 3-30	Jan. 31-Feb. 27	Feb. 1-28
North-West Frontier	0	1	16
Punjab	1,805	5,217	3,644
Delhi	3	3	28
United Provinces	2,754	4,752	5,468
Bihar and Orissa	597	967	1,218
Bengal	0	0	0
Assam	0	0	0
Central Provinces	481	998	1,071
Madras Presidency	341	346	407
Hyderabad State	348	738	603
Mysore	437	462	71
Bombay Presidency	751	1,080	853
Burma	575	708	470
Other Indian States	608	1,683	669
Total	8,682	16,955	14,518

Java reported 1,094 plague deaths during February, which was approximately 400 fewer than in the preceding four weeks. "A continued decline may be expected up to June, which is, as a rule, the month of minimum incidence," states the report.

Plague was less prevalent in Siam and in French Indo-China during the first quarter of the year than in the corresponding season of 1925, only a few cases having been reported in each country.

Plague reappeared in Iraq in December, and during the first 10 weeks of the current year there were 78 cases and 48 deaths reported at Bagdad.

During March, Egypt reported 8 cases of plague, one at Alexandria, one at Suez, one in Minia Province, and 5 in Gharbia Province. These are the first cases reported in Egypt this year.

Four cases of plague were reported in Greece during March, one at Zante, one at Chios, and two at Heraclion.

Russia reported 28 plague deaths in the Uralsk-Boukeiev Government in the period from February 16 to March 16.

The Epidemiological Report makes the following comment concerning plague in Africa:

Madagascar, Kenya, and Uganda have recently been the most important plague centers in East Africa. Mauritius and the Tanganyika Territory have been free from plague for several months. There were 186 plague cases reported in Madagascar during March, against a maximum of 400 cases in December; June is usually the month of lowest incidence in that island. In Kenya and

Uganda the seasonal fluctuations are more irregular, but there is, nevertheless, a definite tendency toward a seasonal maximum between June and September. There were 97 plague cases reported in Kenya during February, as against 49 in the preceding month and 23 during the corresponding month of 1925. In Uganda there were 109 plague cases in January, as against 29 during the corresponding month of the preceding year.

Human plague cases were again reported during March in the Union of South Africa, but the outbreak was confined to a small area in the Orange Free State.

Ecuador reported 16 plague cases at Guayaquil during February, compared with 34 in January.

Cholera.—Cholera cases increased markedly during March in Siam and in French Indo-China. The number of cases in Siam rose from 285 in the two weeks ended February 27 to 838 in the two weeks ended March 13. In French Indo-China an epidemic started in January in Cambodia, and during February 958 cases were reported. The disease spread rapidly and in March 1,666 cases were reported, with Cochin-China also heavily infected.

In India, 6,532 deaths from cholera were reported in February, approximately the same number as in the preceding four weeks. No extension of the infected area took place, but the number of cases in Bengal and the neighboring districts of Bihar increased, while the outbreak in the southern part of Madras Presidency began to decline.

Cholera cases in the principal ports of the Far East from March 14 to April 24, 1926

City	Week ended—					
	Mar. 20	Mar. 27	Apr. 3	Apr. 10	Apr. 17	Apr. 24
Calcutta (deaths)	45	48	30	-------	46	-------
Madras (deaths)	4	9	4	1	0	0
Rangoon (deaths)	2	1	2	4	6	4
Bangkok	84	90	91	102	92	107
Saigon and Cholon	0	2	13	21	46	23
Singapore	0	0	0	0	1	0

Typhus and relapsing fever.—Russia generally reported a lower incidence of both typhus and relapsing fever during the fourth quarter of 1925 than during the corresponding quarter of 1924. The figures for each geographical area are shown in the accompanying table.

The following data on typhus and relapsing fever in the remainder of Europe are given in the Report:

In Poland there were 540 typhus cases during the four weeks ended March 20, as against 500 during the preceding four weeks and 739 during the corresponding period of 1925. Practically all the cases occurred in the eastern provinces. No case of relapsing fever was reported during the period under review; 324 typhus cases were reported during January in Rumania; there were 231 cases during the corresponding month of the previous year. Small typhus outbreaks occurred in Bulgaria and in the Kingdom of the Serbs, Croats, and Slovenes. Only 5 cases of relapsing fever have been reported during the first quarter of the current year in the whole of Europe outside Russia.

Cases of typhus and relapsing fever reported in Russia during the fourth quarter of 1924 and 1925

Geographical area	Typhus fever		Relapsing fever	
	1924	1925	1924	1925
North-Eastern	539	283	12	5
North-Western	564	273	61	61
Western	651	308	29	66
Central Industrial	2,706	1,360	284	105
Central Black Soil	718	749	385	414
Middle Volga	749	408	262	191
Lower Volga	387	253	480	410
Viatka-Vietluga	410	156	19	40
Ural	148	[1] 17	335	[1] 37
North Caucasus	161	117	302	343
Ukraine	1,412	1,760	416	474
Crimea	43	[1] 9	6	[1] 24
Transcaucasia	99	153	61	189
Asiatic Russia	617	[1] 177	417	[1] 76
Railways, waterways	256	228	76	102
Total	9,460	6,251	3,145	2,537

[1] Incomplete data

In the first quarter of 1926 Tunisia reported 180 cases of typhus fever, Algeria 89 cases, and the French Protectorate of Morocco 270 cases.

Smallpox.—A severe epidemic of smallpox occurred in India, in the Province of Orissa, at the beginning of the current year. In two districts, Puri and Cuttack, there were 15,752 cases and 3,088 deaths from smallpox reported during the first eight weeks of the year. In southern India, on the contrary, smallpox was less prevalent than during the early months of 1925.

The incidence of smallpox in England and Wales has been declining since February. During the four weeks ended April 10 there were 687 cases reported, compared with 945 in the preceding four weeks.

Typhoid fever and dysentery.—"Following the very low incidence of typhoid fever which prevailed throughout Europe at the end of 1925 and the beginning of 1926, a slight increase occurred in certain countries of western and central Europe during February and March," states the Report.

Cases of typhoid fever reported in various countries during the first quarter of 1926

Four weeks ended—	England and Wales	Germany	Netherlands	Belgium[1]
Jan. 30	138	360	63	42
Feb. 27	159	426	95	73
Mar. 27	179	381	71	59

[1] Monthly data.

"A similar increase of dysentery cases took place during February in Germany and Poland. The incidence of both diseases continued to diminish as usual during the winter months in Eastern, Southern, and the remainder of Central Europe."

In Japan there were 9,953 typhoid fever cases reported during the first 10 weeks of the year, as compared with 6,808 cases in the corresponding period of 1925. In March the incidence was returning to a normal level.

Lethargic encephalitis.—The incidence of lethargic encephalitis shows no marked change during the first quarter in any of the countries which report on this disease. The number of cases reported during the first quarter of 1926 are compared with the cases in the corresponding period of 1925 in the following table:

Cases of lethargic encephalitis notified in various countries, January–March, 1925 and 1926

Four weeks ended—	England and Wales		Scotland, 16 cities		Netherlands		Switzerland		Italy		United States, 27 States	
	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926
Jan. 23	185	185	21	19	8	6	5	2	30	32	107	44
Feb. 20	223	223	26	19	6	4	4	1	63	28	86	41
Mar. 20	240	186	29	26	26	12	20	4	97	40	62	48

Month	Sweden		Denmark		Belgium		Czechoslovakia	
	1925	1926	1925	1926	1925	1926	1925	1926
January	14	12	19	7	16	0	14	4
February	17	13	22	2	15	5	25	10
March	22	20	23	8	6	3	40	6

Anthrax.—The following data on the prevalence of anthrax is taken from the Report:

Anthrax cases and deaths reported in various countries during 1924 and 1925

Country	Cases or deaths[1]	Total 1924	1925				
			Total	First quarter	Second quarter	Third quarter	Fourth quarter
AMERICA							
United States (27 States)	C	-------	45	18	12	9	6
Uruguay	C	103	[2] 132	57	43	15	[3] 17
ASIA							
Iraq	C	4	10	2	2	1	5
	D	2	1	0	0	0	1
Australia	C	4	3	2	0	0	1
EUROPE							
Germany	C	118	166	42	44	50	30
Austria	C	7	12	2	4	3	3
	D	2	2	0	0	2	0
Denmark	C	8	3	1	0	0	2
Hungary	D	84	68	18	21	12	17
Italy	C	2,728	1,656	222	245	689	500

[1] C=Cases, D=Deaths. [2] Data for 11 months only. [3] Data for 2 months only.

Anthrax cases and deaths reported in various countries during 1924 and 1925—Continued

Country	Cases or deaths	Total 1924	1925				
			Total	First quarter	Second quarter	Third quarter	Fourth quarter
EUROPE—continued							
Lithuania	C	14	5	0	1	3	1
	D	3	1	0	0	1	0
Poland	C	69	74	14	16	38	6
	D	17	11	2	3	3	3
Russia:							
European Russia	C	8,178	7,077	1,173	1,432	3,601	871
Ukraine	C	5,392	5,041	864	845	2,172	1,160
Transcaucasia	C	396	872	95	107	316	354
Siberia	C	535	175	52	24	86	13
Far Eastern Republic	C	28	11	2	4	5	0
Central Asia	C	617	585	38	14	533	
Waterways, railways, and prisons	C	174	86	14	18	27	27
Total Russia		15,320	13,847	2,238	2,444	6,740	2,425
Kingdom of the Serbs, Croats, and Slovenes	C		498	57	99	200	142
	D		70	10	11	29	20
Switzerland	C	2	6	0	3	3	0
Czechoslovakia	C	67	47	8	11	22	6
	D	7	4	2	0	0	2

Tuberculosis.—Some interesting data on the decline in tuberculosis mortality during 1925 in many of the large cities of Europe and other parts of the world are presented in the April number of Epidemiological Report, from which the figures in the table below have been taken. The decrease in deaths from tuberculosis as compared with 1924 has been greatest in the cities in Eastern and Central Europe. A few European cities and a number of those outside Europe showed no improvement over 1924 or even a higher death rate.

Mortality from tuberculosis (all forms) in various cities in 1925 and the per cent increase or decrease over 1924

City	Population in 1925, in thousands	Death rate per 100,000	Per cent increase or decrease
EUROPE			
Cracow	196	220	−35.7
Budapest	961	291	−26.9
Bologna	224	169	−20.3
Trieste	249	281	−17.1
Berlin	4,014	121	−16.6
Copenhagen	587	108	−15.6
Venice	201	207	−15.5
Hamburg	1,079	114	−13.6
Oslo	258	167	−13.2
Brussels	818	136	−11.7
Cologne	727	121	−11.7
30 Swiss cities	1,166	125	−10.7
Dresden	619	123	−10.2
Stockholm	439	154	−9.9
Madrid	783	253	−8.0
London	4,602	107	−7.8
Glasgow	1,057	134	−7.6
Leningrad	1,085	284	−7.5
Seville	211	406	−7.1
Brunn	222	233	−6.8

Mortality from tuberculosis (all forms) in various cities in 1925 and the per cent increase or decrease over 1924—Continued

City	Population in 1925, in thousands	Death rate per 100,000	Per cent increase or decrease
EUROPE—continued			
Breslau	555	131	−6.4
Rotterdam	548	110	−6.0
Munich	681	117	−5.6
Barcelona	739	185	−4.1
Belfast	438	172	−3.4
Tallinn	127	274	−3.2
The Hague	394	87	−2.2
Valencia	260	180	−2.2
Moscow	1,855	157	−1.9
Paris	2,906	280	−1.1
Amsterdam	718	97	0
Edinburgh	427	133	0
Prague	713	174	0
Strasburg	167	236	0
Genoa	335	219	+2.3
Lille	201	252	+3.7
Milan	722	191	+4.4
Lodz	527	293	+4.6
Dublin	438	185	+5.8
Vienna [1]	1,870	204	+14.0
Lyons	562	261	+14.5
Pilsen	108	241	+18.7
Sofia [2]	154	[3] 419	+19.4
AMERICA			
Sao Paulo	850	107	+2.9
Montevideo [1] [2]	423	[3] 272	+3.8
Habana [2]	399	[3] 262	+5.6
Buenos Aires [3]	1,856	198	+20.7
AFRICA			
Alexandria	487	146	−7.0
Cairo	819	118	+5.4
ASIA			
Manila	308	368	−40.3
Bombay [2] [4]	1,259	[3] 94	−22.3
Singapore	396	317	+3.9
Madras [2] [4]	527	[3] 284	+0.2
Calcutta [2] [5]	1,077	[3] 228	+15.2
Rangoon [2] [4]	346	[3] 434	+24.0

[1] Data for eleven months.
[2] Pulmonary tuberculosis only.
[3] Data for 10 months.
[4] Data for 51 weeks.
[5] Data for 49 weeks.

SMALLPOX AND VACCINATION IN LOS ANGELES, CALIF.

Dr. George Parrish, health commissioner of Los Angeles, Calif., has compiled the following data regarding 1,220 cases of smallpox which occurred in Los Angeles from July 1, 1925, to May 1, 1926.

Number vaccinated in childhood or infancy [1]	122
Number vaccinated too long ago to be immune [2]	33
Number vaccinated after exposure (too late)	113
Number never successfully vaccinated	952
Total number of cases reported	1,220

[1] Ages of patients who were vaccinated in infancy varied from 18 to 75 years.
[2] Time from vaccination to onset of disease varied from 6 to 55 years. Ages of patients varied from 21 to 79 years.

The vaccination histories of the patients who died were as follows:

Never vaccinated	144
Vaccinated after exposure	5
Vaccinated more than 20 years before onset of disease	15
Total	164

During the epidemic three cases presented fairly good evidence that they had previously had smallpox—one 33 years before onset of the disease, one 30 years, and one 13 years before.

PATIENTS IN HOSPITALS FOR FEEBLE-MINDED

Reports have been received by the Public Health Service from 20 institutions for the care of feeble-minded persons, located in 13 States. The data given below are for the month of March, 1926. The number of patients in these institutions on March 1, was 13,013, including those on temporary leave; on March 31, there were 13,060 patients, a gain of 0.36 per cent. The increase in the number of patients on temporary leave (35) equals three-fourths of the increase in the number of patients (47). The average number of patients on temporary leave was 632, or 4.8 per cent of the total. Forty-eight and one-tenth per cent of the patients were males and 51.9 per cent were females; 17 patients were discharged during the month and 30 died; 9 patients were reported as transferred to institutions not included in the table.

Patients on books 1st day of month:	
In institution	12, 398
On temporary leave	615
Total	13, 013
Admitted during month:	
First admissions	97
Readmissions	6
Total received during month	103
Total in institution during month	13, 116
Discharged or placed on indefinite parole during month	17
Transferred to other institutions	9
Died during month	30
Total discharged, transferred, and died	56
Patients on books last day of month:	
In institutions	12, 410
On temporary leave	650
Total	13, 060
Males	6, 283
Females	6, 777

DEATHS DURING WEEK ENDED JUNE 12, 1926

Summary of information received by telegraph from industrial insurance companies for week ended June 12, 1926, and corresponding week of 1925. (From the Weekly Health Index, June 17, 1926, issued by the Bureau of the Census, Department of Commerce)

	Week ended June 12, 1926	Corresponding week 1925
Policies in force	59, 810, 573	60, 189, 649
Number of death claims	12, 130	12, 660
Death claims per 1,000 policies in force, annual rate	10. 6	11. 0

Deaths from all causes in certain large cities of the United States during the week ended June 12, 1926, infant mortality, annual death rate, and comparison with corresponding week of 1925. (From the Weekly Health Index, June 17, 1926, issued by the Bureau of the Census, Department of Commerce)

City	Week ended June 12, 1926		Annual death rate per 1,000 corresponding week 1925	Deaths under 1 year		Infant mortality rate, week ended June 12, 1926 [2]
	Total deaths	Death rate [1]		Week ended June 12, 1926	Corresponding week, 1925	
Total (66 cities)	6, 906	12. 4	15. 3	785	924	[3] 62
Albany [4]	43	18. 8	19. 9	2	7	42
Atlanta	75			10	14	
White	36			5		
Colored	39	([5])		5		
Baltimore [4]	195	12. 6	22. 1	11	26	32
White	156			7		25
Colored	39	([5])		4		65
Birmingham	65	16. 1	23. 6	9	13	
White	34			6		
Colored	31	([5])		3		
Boston	198	13. 1	16. 2	28	22	79
Bridgeport	25			0	2	0
Buffalo	159	15. 2	16. 5	23	20	92
Cambridge	28	12. 0	18. 3	3	6	50
Camden	24	9. 6	18. 2	3	7	51
Canton	26	12. 3	11. 3	2	2	44
Chicago [4]	615	10. 5	11. 7	65	59	58
Cincinnati	120	15. 2	16. 2	8	2	50
Cleveland	188	10. 2	9. 2	30	20	78
Columbus	71	13. 0	13. 4	8	9	73
Dallas	69	18. 0	14. 6	12	13	
White	49			10		
Colored	20	([5])		2		
Dayton	45	13. 3	11. 2	4	2	63
Denver	68	12. 4	13. 7	7	3	
Des Moines	42	15. 0	7. 4	5	3	83
Detroit	329	13. 3	10. 3	50	46	80
Duluth	23	10. 6	10. 4	3	5	70
El Paso	35	16. 7	27. 3	13	16	
Erie	31			4	4	76
Fall River [4]	37	14. 7	19. 0	6	7	87
Flint	28	10. 7	6. 4	2	3	33
Fort Worth	25	8. 2	9. 6	3	4	
White	20			3		
Colored	5	([5])		0		
Grand Rapids	18	6. 0	12. 6	0	2	0
Houston	51			7	8	
White	38			5		
Colored	13	([5])		2		
Indianapolis	104	14. 8	10. 0	13	3	95
White	88			6		51
Colored	21			7		385
Jersey City	70	11. 5	17. 0	9	15	64

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday June 11, 1926.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Kansas City, Kans., 14, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended June 12, 1926, infant mortality, annual death rate, and comparison with corresponding week of 1925. (From the Weekly Health Index, June 17, 1926, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended June 12, 1926		Annual death rate per 1,000 corresponding week 1925	Deaths under 1 year		Infant mortality rate, week ended June 12, 1926
	Total deaths	Death rate		Week ended June 12, 1926	Corresponding week, 1925	
Kansas City, Kans.	30	13.4	13.0	5	5	87
White	23			4		84
Colored	7	(5)		1		131
Kansas City, Mo.	91	12.7	9.5	9	16	
Los Angeles	214			21	31	58
Louisville	73	12.2	12.1	8	11	69
White	55			6		60
Colored	18	(5)		2		125
Lowell	29			2	3	37
Lynn	23	11.5	10.6	2	1	50
Memphis	99	29.2	19.7	9	10	
White	54			5		
Colored	45	(5)		4		
Milwaukee	127	12.8	10.8	17	11	79
Minneapolis	111	13.3	10.3	12	12	67
Nashville [4]	54	20.6	16.1	6	7	
White	27			4		
Colored	27	(5)		2		
New Bedford	40			10	4	174
New Haven	38	10.9	12.5	4	1	55
New Orleans	130	16.2	17.2	15	22	
White	73			10		
Colored	57	(5)		5		
New York	1,330	11.7	18.2	158	208	64
Bronx Borough	169	9.8	16.0	15	18	50
Brooklyn Borough	445	10.4	16.1	66	83	67
Manhattan Borough	576	16.0	23.1	67	89	74
Queens Borough	107	7.3	13.7	7	15	32
Richmond Borough	33	12.0	20.7	3	3	53
Newark, N. J.	88	10.0	16.7	7	18	33
Norfolk	32	9.6	9.9	1	6	19
White	15			0		0
Colored	17	(5)		1		50
Oakland	46	9.2	10.5	6	7	69
Oklahoma City	25			3	3	
Omaha	53	12.8	14.0	5	3	52
Paterson	30	10.9	18.0	6	6	104
Philadelphia	436	11.3	23.9	49	88	65
Pittsburgh	172	14.1	14.9	24	26	80
Portland, Oreg.	57			2	7	20
Providence	54	10.2	16.5	9	11	75
Richmond	49	13.5	11.2	3	5	38
White	29			2		39
Colored	20	(5)		1		35
Rochester	101	16.4	14.3	10	11	80
St. Louis	193	12.1	12.2	12	19	
St. Paul	60	12.6	15.3	5	6	44
Salt Lake City [4]	32	12.5	13.1	5	7	69
San Antonio	79	20.1	16.8	25	16	
San Diego	40	19.0	15.7	2	3	42
San Francisco	142	13.1	13.4	7	5	42
Schenectady	23	12.9	15.7	2	5	58
Seattle	67			3	6	28
Somerville	10	5.2	17.9	0	8	0
Spokane	34	16.3	16.8	0	2	0
Springfield, Mass.	33	11.9	18.4	3	10	43
Syracuse	52	14.7	10.0	7	2	88
Tacoma	25	12.3	12.0	3	2	70
Toledo	65	11.5	12.2	5	7	48
Trenton	24	9.3	27.3	0	6	0
Utica	32	16.2	11.8	2	3	44
Washington, D. C.	148	14.6	14.8	12	10	68
White	88			6		50
Colored	60	(5)		6		109
Waterbury	31			2	4	43
Wilmington, Del.	29	12.2	16.7	3	3	70
Worcester	45	12.2	11.5	4	5	46
Yonkers	22	9.9	10.1	2	2	45
Youngstown	26	8.2	7.2	3	3	38

For footnotes 4 and 5, see p. 1304

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Week Ended June 19, 1926

ALABAMA

	Cases
Chicken pox	27
Diphtheria	1
Influenza	9
Lethargic encephalitis	1
Malaria	40
Measles	265
Mumps	33
Pellagra	23
Pneumonia	20
Poliomyelitis	1
Scarlet fever	3
Smallpox	4
Tuberculosis	35
Typhoid fever	38
Whooping cough	37

ARIZONA

Chicken pox	2
Diphtheria	3
Influenza	1
Measles	2
Pneumonia	2
Scarlet fever	6
Tuberculosis	19
Typhoid fever	11

ARKANSAS

Chicken pox	17
Diphtheria	3
Hookworm disease	1
Influenza	13
Malaria	64
Measles	26
Mumps	3
Ophthalmia neonatorum	2
Pellagra	24
Scarlet fever	16
Smallpox	2
Trachoma	3
Tuberculosis	4
Typhoid fever	4
Whooping cough	50

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Pacific Grove	1
Stockton	3
Chicken pox	169
Diphtheria	76
Influenza	7
Leprosy	1
Measles	425
Mumps	135
Scarlet fever	126
Smallpox	11
Typhoid fever	14
Whooping cough	76

COLORADO

Cerebrospinal meningitis	1
Chicken pox	63
Diphtheria	25
German measles	7
Impetigo contagiosa	1
Influenza	1
Measles	37
Mumps	1
Rocky Mountain spotted fever	2
Scarlet fever	20
Smallpox	3
Tuberculosis	26
Vincent's angina	1
Whooping cough	39

CONNECTICUT

Cerebrospinal meningitis	2
Chicken pox	92
Diphtheria	15
Favus	1
German measles	19
Influenza	2
Measles	349
Mumps	8
Pneumonia (broncho)	24
Pneumonia (lobar)	38

CONNECTICUT—continued

	Cases
Scarlet fever	78
Septic sore throat	1
Tuberculosis (all forms)	44
Typhoid fever	3
Whooping cough	53

DELAWARE

Chicken pox	1
Diphtheria	6
Measles	12
Scarlet fever	2
Tuberculosis	1
Whooping cough	3

DISTRICT OF COLUMBIA

Chicken pox	16
Diphtheria	8
Measles	101
Pellagra	1
Pneumonia	22
Scarlet fever	16
Smallpox	2
Tuberculosis	31
Whooping cough	39

FLORIDA

Cerebrospinal meningitis	2
Chicken pox	1
Diphtheria	6
German measles	1
Influenza	93
Malaria	13
Measles	23
Mumps	4
Pneumonia	101
Poliomyelitis	1
Scarlet fever	2
Smallpox	42
Tetanus	6
Tuberculosis	110
Typhoid fever	16
Whooping cough	21

GEORGIA

Chicken pox	13
Diphtheria	4
Dysentery	53
Hookworm disease	4
Influenza	2
Malaria	29
Measles	90
Mumps	12
Paratyphoid fever	2
Pellagra	19
Pneumonia	20
Poliomyelitis	1
Scarlet fever	2
Septic sore throat	9
Smallpox	15
Tuberculosis	22
Typhoid fever	45
Typhus fever	2
Whooping cough	20

IDAHO

Chicken pox	14
Diphtheria	7
Measles	4

IDAHO—continued

	Cases
Mumps	3
Scarlet fever	1
Smallpox:	
Emmett	18
Scattering	2
Tuberculosis	2
Typhoid fever	1
Whooping cough	4

ILLINOIS

Cerebrospinal meningitis:	
Cook County	1
Knox County	1
St. Clair County	1
Chicken pox	279
Diphtheria	71
Influenza	69
Lethargic encephalitis—Macon County	1
Measles	1,155
Mumps	42
Pneumonia	225
Poliomyelitis:	
Champaign County	1
Cook County	1
Franklin County	1
McDonough County	1
Scarlet fever	257
Smallpox	38
Tuberculosis	514
Typhoid fever	12
Whooping cough	175

INDIANA

Cerebrospinal meningitis	1
Chicken pox	45
Diphtheria	8
Influenza	10
Measles	296
Pneumonia	4
Scarlet fever	65
Smallpox	59
Tuberculosis	54
Whooping cough	72

IOWA

Chicken pox	14
Diphtheria	3
German measles	16
Measles	118
Mumps	6
Poliomyelitis	2
Scarlet fever	38
Smallpox	9
Tuberculosis	12
Typhoid fever	1
Whooping cough	20

KANSAS

Cerebrospinal meningitis	2
Chicken pox	34
Diphtheria	7
Dysentery (amebic)	1
German measles	6
Influenza	30
Measles	206
Mumps	14

KANSAS—continued

	Cases
Pellagra	1
Pneumonia	61
Poliomyelitis—Topeka (rural)	1
Scarlet fever	22
Smallpox	8
Tetanus	1
Tuberculosis	35
Typhoid fever	5
Whooping cough	116

LOUISIANA

Diphtheria	5
Influenza	18
Leprosy	1
Malaria	17
Paratyphoid fever	1
Pneumonia	35
Scarlet fever	4
Smallpox	2
Tuberculosis	39
Typhoid fever	23
Whooping cough	17

MAINE

Cerebrospinal meningitis	1
Chicken pox	14
German measles	27
Lethargic encephalitis	1
Measles	124
Mumps	5
Paratyphoid fever	1
Pellagra	2
Pneumonia	4
Scarlet fever	7
Tuberculosis	2
Typhoid fever	7
Whooping cough	4

MARYLAND [1]

Chicken pox	67
Diphtheria	16
Dysentery	1
German measles	4
Influenza	4
Lethargic encephalitis	2
Measles	182
Mumps	84
Paratyphoid fever	3
Pellagra	2
Pneumonia (broncho)	26
Pneumonia (lobar)	30
Poliomyelitis	1
Scarlet fever	62
Septic sore throat	1
Tuberculosis	51
Typhoid fever	3
Whooping cough	72

MASSACHUSETTS

Chicken pox	149
Conjunctivitis (suppurative)	3
Diphtheria	60
German measles	256
Influenza	3
Lethargic encephalitis	1

[1] Week ended Friday.

MASSACHUSETTS—continued

	Cases
Measles	587
Mumps	157
Ophthalmia neonatorum	21
Pneumonia (lobar)	61
Poliomyelitis	1
Scarlet fever	210
Trachoma	1
Tuberculosis (pulmonary)	107
Tuberculosis (other forms)	26
Typhoid fever	13
Whooping cough	148

MICHIGAN

Diphtheria	96
Measles	879
Pneumonia	54
Scarlet fever	285
Smallpox	8
Tuberculosis	39
Typhoid fever	9
Whooping cough	152

MINNESOTA

Cerebrospinal meningitis	1
Chicken pox	96
Diphtheria	42
Influenza	1
Lethargic encephalitis	1
Measles	588
Pneumonia	4
Scarlet fever	234
Smallpox	4
Tuberculosis	45
Whooping cough	41

MISSISSIPPI

Diphtheria	4
Scarlet fever	1
Smallpox	3
Typhoid fever	13

MISSOURI

(Exclusive of Kansas City)

Chicken pox	289
Diphtheria	51
Measles	269
Mumps	8
Scarlet fever	81
Smallpox	1
Trachoma	2
Tuberculosis	36
Typhoid fever	11
Whooping cough	75

MONTANA

Cerebrospinal meningitis	2
Chicken pox	7
Diphtheria	19
Measles	47
Mumps	1
Rocky Mountain spotted fever	3
Scarlet fever	11
Smallpox	2
Tuberculosis	1
Typhoid fever	3

NEBRASKA

	Cases
Chicken pox	20
Diphtheria	3
Measles	39
Mumps	4
Pneumonia	1
Scarlet fever	50
Smallpox	19
Tuberculosis	14
Typhoid fever	2
Whooping cough	29

NEW JERSEY

Cerebrospinal meningitis	3
Chicken pox	174
Diphtheria	65
Measles	671
Pneumonia	65
Poliomyelitis	1
Rabies	1
Scarlet fever	178
Typhoid fever	6
Whooping cough	77

NEW MEXICO

Chicken pox	5
Diphtheria	1
Measles	8
Mumps	1
Pneumonia	4
Rabies (in animals)	1
Scarlet fever	4
Smallpox	1
Tuberculosis	59
Typhoid fever	6
Whooping cough	21

NEW YORK

(Exclusive of New York City)

Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	238
Diphtheria	55
Dysentery	4
German measles	421
Influenza	3
Lethargic encephalitis	5
Malaria	4
Measles	1,712
Mumps	120
Pneumonia	165
Scarlet fever	140
Septic sore throat	5
Smallpox	7
Trachoma	2
Typhoid fever	5
Vincent's angina	6
Whooping cough	265

NORTH CAROLINA

Diphtheria	12
German measles	70
Measles	385
Poliomyelitis	2
Scarlet fever	9
Smallpox	36
Typhoid fever	20
Whooping cough	272

OKLAHOMA

	Cases
(Exclusive of Oklahoma City and Tulsa)	
Cerebrospinal meningitis—Pittsburg County	1
Chicken pox	6
Diphtheria	1
Influenza	21
Malaria	28
Measles	47
Pellagra	20
Pneumonia	12
Poliomyelitis—Osage County	1
Smallpox	7
Typhoid fever	12
Whooping cough	65

OREGON

Cerebrospinal meningitis	2
Chicken pox	14
Diphtheria	13
Influenza	8
Malaria	1
Measles	54
Mumps	12
Pneumonia	[1]7
Rocky Mountain spotted fever	2
Scarlet fever	34
Smallpox:	
Portland	9
Scattering	15
Tuberculosis	[1]3
Typhoid fever	5
Whooping cough	22

PENNSYLVANIA

Chicken pox	275
Diphtheria	155
German measles	60
Impetigo contagiosa	8
Measles	2,613
Mumps	33
Ophthalmia neonatorum—Philadelphia	1
Pneumonia	27
Poliomyelitis—York	1
Scarlet fever	452
Smallpox	1
Tetanus—Philadelphia	1
Tuberculosis	153
Typhoid fever	25
Whooping cough	341

SOUTH DAKOTA

Chicken pox	1
Diphtheria	2
Influenza	8
Measles	7
Poliomyelitis	1
Scarlet fever	37
Smallpox	1
Tuberculosis	1
Typhoid fever	2

TENNESSEE

Cerebrospinal meningitis—Knox County	1
Chicken pox	6
Diphtheria	7
Dysentery	6
Influenza	6

[1] Deaths.

TENNESSEE—continued

	Cases
Lethargic encephalitis—Hamblen County	1
Malaria	17
Measles	171
Mumps	7
Ophthalmia neonatorum	1
Pellagra	22
Pneumonia	3
Poliomyelitis:	
Dyer County	1
Henderson County	1
Rabies	1
Scarlet fever	8
Smallpox	10
Tetanus	1
Trachoma	1
Tuberculosis	93
Typhoid fever	16
Whooping cough	26

TEXAS

Chicken pox	30
Dengue	1
Diphtheria	13
Dysentery	5
Influenza	9
Measles	8
Mumps	17
Pellagra	5
Pneumonia	6
Scarlet fever	9
Smallpox	8
Tuberculosis	18
Typhoid fever	14
Whooping cough	48

UTAH

Chicken pox	25
Diphtheria	9
Measles	53
Mumps	8
Pneumonia	3
Scarlet fever	3
Smallpox	1
Tuberculosis	1
Whooping cough	108

WASHINGTON

Cerebrospinal meningitis:	
Asotin County	1
Spokane	2
Chicken pox	55
Diphtheria	10
German measles	31
Measles	88
Mumps	42
Scarlet fever	58

WASHINGTON—continued

	Cases
Smallpox	15
Tuberculosis	25
Typhoid fever	4
Whooping cough	38

WEST VIRGINIA

Chicken pox	17
Diphtheria	6
Influenza	2
Measles	578
Scarlet fever	18
Smallpox	7
Trachoma	1
Tuberculosis	15
Typhoid fever	9
Whooping cough	35

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	197
Diphtheria	6
German measles	2
Measles	303
Mumps	25
Pneumonia	7
Scarlet fever	15
Tuberculosis	23
Whooping cough	44
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	51
Diphtheria	15
German measles	91
Influenza	15
Measles	1,070
Mumps	39
Pneumonia	14
Poliomyelitis	1
Scarlet fever	55
Smallpox	1
Tuberculosis	25
Typhoid fever	2
Whooping cough	83

WYOMING

Chicken pox	13
German measles	3
Influenza	5
Measles	8
Rocky Mountain spotted fever:	
Fremont County	2
Natrona County	1
Scarlet fever	14
Smallpox	1
Typhoid fever	2
Whooping cough	14

Report for week ended June 12, 1926

NORTH DAKOTA

	Cases
Chicken pox	4
Diphtheria	9
German measles	19
Measles	60
Pneumonia	6

NORTH DAKOTA—continued

	Cases
Scarlet fever	54
Smallpox	2
Tuberculosis	1
Whooping cough	26

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
May, 1926										
Arkansas	0	7	153	123	268	85	0	92	35	19
District of Columbia	2	71	3	-------	1,604	0	0	132	3	5
Louisiana	0	37	86	55	17	51	0	81	78	54
New Jersey	10	328	34	-------	6,991	-------	4	828	0	21
North Dakota	0	28	-------	-------	126	-------	1	256	31	2
Tennessee	10	60	516	44	3,154	136	0	170	147	51
Wisconsin	3	126	424	0	5,021	0	0	459	15	14

RODENT PLAGUE IN SAN BENITO COUNTY, CALIF.

A report dated June 5, 1926, states that 5 squirrels out of a total of 27 shipped from San Benito County, Calif., to the Public Health Service laboratory at San Francisco, have proved positive for bubonic plague.

SMALLPOX IN CALIFORNIA, JANUARY TO APRIL, 1926

The Weekly Bulletin of the California State Board of Health dated May 15, 1926, gives the following summary of cases of smallpox and deaths from this disease during the four months ended April 30, 1926. The total number of cases of smallpox was 2,182; deaths, 208. Of these, 1,249 cases and 186 deaths occurred in Los Angeles County. Only 10 counties reported deaths from smallpox during the four months, and 5 of these had only one death each.

County	January		February		March		April	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Alameda	70	-------	77	1	106	1	65	-------
Butte	-------	-------	-------	-------	-------	-------	4	-------
Colusa	-------	-------	5	-------	-------	-------	-------	-------
Contra Costa	8	-------	6	-------	6	-------	-------	-------
El Dorado	-------	-------	-------	-------	11	-------	-------	-------
Glenn	1	-------	-------	-------	-------	-------	-------	-------
Humboldt	-------	-------	-------	-------	-------	-------	1	-------
Imperial	-------	-------	4	-------	40	-------	3	-------
Kern	-------	-------	6	-------	12	2	4	-------
Los Angeles	275	28	445	70	400	46	129	42
Madera	1	-------	3	-------	-------	-------	-------	-------
Marin	-------	-------	-------	-------	1	-------	-------	-------
Mendocino	1	-------	-------	-------	6	-------	25	-------
Merced	2	-------	-------	-------	-------	-------	2	-------
Modoc	1	-------	-------	-------	-------	-------	-------	-------
Orange	5	-------	4	-------	5	-------	12	-------
Placer	12	-------	4	-------	6	-------	10	-------
Riverside	13	1	2	-------	2	-------	-------	-------
Sacramento	30	-------	34	-------	19	1	11	-------
San Bernardino	-------	-------	15	1	7	-------	1	-------
San Diego	-------	-------	4	1	14	2	4	-------
San Francisco	4	1	24	5	25	1	24	1
San Joaquin	1	-------	-------	-------	4	-------	15	2
San Luis Obispo	2	-------	-------	-------	-------	-------	-------	-------
San Mateo	-------	-------	-------	-------	1	-------	1	-------
Santa Barbara	1	1	3	-------	2	-------	1	-------

County	January		February		March		April	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Santa Clara	3		6		5		10	
Santa Cruz					1			
Siskiyou					2			
Solano	5		1					
Sonoma	1		3		51		7	
Stanislaus			1		9		5	
Sutter							1	
Tulare	1				2	1	2	
Ventura	2		2		1			
Yolo	1		6		6			
Yuba	2							
California			2		2			
Total	442	31	657	78	746	54	337	45

SMALLPOX IN FLORIDA, DECEMBER, 1925, TO MAY, 1926

The bureau of vital statistics of the State Board of Health of Florida has supplied the following data relative to cases of smallpox reported in the State of Florida during the six months ended May 31, 1926:

Location	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
State	65	322	558	782	407	269	2,403
Alachua County		2	4	6	2	25	39
Brevard County		10	1	4		1	16
Citrus County			1			1	2
Clay County			10	2	4	1	17
Dade County, exclusive of Miami		2	6	7	9		24
Miami	25	82	136	185	25	6	459
Duval County, exclusive of Jacksonville			7	14	7		28
Jacksonville	13	35	104	132	106	104	494
Escambia County	1	4	2		1	3	11
Franklin County						1	1
Glades County				2		2	4
Highlands County	3		3			5	11
Hillsboro County, exclusive of Tampa		10		12	27	2	51
Tampa	13	122	120	112	68	31	466
Lake County					1	1	2
Lee County				2		2	4
Madison County				1			1
Marion County		5		6	1	2	14
Orlando			36		1	1	38
Palm Beach County, exclusive of West Palm Beach		3	4	4	2		13
West Palm Beach			60	113	37	12	222
Pasco County		5	1	15	3	2	26
St. Petersburg			6	35	28	22	91
Polk County, exclusive of Lakeland			2	29	6	4	41
Lakeland			1	11	2	4	18
St. Johns County	1		3	23		7	34
St. Lucie County		3	4	22		12	41
Sarasota County		1	1			4	6
Seminole County		1		9	6	8	24
Volusia County		1		1	15	1	18
Washington County					1	3	4

PLAGUE ERADICATIVE MEASURES IN LOS ANGELES, CALIF.

The following items were taken from the report of plague eradicative measures from Los Angeles, Calif.:

Week ended June 12, 1926:

Number of rats trapped	389
Number of rats found to be plague infected	0
Number of squirrels examined	747
Number of squirrels found to be plague infected	0
Number of mice trapped	262
Number of mice found to be plague infected	0

Date of discovery of last plague-infected rodent, Nov. 6, 1925.
Date of last human case, Jan. 15, 1925.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended June 5, 1926, 35 States reported 932 cases of diphtheria. For the week ended June 6, 1925, the same States reported 1,345 cases of this disease. Ninety-seven cities, situated in all parts of the country and having an aggregate population of more than 30,120,000, reported 684 cases of diphtheria for the week ended June 5, 1926. Last year for the corresponding week they reported 870 cases. The estimated expectancy for these cities was 833 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-three States reported 13,263 cases of measles for the week ended June 5, 1926, and 6,165 cases of this disease for the week ended June 6, 1925. Ninety-seven cities reported 5,783 cases of measles for the week this year and 3,398 cases last year.

Poliomyelitis.—The health officers of 36 States reported 14 cases of poliomyelitis for the week ended June 5, 1926. The same States reported 38 cases for the week ended June 6, 1925.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 2,589 cases; last year, 2,845 cases; 97 cities—this year, 1,321 cases; last year, 1,462 cases; estimated expectancy, 885 cases.

Smallpox.—For the week ended June 5, 1926, 36 States reported 547 cases of smallpox. Last year for the corresponding week they reported 821 cases. Ninety-seven cities reported smallpox for the week as follows: 1926, 88 cases; 1925, 256 cases; estimated expectancy, 125 cases.

Typhoid fever.—Two hundred and forty-two cases of typhoid fever were reported for the week ended June 5, 1926, by 35 States. For the corresponding week of 1925, the same States reported 566 cases of this disease. Ninety-seven cities reported 54 cases of typhoid fever for the week this year and 137 cases for the corresponding week last year. The estimated expectancy for these cities was 71 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia were reported for the week by 91 cities, with a population of more than 29,400,000, as follows: 1926, 646 deaths; 1925, 744.

City reports for week ended June 5, 1926

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

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1917 is included. In obtaining the estimated expectancy the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	75,333	1	1	0	0	0	95	1	5
New Hampshire:									
Concord	22,546	0	0	0	0	0	0	0	0
Manchester	83,097	0	1	0	0	0	18	0	0
Vermont:									
Barre	10,008	0	0	0	0	0	0	1	0
Massachusetts:									
Boston	779,620	25	50	13	3	1	96	41	15
Fall River	128,993	0	3	1	0	0	2	2	2
Springfield	142,065	0	2	2	0	0	6	1	1
Worcester	190,757	2	4	8	0	0	4	0	5
Rhode Island:									
Pawtucket	69,760	1	1	0	0	0	10	1	1
Providence	267,918	0	7	7	0	0	46	0	9
Connecticut:									
Bridgeport	(1)	7	5	2	0	0	3	0	2
Hartford	160,197	4	5	0	1	0	7	0	6
New Haven	178,927	8	3	0	1	0	39	1	3
MIDDLE ATLANTIC									
New York:									
Buffalo	538,016	8	10	0	0	0	23	1	17
New York	5,873,356	168	256	176	34	6	484	74	155
Rochester	316,786	10	6	6	0	0	48	1	5
Syracuse	182,003	12	6	2	0	0	366	9	4
New Jersey:									
Camden	128,642	3	3	7	0	0	19	0	6
Newark	452,513	51	13	5	2	0	89	8	7
Trenton	132,020	1	3	1	0	0	43	0	4
Pennsylvania:									
Philadelphia	1,979,364	66	62	61	----	6	216	9	41
Pittsburgh	631,563	25	18	11	----	1	185	3	21
Reading	112,707	2	3	1	----	0	35	0	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	11	7	8	0	0	179	9	12
Cleveland	936,485	47	18	30	0	0	37	6	11
Columbus	279,836	13	2	5	0	1	65	0	7
Toledo	287,380	27	5	3	0	0	299	0	6
Indiana:									
Fort Wayne	97,846	3	2	2	0	0	74	0	1
Indianapolis	358,819	4	4	1	0	0	27	1	13
South Bend	80,091	1	1	0	0	0	52	0	5
Terre Haute	71,071	0	1	0	0	0	10	0	1

[1] No estimate made.

City reports for week ended June 5, 1926—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Illinois:									
Chicago	2,995,239	137	87	60	3	1	229	18	36
Peoria	81,564	2	1	0	0	0	0	2	1
Springfield	63,923	3	0	0	0	0	12	4	1
Michigan:									
Detroit	1,245,824	56	37	49	2	7	53	7	31
Flint	130,316	16	3	2	0	0	131	1	5
Grand Rapids	153,698	5	2	2	0	0	63	0	2
Wisconsin:									
Kenosha	50,891	7	0	0	0	0	46	1	0
Madison	46,385		0						
Milwaukee	509,192	90	12	13	2	3	293	50	11
Racine	67,707	3	0	2	0	0	279	4	6
Superior	39,671	0	0	1	0	0	16	0	2
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	7	1	0	0	0	13	0	2
Minneapolis	425,435	35	14	25	0	0	72	1	8
St. Paul	246,001	24	15	4	0	1	364	0	1
Iowa:									
Davenport	52,469	0	1	2	0		2	0	
Des Moines	141,441	0	1	2	0		0	0	
Sioux City	76,411	1	0	0	0		0	0	
Waterloo	36,771	2	0	0	0		54	1	
Missouri:									
Kansas City	367,481	12	5	1	2	2	29	2	9
St. Joseph	78,342	3	1	0	0	0	6	0	0
St. Louis	821,513	12	39	72	1	1	497	6	
North Dakota:									
Fargo	26,403	2	0	0	0	0	0	2	0
Grand Forks	14,811		0						
South Dakota:									
Aberdeen	15,036	0	0	0	0		3	3	
Sioux Falls	30,127	0	0	0	0	0	4	0	0
Nebraska:									
Lincoln	60,941	3	1	0	0	0	0	0	0
Omaha	211,768	7	2	1	0	0	56	0	2
Kansas:									
Topeka	55,411	19	1	0	0	0	11	0	1
Wichita	88,367	0	1	1	0	0	4	0	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	2	1	3	0	0	3	0	4
Maryland:									
Baltimore	796,296	46	17	11	3	2	40	98	19
Cumberland	33,741	0	0	0	0	0	7	0	1
Frederick	12,035	0	0	0	0	0	1	3	0
District of Columbia:									
Washington	497,906	27	8	6	0	0	191	0	9
Virginia:									
Lynchburg	30,395	4	0	0	0	0	29	0	0
Norfolk	(1)	19	0	0	0	0	33	2	0
Richmond	186,403	6	0	1	0	0	101	2	1
Roanoke	58,208	0	0	0	0	0	23	1	0
West Virginia:									
Charleston	49,019	1	0	0	4	0	35	0	
Wheeling	56,208	10	0	0	0	0	91	0	0
North Carolina:									
Raleigh	30,371	2	0	2	0	0	1	0	0
Wilmington	37,061		0						
Winston-Salem	69,031	2	0	0	0	0	43	6	1
South Carolina:									
Charleston	73,125	2	0	0	11	1	6	0	1
Columbia	44,225	5	0	0	0	0	0	0	0
Greenville	27,311	0	0	0	0	0	0	1	0

[1] No estimate made.

City reports for week ended June 5, 1926—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—continued									
Georgia:									
Atlanta	(1)	10	1	2	4	0	36	0	2
Brunswick	16,809	0	0	0	0	0	6	0	0
Savannah	93,134	0	0	0	1	1	0	1	0
Florida:									
Miami	69,754	1	-------	4	0	0	5	2	2
St. Petersburg	26,847	-------	0	-------	0	0	-------	-------	1
Tampa	94,743	1	0	0	0	0	0	1	2
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,309	0	1	0	0	0	11	0	0
Louisville	305,935	2	3	0	0	2	21	0	13
Tennessee:									
Memphis	174,533	-------	1	1	0	0	139	-------	2
Nashville	136,220	4	0	0	0	2	10	0	3
Alabama:									
Birmingham	205,670	14	0	2	1	3	127	6	6
Mobile	65,955	1	0	0	0	0	1	0	0
Montgomery	46,481	0	0	0	0	0	11	2	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,643	4	0	0	0	-------	1	1	-------
Little Rock	74,216	4	0	0	0	0	6	0	2
Louisiana:									
New Orleans	414,493	4	6	6	3	2	5	0	8
Shreveport	57,857	1	0	3	0	0	0	1	2
Oklahoma:									
Oklahoma City	(1)	0	0	1	6	1	6	0	1
Texas:									
Dallas	194,450	37	2	1	0	0	4	0	0
Galveston	48,375	0	1	0	0	0	0	0	1
Houston	164,954	0	2	2	0	1	0	1	3
San Antonio	198,069	0	0	1	0	0	4	0	5
MOUNTAIN									
Montana:									
Billings	17,971	2	0	0	0	0	7	0	1
Great Falls	29,883	1	0	0	0	1	53	0	0
Helena	12,037	0	0	0	0	0	0	0	1
Missoula	12,668	2	0	1	0	0	1	0	0
Idaho:									
Boise	23,042	0	0	0	0	0	3	0	0
Colorado:									
Denver	280,911	32	10	5	-------	1	23	1	7
Pueblo	43,787	6	1	0	0	0	39	0	1
New Mexico:									
Albuquerque	21,000	6	1	4	0	0	2	2	2
Arizona:									
Phoenix	38,669	0	-------	0	0	0	0	0	0
Utah:									
Salt Lake City	130,948	-------	3	6	0	0	11	-------	6
Nevada:									
Reno	12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	(1)	25	4	8	0	-------	32	33	-------
Spokane	108,897	13	2	1	0	-------	18	0	-------
Tacoma	104,455	1	1	4	0	0	2	1	3
Oregon:									
Portland	282,383	13	0	7	3	0	49	3	6
California:									
Los Angeles	(1)	18	34	21	9	0	2	4	8
Sacramento	72,260	5	2	4	0	0	0	8	8
San Francisco	557,530	23	18	11	1	1	204	16	0

[1] No estimate made.

City reports for week ended June 5, 1926—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	2	0	0	0	1	1	0	0	8	25
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	5
Manchester	1	5	0	0	0	0	0	0	0	0	14
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	0	2
Massachusetts:											
Boston	42	59	0	0	0	17	2	0	0	51	199
Fall River	2	4	0	0	0	7	1	0	0	2	35
Springfield	5	2	0	0	0	2	0	0	0	5	37
Worcester	7	7	0	0	0	1	0	0	0	14	48
Rhode Island:											
Pawtucket	1	0	0	0	0	2	0	0	0	3	14
Providence	7	3	0	0	0	1	0	0	0	10	71
Connecticut:											
Bridgeport	6	18	0	0	0	1	0	0	0	1	29
Hartford	3	3	0	0	0	0	0	0	0	2	35
New Haven	3	7	0	0	0	3	1	0	0	6	46
MIDDLE ATLANTIC											
New York:											
Buffalo	19	9	0	0	0	13	1	0	1	34	152
New York	187	224	1	0	0	[1] 114	11	12	0	60	1,347
Rochester	13	14	0	0	0	4	0	1	0	3	35
Syracuse	9	0	0	0	0	2	0	0	0	30	47
New Jersey:											
Camden	3	5	0	0	0	0	1	0	0	0	31
Newark	16	19	0	0	0	5	0	2	0	18	80
Trenton	2	3	0	0	0	6	0	0	0	0	40
Pennsylvania:											
Philadelphia	65	90	1	0	0	38	5	2	0	36	464
Pittsburgh	23	34	0	0	0	7	1	1	0	102	162
Reading	2	12	0	0	0	0	0	0	0	9	23
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	9	15	2	1	0	8	0	1	0	21	137
Cleveland	18	60	2	0	0	13	1	0	0	74	18
Columbus	7	14	2	0	0	4	1	1	0	10	68
Toledo	10	11	2	0	0	7	1	0	0	40	60
Indiana:											
Fort Wayne	2	7	3	0	0	1	0	0	0	8	13
Indianapolis	10	8	9	9	0	3	1	0	0	12	110
South Bend	3	3	2	1	0	1	0	0	0	4	17
Terre Haute	2	5	1	0	0	1	0	0	0	0	15
Illinois:											
Chicago	97	73	3	2	0	55	3	1	0	43	633
Peoria	3	1	0	0	0	1	0	1	0	0	24
Springfield	1	2	1	0	0	0	1	1	0	4	18
Michigan:											
Detroit	61	124	3	0	0	25	3	3	1	58	291
Flint	4	19	1	0	0	1	0	0	0	3	23
Grand Rapids	5	7	1	0	0	1	0	0	0	6	32
Wisconsin:											
Kenosha	1	0	2	0	0	0	0	0	0	3	13
Madison	2		0				0				
Milwaukee	19	15	5	0	0	4	0	0	0	31	102
Racine	4	2	1	0	0	1	0	0	0	7	18
Superior	2	5	2	0	0	0	0	0	0	0	13
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	17	2	0	0	1	1	0	0	0	29
Minneapolis	27	43	9	0	0	3	1	0	0	4	83
St. Paul	18	29	4	0	0	8	0	0	0	32	65

[1] Pulmonary tuberculosis only.

City reports for the week ended June 5, 1926—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.											
Iowa:											
Davenport	1	0	4	1			0	0		0	
Des Moines	5	4	3	1			0	0		0	
Sioux City	2	9	1	8			0	0		3	
Waterloo	2	0	0	0			0	0		6	
Missouri:											
Kansas City	6	11	3	0	0	9	0	0	0	8	94
St. Joseph	1	1	0	0	0	0	1	1	0	0	31
St. Louis	25	58	3	1	0	7	2	3	0	34	184
North Dakota:											
Fargo	0	2	0	1	0	0	0	0	0	4	6
Grand Forks	0		0				0				
South Dakota:											
Aberdeen	1	8	0	0			0	0		34	
Sioux Falls	1	1	1	0	0	0	0	0	0	0	5
Nebraska:											
Lincoln	1	2	0	0	0	2	0	0	0	15	10
Omaha	4	35	5	10	0	4	0	0	1	3	48
Kansas:											
Topeka	1	2	1	0	0	0	0	0	0	15	11
Wichita	2	1	3	0	0	0	0	0	0	18	25
SOUTH ATLANTIC											
Delaware:											
Wilmington	4	5	0	0	0	1	1	0	0	0	32
Maryland:											
Baltimore	22	40	1	0	0	13	3	2	2	49	215
Cumberland	1	0	0	0	0	0	0	0	0	0	5
Frederick	0	0	0	0	0	0	0	0	0	2	2
District of Col.:											
Washington	15	28	2	0	0	14	2	1	0	27	146
Virginia:											
Lynchburg	1	2	0	0	0	0	1	0	0	3	12
Norfolk	1	15	1	1	0	4	0	0	0	13	
Richmond	2	9	0	1	0	5	1	0	0	0	57
Roanoke	1	0	1	5	0	3	0	0	0	1	14
West Virginia:											
Charleston	1	0	0	0	0		1	0	0	16	
Huntington	0		0				0				
Wheeling	2	1	1	0	0	3	0	0	0	0	14
North Carolina:											
Raleigh	0	0	0	1	0	1	0	0	0	6	10
Wilmington	0		0				0				
Winston-Salem	0	0	2	0	0	0	1	1	0	9	1
South Carolina:											
Charleston	0	0	0	1	0	1	0	1	0	4	16
Columbia	0	0	0	0	0	0	1	3	0	0	
Greenville	0	1	1	0	0	0	1	0	0	1	9
Georgia:											
Atlanta	4	0	6	0	0	4	1	8	3	0	70
Brunswick	0	0	0	0	0	0	0	0	0	0	5
Savannah	0	0	1	0	0	2	1	0	0	0	33
Florida:											
Miami		0		1	0	0		4	0	18	44
St. Petersburg	0		0		0	2	0		0		18
Tampa	0	0	0	9	0	4	0	1	0	0	36
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	7	0	0	0	3	0	0	0	0	10
Louisville	4	5	1	1	0	6	1	0	1	3	91
Tennessee:											
Memphis	3	8	2	3	0	2	1	0	0		47
Nashville	2	2	1	0	0	2	1	0	0	5	40
Alabama:											
Birmingham	1	2	6	8	0	4	2	1	1	19	86
Mobile	0	0	1	0	0	2	1	1	0	0	22
Montgomery	0	0	0	4	0	0	0	0	0	0	24

City reports for week ended June 5, 1926—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	0	0	-------	-------	0	0	-------	6	-------
Little Rock	0	14	0	0	0	2	1	0	0	4	-------
Louisiana:											
New Orleans	2	13	2	2	0	13	3	0	0	16	127
Shreveport	0	0	1	0	0	1	0	0	0	2	24
Oklahoma:											
Oklahoma City	1	1	4	1	0	2	1	0	0	0	19
Texas:											
Dallas	2	8	2	2	0	4	1	1	2	8	45
Galveston	0	0	1	5	0	0	1	0	0	0	17
Houston	1	2	1	1	0	3	1	0	0	0	66
San Antonio	1	1	0	0	0	9	1	1	1	0	51
MOUNTAIN											
Montana:											
Billings	1	1	0	0	0	1	0	0	0	0	2
Great Falls	2	0	2	0	0	0	0	0	0	1	10
Helena	0	0	0	0	0	0	0	0	0	0	6
Missoula	0	1	0	0	0	0	0	0	0	0	7
Idaho:											
Boise	0	0	1	3	0	0	0	0	0	0	7
Colorado:											
Denver	9	15	1	0	0	12	0	1	0	22	79
Pueblo	1	2	0	0	0	1	0	0	0	1	3
New Mexico:											
Albuquerque	1	2	0	0	0	5	0	1	0	2	22
Arizona:											
Phoenix	-------	1	0	0	0	12	-------	3	0	0	33
Utah:											
Salt Lake City	2	5	1	0	0	0	0	0	0	-------	28
Nevada:											
Reno	0	0	1	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	9	10	4	0	-------	-------	1	0	-------	5	-------
Spokane	4	15	3	0	-------	-------	0	0	-------	7	-------
Tacoma	2	3	2	5	0	0	0	1	0	1	24
Oregon:											
Portland	7	32	7	8	0	1	0	0	0	9	59
California:											
Los Angeles	17	21	4	3	0	31	2	0	0	4	203
Sacramento	1	0	0	1	0	2	0	1	0	0	13
San Francisco	13	14	1	0	0	7	1	1	0	11	144

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	0	0	2	1	0	0	0	1	1
Fall River	0	0	1	1	0	0	0	0	0
Connecticut:									
Bridgeport	0	0	1	0	0	0	0	0	0
Hartford	1	1	0	0	0	0	0	0	0

City reports for week ended June 5, 1926—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC									
New York:									
New York	1	0	8	4	0	0	1	1	1
New Jersey:									
Newark	2	0	0	0	0	0	1	0	0
Pennsylvania:									
Pittsburgh	2	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Columbus	0	0	0	1	0	0	0	0	0
Illinois:									
Chicago	2	1	1	0	0	0	0	0	0
Michigan:									
Detroit	2	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	1	1	0	0	0	0	0	0	0
St. Paul	0	0	1	0	0	0	0	0	0
Missouri:									
Kansas City	2	2	0	0	0	0	0	0	0
SOUTH ATLANTIC[1]									
District of Columbia:									
Washington	0	0	0	0	0	1	0	0	0
North Carolina:									
Raleigh	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	9	1	0	0	0
Georgia:									
Atlanta	0	0	0	0	0	1	0	0	0
Florida:									
Miami	1	0	0	0	0	0	------	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham	0	0	0	0	1	0	0	0	0
Mobile	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
Shreveport	0	0	0	0	0	1	0	0	0
Oklahoma:									
Oklahoma City	0	0	0	0	1	1	0	0	0
Texas:									
Galveston	0	0	0	0	0	1	0	0	0
Houston	0	0	0	0	0	1	0	0	0
PACIFIC									
Washington:									
Spokane	1	0	0	0	0	0	0	0	0
Oregon:									
Portland	0	0	0	1	0	0	0	0	0
California:									
Los Angeles	1	1	0	0	1	1	1	0	0

[1] Typhus fever, 2 cases at Baltimore, Md.

The following table gives the rates per 100,000 population for 103 cities for the five-week period ended June 5, 1926, compared with those for a like period ended June 6, 1925. The population figures used in computing the rates are approximate estimates as of July 1,

1925 and 1926, respectively, authoritative figures for many of the cities not being available. The 103 cities reporting cases had an estimated aggregate population of nearly 30,000,000 in 1925 and nearly 30,500,000 in 1926. The 96 cities reporting deaths had more than 29,250,000 estimated population in 1925 and more than 29,750,000 in 1926. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, May 2 to June 5, 1926—Annual rates per 100,000 population—Compared with rates for the corresponding period of 1925 [1]

DIPHTHERIA CASE RATES

	Week ended									
	May 9, 1925	May 8, 1926	May 16, 1925	May 15, 1926	May 23, 1925	May 22, 1926	May 30, 1925	May 29, 1926	June 6, 1925	June 5, 1926
103 cities	[2] 152	[3] 115	[4] 158	[3] 121	148	[3] 117	[5] 144	[3] 122	[6] 152	[7] 118
New England	105	106	149	87	122	78	110	80	125	[8] 79
Middle Atlantic	211	125	237	135	202	138	210	145	243	134
East North Central	106	89	[9] 102	96	101	117	100	108	92	[10] 120
West North Central	269	[3] 195	205	[3] 199	243	[3] 145	187	[3] 163	183	[3] 207
South Atlantic	98	75	81	77	83	71	[5] 72	96	[6] 88	[11] 51
East South Central	11	62	32	52	37	36	11	42	11	[12] 17
West South Central	62	60	53	82	40	47	62	65	40	56
Mountain	102	146	148	182	129	127	139	127	74	109
Pacific	[2] 117	178	[13] 132	175	157	164	160	159	138	132

MEASLES CASE RATES

103 cities	[2] 603	[3] 1,712	[4] 599	[3] 1,565	579	[3] 1,434	[5] 569	[3] 1,283	[6] 594	[7] 1,001
New England	949	1,714	1,145	1,198	1,014	1,075	836	1,064	841	[8] 736
Middle Atlantic	793	1,429	765	1,198	615	1,133	701	956	771	751
East North Central	830	1,454	[9] 795	1,371	888	1,372	839	1,252	825	[10] 1,042
West North Central	109	[3] 4,458	76	[3] 4,134	233	[3] 3,437	137	[3] 3,061	111	[3] 2,209
South Atlantic	227	1,942	311	1,933	309	1,659	[5] 242	1,542	[6] 393	[11] 1,244
East South Central	315	3,248	152	3,461	310	2,999	200	2,376	121	[12] 1,702
West South Central	31	125	13	155	22	142	13	112	22	86
Mountain	176	883	55	1,393	176	1,384	240	1,302	37	1,247
Pacific	[2] 91	661	[13] 170	679	124	693	157	803	157	696

SCARLET FEVER CASE RATES

103 cities	[2] 311	[3] 294	[4] 338	[3] 326	297	[3] 309	[5] 267	[3] 274	[6] 256	[7] 229
New England	400	222	345	312	338	288	204	258	256	[8] 251
Middle Atlantic	318	217	330	249	264	256	270	212	262	209
East North Central	341	310	[9] 368	356	388	341	321	339	293	[10] 246
West North Central	599	[3] 933	705	[3] 870	539	[3] 721	514	[3] 695	466	[3] 416
South Atlantic	100	177	156	222	138	195	[5] 115	160	[6] 125	[11] 175
East South Central	242	187	299	202	226	176	168	171	116	[12] 94
West South Central	84	176	70	155	44	172	62	116	84	163
Mountain	268	137	342	246	314	173	398	100	324	218
Pacific	[2] 144	208	[13] 187	259	155	294	133	181	144	170

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1925 and 1926, respectively.
[2] Spokane, Wash., not included.
[3] Grand Forks, N. Dak., not included.
[4] Superior, Wis., and Tacoma, Wash., not included.
[5] Charleston, W. Va., not included.
[6] Wilmington, N. C., not included.
[7] Concord, N. H., Madison, Wis., Grand Forks, N. Dak., Norfolk, Va., Wilmington, N. C., and Covington, Ky., not included.
[8] Concord, N. H., not included.
[9] Superior, Wis., not included.
[10] Madison, Wis., not included.
[11] Norfolk, Va., and Wilmington, N. C., not included
[12] Covington, Ky., not included.
[13] Tacoma, Wash., not included.

Summary of weekly reports from cities, May 2 to June 5, 1926—Annual rates per 100,000 population—Compared with rates for the corresponding period of 1925—Continued

SMALLPOX CASE RATES

	Week ended									
	May 9, 1925	May 8, 1926	May 16, 1925	May 15, 1926	May 23, 1925	May 22, 1926	May 30, 1925	May 29, 1926	June 6, 1925	June 5, 1926
103 cities	[2] 45	[3] 26	[4] 44	[3] 26	58	[3] 18	[5] 47	[3] 19	[6] 45	[7] 15
New England	2	0	0	0	0	0	0	0	0	[8] 0
Middle Atlantic	6	0	7	0	2	0	2	1	4	0
East North Central	41	22	[9] 53	20	66	18	54	13	61	[10] 9
West North Central	58	[3] 58	76	[3] 36	66	[3] 28	68	[3] 44	92	[3] 40
South Atlantic	42	30	35	39	61	24	[5] 10	28	[6] 37	[11] 34
East South Central	347	73	173	119	404	62	389	62	105	[12] 88
West South Central	26	159	35	116	123	95	53	99	31	43
Mountain	46	36	28	55	28	18	55	36	37	27
Pacific	[2] 167	57	[13] 181	67	177	51	160	32	182	24

TYPHOID FEVER CASE RATES

103 cities	[2] 13	[3] 8	[4] 13	[3] 8	18	[3] 11	[5] 15	[3] 10	[6] 24	[7] 9
New England	5	9	12	0	24	9	17	7	29	[8] 0
Middle Atlantic	13	7	10	10	19	7	9	5	26	9
East North Central	8	4	[9] 6	5	5	5	7	9	9	[10] 5
West North Central	2	[3] 6	0	[3] 2	4	[3] 8	10	[3] 4	8	[3] 8
South Atlantic	27	13	25	4	36	32	[5] 39	26	[6] 39	[11] 34
East South Central	42	16	58	0	68	10	47	31	37	[12] 11
West South Central	44	17	75	43	62	26	62	13	84	9
Mountain	0	0	0	9	18	9	9	0	74	9
Pacific	[2] 9	11	[13] 3	8	6	19	8	11	8	8

INFLUENZA DEATH RATES

96 cities	14	25	[13] 14	16	14	15	[5] 12	12	[6] 10	[14] 8
New England	10	14	7	5	5	12	7	9	2	[8] 2
Middle Atlantic	10	22	12	17	11	16	9	11	11	6
East North Central	15	29	10	18	11	18	13	11	10	[10] 8
West North Central	11	13	11	6	17	8	17	13	4	8
South Atlantic	19	19	10	17	6	11	[5] 12	11	[6] 6	[11] 8
East South Central	47	99	74	31	79	36	37	26	47	[12] 39
West South Central	15	47	19	28	19	24	29	9	5	14
Mountain	18	18	55	18	18	0	0	9	28	18
Pacific	15	4	[13] 12	4	22	4	7	11	11	4

PNEUMONIA DEATH RATES

96 cities	145	163	[13] 123	150	123	141	[8] 119	[5] 120	[6] 123	[15] 106
New England	156	170	129	165	110	144	110	123	69	[8] 117
Middle Atlantic	184	174	143	165	143	173	145	145	167	130
East North Central	123	178	118	147	116	133	111	106	107	[10] 99
West North Central	74	121	55	81	76	94	57	83	55	50
South Atlantic	148	169	129	182	125	148	[5] 147	[5] 111	[6] 138	[16] 83
East South Central	147	223	152	182	126	171	158	171	116	[12] 132
West South Central	131	118	106	137	73	90	73	109	63	99
Mountain	120	82	157	91	166	82	74	91	92	146
Pacific	109	78	[13] 75	92	120	53	73	64	116	67

[2] Spokane, Wash., not included.
[3] Grand Forks, N. Dak., not included.
[4] Superior, Wis., and Tacoma, Wash., not included.
[5] Charleston, W. Va., not included.
[6] Wilmington, N. C., not included.
[8] Concord, N. H., not included.
[10] Madison, Wis., not included.
[11] Norfolk, Va., and Wilmington, N. C., not included.
[12] Covington, Ky., not included.
[13] Tacoma, Wash., not included.
[14] Concord, N. H., Madison, Wis., Norfolk, Va., Wilmington, N. C., and Covington, Ky., not included.
[15] Concord, N. H., Madison, Wis., Norfolk, Va., Charleston, W. Va., Wilmington, N. C., and Covington, Ky., not included.
[16] Norfolk, Va., Charleston, W. Va., and Wilmington, N. C., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1925 and 1926, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1925	1926	1925	1926
Total	103	96	29,944,996	30,473,129	29,251,658	29,764,201
New England	12	12	2,176,124	2,206,124	2,176,124	2,206,124
Middle Atlantic	10	10	10,346,970	10,476,970	10,346,970	10,476,970
East North Central	16	16	7,481,656	7,655,436	7,481,656	7,655,436
West North Central	14	11	2,594,962	2,634,662	2,461,380	2,499,036
South Atlantic	21	21	2,716,070	2,776,070	2,716,070	2,776,070
East South Central	7	7	993,103	1,004,953	993,103	1,004,953
West South Central	8	6	1,184,057	1,212,057	1,078,198	1,103,695
Mountain	9	9	563,912	572,773	563,912	572,773
Pacific	6	4	1,888,142	1,934,084	1,434,245	1,469,144

FOREIGN AND INSULAR

THE FAR EAST

Report for week ended May 29, 1926.—The following report for the week ended May 29, 1926, was transmitted by the far eastern bureau of the health section of the League of Nations' secretariat, located at Singapore, to the headquarters at Geneva:

Maritime towns	Plague		Cholera		Smallpox		Maritime towns	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths
Egypt: Suez	3	0	0	0	0	0	Hongkong	0	0	0	0	1	0
Iraq: Basrah	0	0	0	0	4	3	China:						
British India:							Shanghai	0	0	0	0	----	2
Bombay	----	2	----	0	26	1	Amoy	13	0	0	0	1	0
Madras	----	0	----	0	2	1	Sarawak: Kuching	0	0	0	0	1	0
Karachi	----	1	----	0	3	3	Japan: Osaka	0	0	0	0	3	0
Negapatam	----	0	----	0	1	1	Kwangtung:						
Siam: Bangkok	1	1	219	118	7	3	Dairen	0	0	0	0	4	0
French Indo-China:							Port Arthur	0	0	0	0	1	0
Saigon and Cholon	0	0	5	5	0	0							
Haiphong	0	0	27	20	0	0							

Telegraphic reports from the following maritime towns indicated that no case of plague, cholera, or smallpox was reported during the week:

ASIA

British India.—Chittagong, Cochin, Tuticorin.

Ceylon.—Colombo.

Federated Malay States.—Port Swettenham.

Straits Settlements.—Penang, Singapore.

Dutch East Indies.—Batavia, Surabaya, Samarang, Cheribon, Belawan Deli, Palembang, Sabang, Makassar, Menado, Banjermasin, Balik-Papan, Tarakan, Pontianak, Padang.

British North Borneo.—Sandakan.

Portuguese Timor.—Dilly.

Philippine Islands.—Manila, Iloilo, Jolo, Cebu, Zamboanga.

French Indo-China.—Turane.

Formosa.—Keelung.

Japan.—Nagasaki, Yokohama, Shimonoseki, Moji, Kobe, Niigata, Tsuruga, Hakodate.

Korea.—Chemulpo, Fusan.

Manchuria.—Antung, Mukden, Changchun, Harbin.

U. S. S. R.—Vladivostok.

AUSTRALASIA AND OCEANIA

Australia.—Adelaide, Melbourne, Sydney, Brisbane, Rockhampton, Townsville, Port Darwin, Broome, Fremantle, Carnarvon, Thursday Island.
New Guinea.—Port Moresby.
New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.
New Caledonia.—Noumea.
Hawaii.—Honolulu.

AFRICA

Egypt.—Alexandria, Port Said.
Anglo-Egyptian Sudan.—Port Sudan.
Eritrea.—Massaua.
French Somaliland.—Jibuti.
British Somaliland.—Berbera.
Italian Somaliland.—Mogadiscio.
Kenya.—Mombasa.
Tanganyika.—Dar-es-Salaam.
Seychelles.—Victoria.
Mauritius.—Port Louis.
Portuguese East Africa.—Mozambique, Beira.
Union of South Africa.—Durban, East London, Port Elizabeth, Cape Town.

Reports had not been received in time for distribution from:

British India.—Rangoon, Calcutta, Vizagapatam.
Madagascar.—Tamatave, Majunga.
Portuguese East Africa.—Lourenco Marques.
Zanzibar.—Zanzibar.

BRAZIL

Yellow fever—Parahyba—Natal.—An outbreak of yellow fever in Parahyba and Natal, Brazil, late in March was reported to be checked May 17, 1926. Thirty cases and several deaths were reported in Parahyba, and a smaller number in Natal.

CANADA

Communicable diseases—May 9–29, 1926.—The Canadian Ministry of Health reports certain communicable diseases in seven Provinces of Canada for the period May 9 to May 29, 1926, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal meningitis			2					2
Influenza	224	1						225
Poliomyelitis			1	1				2
Smallpox				25	8	5		38
Typhoid fever			27	24	4	9	6	70

CZECHOSLOVAKIA

Communicable diseases—January–March, 1926.—During the three months ended March 31, 1926, communicable diseases were reported in Czechoslovakia as follows:

Disease	Cases	Deaths	Provinces showing greatest number of cases and deaths
Anthrax	6	2	Russinia: Cases, 3. Slovakia, deaths, 2.
Cerebrospinal meningitis	74	19	Bohemia: Cases 31; deaths, 11.
Diphtheria	1,383	114	Bohemia: Cases, 715; deaths, 60.
Dysentery	57	1	Slovakia: Cases, 20. Bohemia, 1 death.
Malaria	3	-------	Slovakia.
Paratyphoid fever B	12	1	Bohemia.
Puerperal infection	128	38	Bohemia: Cases, 65; deaths, 25.
Scarlet fever	3,787	77	Bohemia: Cases, 2,108; deaths, 35.
Smallpox	1	1	Slovakia.
Trachoma	830	-------	Moravia: Cases, 322.
Typhoid fever	1,198	118	Slovakia: Cases, 491; deaths, 25.
Typhus fever	111	1	Russinia: Cases, 111; deaths, 1.

EGYPT

Plague—May 7–13, 1926—Summary.—During the week ended May 13, 1926, 11 cases of plague, of which one case occurred at Alexandria, were reported in Egypt, making a total of 32 cases reported from January 1 to May 13, 1926, as compared with 40 cases reported during the corresponding period of the preceding year.

Later occurrence.—Later occurrence of plague in Egypt has been reported as follows: *Suez*—May 16, 1 case with 1 death (bubonic); province of *Beni-Suef*, May 16–20, 5 cases with 4 deaths (bubonic and septicemic); Province of *Minia*, May 17, 1 case (bubonic).

ESTHONIA

Communicable diseases—March–April, 1926.—Cases of communicable diseases have been reported in the Republic of Esthonia, for the months of March and April, 1926, as follows:

Disease	March, 1926	April, 1926
Cerebrospinal meningitis	1	-------
Diphtheria	47	37
Leprosy	4	1
Measles	82	586
Scarlet fever	288	157
Tuberculosis	197	143
Typhoid fever	28	14
Typhus fever	5	4

INDIA

Epidemic plague—Punjab.—Under date of May 8, 1926, epidemic plague was declared present in the Punjab, India, with cases in nearly every district of the Province. The greatest prevalence was reported in the eastern districts. During the second week in April, 1926, 7,336 cases with 5,379 deaths were reported.

JAMAICA

Smallpox (alastrim)—April 25–May 29, 1926.—During the five weeks ended May 29, 1926, 102 cases of smallpox (alastrim) were reported in the island of Jamaica, exclusive of Kingston. No cases were reported in Kingston.

Prevalence of other diseases.—During the period under report other diseases were reported in the island, exclusive of Kingston, as follows: Chicken pox, 42 cases; tuberculosis (pulmonary), 59 cases; typhoid fever, 37 cases. At Kingston the occurrence of the diseases named was reported as follows: Chicken pox, 3 cases; tuberculosis (pulmonary), 13 cases; typhoid fever, 10 cases. Population of island, estimated, 858,118; population of Kingston, census of 1921, 62,707.

MEXICO

Anthrax—Vera Cruz.—During the week ended June 6, 1926, a fatal case of anthrax was reported at Vera Cruz, Mexico.

PANAMA CANAL

Communicable diseases—April, 1926.—During the month of April, 1926, communicable diseases were reported in the Canal Zone, and at Colon and Panama, as follows:

Disease	Canal Zone		Colon		Panama		Infected in other localities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chicken pox	2				4				6	
Diphtheria	2		1		5	1			8	1
Dysentery			3		1		6	2	10	2
Hookworm			4		31		38		73	
Malaria	25		1				17		43	
Measles	3		3		7		8		21	
Meningitis	3	1				2			3	3
Mumps			2				7		9	
Pneumonia [1]		3		4		12		5		24
Tuberculosis [1]		1		4		17		4		26
Whooping cough	1	1	4		1		1		7	1

[1] Only deaths reported.

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

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended June 25, 1926 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Apr. 18-24, 1926: Cases, 3,514; deaths, 2,198.
Madras	May 9-15	2	1	
Rangoon	Apr. 18-May 8	94	48	

[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 June 25, 1926—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Egypt				May 7-13, 1926: Cases, 11; total Jan. 1-May 13, 1926—32; total for corresponding period 1925—cases, 40.
City—				
Suez	May 16	1	1	Bubonic.
Province—				
Beni-Suef	May 16-20	5	4	Bubonic and septicemic.
Minia	May 17	1		Bubonic.
India				Apr. 18-24, 1926: Cases, 11,032; deaths, 9,068.
Bombay	Apr. 25-May 1	2	2	
Karachi	May 9-15	1		
Madras	Apr. 18-24	37	22	Presidency.
Punjab District	Apr. 2-8	7,336	5,379	Epidemic, May 8, 1926.
Rangoon	Apr. 18-May 8	26	25	
Siam:				
Bangkok	Apr. 25-May 1	1	3	

SMALLPOX

Algeria:				
Algiers	May 11-20	6		
British East Africa:				
Kenya—				
Tanganyika	Apr. 11-17	2		
Canada:				
British Columbia—				
Vancouver	May 24-30	1		
Ontario	May 9-29	25		
Hamilton	June 6-12	1		
China:				
Manchuria—	May 2-8			
An-shan	do	3		South Manchuria Ry. line.
Fushun	do	6		Do.
Kai-yuan	do	1		Do.
Kungchuling	do	1		Do.
Liao-yang	do	1		Do.
Mukden	do	5		Do.
Penhsihu	do	2		Do.
Egypt:				
Alexandria	Apr. 30-May 13	11	5	
Cairo	Jan. 8-14	5	1	
Great Britain:				
England and Wales	May 16-22	162		
Leeds	May 24-29	1		
Newcastle-upon-Tyne	do	1		
India				Apr. 18-24, 1926: Cases, 7,330; deaths, 1,700.
Bombay	Apr. 25-May 1	34	19	
Karachi	May 9-15	17	7	
Madras	do	4	1	
Rangoon	Apr. 25-May 8	4	1	
Mexico:				
Guadalajara	June 1-7		1	
San Luis Potosi	May 30-June 5		2	
Persia:				
Teheran	Feb. 28-Mar. 21		6	
Portugal:				
Lisbon	May 16-29	17		
Spain:				
Valencia	May 23-29	6	3	
Union of South Africa:				
Orange Free State	Apr. 25-May 1			Outbreaks.

TYPHUS FEVER

Egypt:				
Alexandria	Apr. 30-May 6	1		
Port Said	May 6-13	1		
Esthonia				March, 1926: Cases, 5. April, 1926: Cases, 4.
Union of South Africa:				
Cape Province	Apr. 30-May 1			Outbreaks, in four districts, in 10 localities.

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

Reports Received During Week Ended June 25, 1926—Continued

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Brazil				Mar.-May 17, 1926: 30 cases, several deaths in Parahyba; a smaller number in Natal. Reported checked May 17, 1926.

Reports Received from December 26, 1925, to June 25, 1926 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Chosen	October-November, 1925.	12	5	
French Settlements in India	Dec. 1-31	880	712	
Do	Jan. 1-Mar. 6	435	349	
India				Oct. 18, 1925, to Jan. 2, 1926: Cases, 21,316; deaths, 12,371 Jan. 3-Mar. 13, 1926: Cases, 31,105; deaths, 17,859. Mar. 21-Apr. 24, 1926; Cases, 26,050; deaths, 18,233.
Calcutta	Nov. 1-28	101	89	
Do	Dec. 6-26		54	
Do	Dec. 27-Jan. 16		41	
Do	Jan. 24-Apr. 3	464	417	
Madras	Nov. 15-Jan. 2	174	70	
Do	Jan. 3-Apr. 17	146	90	
Do	May 9-15	2	1	
Rangoon	Nov. 8-Dec. 3	4	4	
Do	Jan. 24-May 8	117	67	
Indo-China				September-December, 1925: Cases, 13; deaths, 7.
Province—				
Annam	Sept. 1-30	2	2	
Cambodia	Dec. 1-31	2	1	
Cochin China	Sept. 1-Dec. 31	6	4	
Saigon	Jan. 4-17	2	2	Including 100 square kilometers of surrounding country.
Do	Apr. 5-May 1	90	73	Including Cholon.
Tonkin	Sept. 1-Nov. 30	3		
Japan	Aug. 30-Oct. 17	409		
Do	Oct. 25-Dec. 26	113		
Do	Jan. 3-30	13		
Philippine Islands:				
Manila	Nov. 9-Jan. 3	15	10	
Do	Jan. 4-May 1	1	28	
Province—				
Bataan	Nov. 30-Dec. 26	29	25	
Do	Jan. 2-16	1	1	
Batangas	Jan. 24-Feb. 20	13	13	
Bohol	Jan. 23-30	1	1	
Bulacan	Oct. 18-Nov. 7	92	64	
Do	Nov. 23-Dec. 31	200	88	
Do	Jan. 2-30	6	6	
Laguna	Nov. 23-Dec. 26	18	14	
Do	Jan. 24-Feb. 6	5	6	
Leyte	Jan. 3-9	2	2	
Mindoro	Dec. 20-31	35	30	
Do	Jan. 1-Feb. 13	64	55	
Nueva Ecija	Nov. 30-Dec. 13	7	5	
Pampanga	Nov. 1-7	1	1	
Do	Nov. 23-Dec. 31	113	85	
Do	Jan. 2-Mar. 3	39	35	
Rizal	Sept. 27-Nov. 21	75	21	
Do	Dec. 21-30	14	11	
Do	Jan. 3-Feb. 20	89	30	
Romblon	Nov. 8-Dec. 13	27	14	
Russia	May-June	7		
Do	July-August	4		
Siam:				
Bangkok	Oct. 4-Nov. 14	108	68	
Do	Nov. 22-Dec. 26	270	149	
Do	Dec. 27-Mar. 13	398	275	
Do	Mar. 21-27	90	52	
Do	Apr. 4-29	211	120	
On vessel:				
Steamship	Oct. 3	9		Arrived at Bangkok, Siam: Cases in coolie passengers.
Ship Selandia	Apr. 15	1		Landed at Singapore, Straits Settlements.

[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 from December 26, 1925, to June 25, 1926—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Argentina				Jan. 24-30, 1926: 6 cases, occurring in interior Provinces of Salta and Santa Fe.
Buenos Aires	Jan. 24-30	1		
Azores:				
St. Michaels	Jan. 17-Apr. 3	9	4	
Belgium:				
Vilvorde	Dec. 1-8	1	1	
Brazil:				
Bahia	Nov. 8-Dec. 28	3	1	
Do	Dec. 27-Jan. 30	4	2	
Santos	Dec. 8-21		2	
Sao Paulo	Reported Mar. 25	4	1	
British East Africa:				
Kenya—				
Kisumu	Nov. 22-Dec. 5	1	2	
Do	Jan. 31-Mar. 20	15	3	
Uganda Protectorate	Sept. 1-Dec. 31	468	426	
Do	Jan 1-Feb. 28	159	143	
Canary Islands:				
La Laguna	Dec. 24	3	2	
Las Palmas	do	1		
Do	Jan. 7	1	1	
Santa Cruz de Tenerife	Dec. 18-27	3		
Do	Dec. 28-Feb. 1	3		
Celebes:				
Makassar	Dec. 29-Feb. 2	12	12	Netherlands East Indies.
Ceylon:				
Colombo	Nov. 15-Dec. 5	3	3	1 plague rodent.
Do	Dec. 27-Jan. 16	2	2	
Do	Jan. 24-Apr. 24	6	6	Feb. 14-20, 1926: 2 plague rodents.
China:				
Nanking	Nov. 15-Apr. 24			Prevalent.
Ecuador:				
Ambato	Mar. 31		5	
Eloy Alfaro	Jan. 1-15	1		
Guayaquil	Nov. 1-Dec. 1	31	12	Rats taken, Nov. 1-Dec. 31, 1925, 49,370; rats found infected, 281,
Do	Jan. 1-May 15	66	29	Rats taken, Jan. 1-May 15, 1926: 93,539; rats found infected, 666.
Latacunga	Apr. 12			Present.
Recreo (country estate)	Jan. 1-15	1		
Egypt				Jan. 1-Dec. 9, 1925: Cases, 138. Jan. 1-May 13, 1926: Cases, 32.
Alexandria	Mar. 10-Apr. 22	4	1	
Beni-Suef	Nov. 18	1	1	
Do	May 16-20	5	4	
Fayoum Province	Dec. 3-9	1	1	
Gharbia Province	Mar. 9-30	5	3	
Minia Province	Mar. 4-May 17	2	1	
Suez	Mar. 27-May 16	8	2	
Greece:				
Athens	Nov. 1-30	18	4	Including Piræus.
Do	Jan. 1-Mar. 31	25	4	
Herakleion	Feb. 4	1		On island of Crete.
Patras	Nov. 13-Dec. 12	4	1	
Hawaii Territory	Feb. 2			1 plague-infected rodent found near Hamakua Mill Co.
Hawaii—				
Honokaa	Mar. 16	2		1 death, suspected plague.
Kakuihaela	Mar. 19	1	1	
Paauilo				Jan. 29, 1926: Plague-infected rat found in vicinity.
India				Oct 18, 1925-Jan. 2, 1926: Cases, 15,135; deaths, 10,677. Jan. 3-Mar. 13, 1926: Cases, 53,563; deaths, 41,553. Mar. 21-Apr. 24, 1926: Cases, 53,583; deaths, 43,425.
Bombay	Dec. 6-12	1	1	
Do	Jan. 3-May 1	21	18	
Calcutta	Dec. 6-12	1	1	
Karachi	Nov. 1-Dec. 19	4	3	
Do	Feb. 21-May 15	24	11	
Madras Presidency	Oct. 25-Nov. 7	75	41	
Do	Nov. 15-21	35	22	
Do	Dec. 20-26	108	64	
Do	Jan. 3-Apr. 24	1,417	846	
Punjab District	Apr. 2-8	7,336	5,379	Epidemic, May 8, 1926.
Rangoon	Oct. 25. Dec. 26	23	15	
Do	Dec. 27-May 8	150	138	

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				September-December, 1925: Cases, 28; deaths, 26.
Province—				
Cambodia	Sept. 1-Nov. 30	13	13	
Cochin China	Sept. 1-Dec. 31	15	13	
Saigon	Apr. 5-11	1		
Iraq:				
Bagdad	Dec. 13-Jan. 2	7	3	
Do	Jan. 10-Apr. 17	111	61	
Java:				
Batavia	Oct. 24-Nov. 6	94	89	Province.
Do	Nov. 14-Jan. 1	315	297	
Do	Jan. 2-Mar. 12	483	468	
Do	Mar. 19-Apr. 23	61	60	
Cheribon	Sept. 27-Oct. 17		166	
Do	Nov. 15-Dec. 26		198	
Do	Jan. 3-Mar. 6		191	
Djokjakarta	Oct. 20-Nov. 9			Epidemic in 1 locality.
Kediri	Dec. 7			Do.
Koeningan	Dec. 27-Jan. 16		114	
Do	Feb. 7-Mar. 6		103	
Pekalongan	Sept. 27-Oct. 17		42	
Do	Nov. 8-Dec. 26		252	
Do	Feb. 14-Mar. 6		90	
Probolinggo	Feb. 12			Epidemic. Port.
Rembang	Oct. 20			Do.
Surabaya	Oct. 11-Dec. 26	59	59	
Do	Dec. 27-Apr. 10	46	46	
Tegal	Sept. 27-Oct. 17	6	6	
Do	Nov. 8-Dec. 26		31	
Do	Feb. 21-Mar. 6		11	
Madagascar				Nov. 1-Dec. 31, 1925: Cases, 632; deaths, 593. Jan. 1-31, 1926: Cases, 611; deaths, 565. Mar. 1-31, 1926: Cases, 186; deaths, 179.
Province—				
Ambositra	Dec. 16-31	9	7	
Do	Jan. 1-15	2	2	
Fort Dauphin	Sept. 16-30	6	3	
Do	Jan. 16-Mar. 15	4	4	
Itasy	Sept. 16-Oct. 30	20	20	
Do	Nov. 16-Dec. 31	34	34	
Do	Jan. 1-15	29	29	
Do	Feb. 1-15	29	29	
Moramanga	Sept. 16-Dec. 31	49	48	
Do	Jan. 1-Mar. 31	56	52	
Tananarive				Sept. 16-Nov. 30, 1925: Cases, 368; deaths, 341. Dec. 16-31, 1925; Cases, 152; deaths, 143. Jan. 1-Mar. 31, 1926: Cases, 653; deaths, 554.
Town—				
Tamatave (Port)	Sept. 16-Nov. 30	42	11	
Do	Feb. 1-Mar. 15	5	3	
Tananarive	Sept. 16-30	2	2	
Do	Nov. 1-30	11	11	
Do	Jan. 1-Mar. 31	38	37	
Mauritius Island	Sept. 20-Dec. 26	21	18	
Moca	Dec. 1-31	2	2	
Pamplemousses	Oct. 1-Nov. 30	3	2	
Port Louis	Oct. 1-Dec. 31	13	9	
Rivière du Rempart	October	2		
Morocco:				
Tangier	May 9-15	1	1	
Nigeria	Aug. 1-Dec. 31	594	447	
Do	Jan. 1-31	24	21	
Persia:				
Teheran	Oct. 21-Nov. 21		12	
Peru				January-March, 1926: Cases, 383; deaths, 148.
Barranca and Supo	Mar. 1-31	4	6	
Cânete	do	1		
Caras	do			Present.
Cascas	do	15	5	
Chiclayo	do		4	
Chimbote	do	16	8	Country estates.
Chincha	do	14	5	
Contumazá	do	12		
Cutorvo	do			Present.
Huacho	Jan. 26	15		Port 60 miles north of Callao.
Lacranmarca	Mar. 1-31	6		
Lima	Jan. 1-31	20		In hospital. Some cases in Province.
Mollendo	do			12 or 15 cases reported unofficially.
Do	Mar. 1-31			

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Peru—Continued				
Moro	Mar. 1-31			Present.
Otuzco	do	1		
Pacasmayo	do	2	1	
Salaverry	do	5	2	
San Pablo	do			Do.
Trujillo	do	15	5	
Russia	May-June	67		
Do	July 1-Dec. 31	256		
Senegal	September-October.	45	25	
Siam	Aug. 23-Dec. 26	65	53	
Do	Dec. 27-Jan. 30	16	9	
Bangkok	Nov. 15-28	3	3	
Do	Jan. 3-30	38	33	
Do	Feb. 7-20	11	5	
Do	Feb. 28-May 1	8	5	
Straits Settlements:				
Singapore	Nov. 1-Dec. 5	8	8	
Do	Jan. 3-Mar. 20	3	3	
Syria:				
Beirut	Nov. 11-20	1		
Do	Jan. 21-31	1		
Union of South Africa				Mar. 7-13, 1926: Cases, 3; European, 2. Mar. 21-27, 1926: Cases, 12; deaths, 4. Apr. 4-17, 1926: Cases, 7; deaths, 4.
Cape Province	Apr. 4-10	1	1	
Cradock district	Apr. 11-24	3	3	
Kimberley district	Dec. 13-19	1		Native.
Middleburg district	Dec. 6-12	1		European.
Steynsburg district	Nov. 15-21	1		Native. On farm.
Winburg district	Feb. 21-27	1		
Orange Free State				Mar. 14-Apr. 10, 1926: Cases, 11; deaths, 5.
Boshof district	Nov. 29-Dec. 5	1	1	In native.
Bothaville district	Dec. 6-12	1	1	Native. On farm.
Bradfort district	Mar. 28-Apr. 3	1	1	
Grandfort district	Mar. 21-27	3	1	European, in same family, pneumonic.
Hoopstad district	Mar. 7-Apr. 17	10	5	
Kroonstad district	Mar. 14-20	1		Native. On farm.
Winburg district	Mar. 14-Apr. 3	11	5	
On vessel:				
Steamship Cid				Jan. 29, 1926. Plague rat. At Buenaventura, Colombia. Rat was killed while jumping ashore from vessel.

SMALLPOX

Algeria:				
Algiers	Nov. 21-Dec. 31	177		
Do	Jan. 1-10	64		
Do	Jan. 21-May 20	87		
Arabia:				
Aden	Nov. 29-Dec. 5	1		Imported.
Do	Jan. 10-May 15	11	1	
Argentina:				
Rosario	October		1	
Australia:				
Queensland—				
Brisbane	Dec. 9-15	1		
Azores:				
Fayal Island	Feb. 2-Apr. 26			Present. Reported as alastrim.
Horta	Apr. 26			Present.
Bahamas	Feb. 23			In Nassau district. Stated to have been imported.
Brazil:				
Manaos	Dec. 1-31		12	
Do	Jan. 1-Mar. 31		145	
Para	Jan. 10-May 15	38	13	
Rio de Janeiro	Nov. 1-28	134	72	
Do	Dec. 6-26	65	26	
Do	Dec. 27-Apr. 3	279	224	June 27, 1925-Mar. 20, 1926: Cases, 1,089; deaths, 580.

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
British East Africa:				
Kenya—				
Mombasa	Nov. 15-Dec. 19	14	6	
Do	Dec. 27-Mar. 20	2		
Tanganyika territory	Apr. 11-17	2		
Dar-es-Salaam	Feb. 21-27	1		
Uganda Protectorate	Sept. 1-Oct. 31	8	4	
Do	Feb. 1-28	1		
British South Africa:				
Northern Rhodesia	Jan. 5-11	2		
Southern Rhodesia	Nov. 13-Dec. 23	3		
Canada				Sept. 13-Jan. 2: In 7 Provinces, 186 cases. Jan. 3-May 29, 1926: Cases, 542.
Alberta				Jan. 3-May 1, 1926: Cases, 70.
Calgary	Dec. 13-19	1		From Drumheller, vicinity of Calgary.
British Columbia—				
Vancouver	Jan. 4-May 30	3		
Victoria	Mar. 21-27	2		
Manitoba				Jan. 3-May 8, 1926: Cases, 78.
Winnipeg	Dec. 13-19	2		
Do	Jan. 3-Apr. 10	16	1	
New Brunswick—				
Northumberland	Dec. 6-13	1		
Ontario				Dec. 1-31, 1925: Cases, 32. Jan. 3-May 8, 1926: Cases, 269.
Admaston	Jan. 1-Feb. 1	16		Township.
Alice and Fraser	Feb. 1-28	6		Do.
King	do	7		Do.
Wilmot	do	6		Do.
Belleville	do	4		
Hamilton	June 6-12	1		
Kingston	Mar. 8-May 15	2		
Kitchener	do	26		
North Bay	Feb. 14-Mar. 14	7		
Ottawa	Dec. 6-12	2		
Do	Jan. 3-May 29	3		
Sarnia	Mar. 14-May 8	9		
Toronto	Dec. 27-Jan. 2	1		
Do	Jan. 3-May 15	31		
Trenton	Jan. 3-Apr. 17	15		
Saskatchewan				Jan. 3-May 8, 1926: Cases, 131.
Moose Jaw	Jan. 3-Mar. 20	2		
Regina	Jan. 24-May 1	5		
Saskatoon	Feb. 14-20	1		
Ceylon:				
Colombo	Dec. 6-12	1		Port case.
Do	Jan. 3-Feb. 6	5		
Chile:				
Punta Arenas	Dec. 13-26		8	
Do	Dec. 27-Jan. 2		4	
China:				
Amoy	Oct. 25-Dec. 19		1	
Do	Jan. 10-Apr. 17		35	
Antung	Dec. 7-20	2		
Do	Mar. 21-May 16	9		
Changsha	Feb. 21-27			Present.
Chungking	Nov. 15-17			Do.
Do	Feb. 28-Apr. 3			Do.
Foochow	Nov. 1-May 1			Do.
Hankow	Nov. 14-Dec. 26	4		
Do	Jan. 10-Mar. 6	3		
Hongkong	Nov. 22-Dec. 26	4		
Do	Jan. 3-Apr. 24	19	9	
Manchuria—				
An-shan	Dec. 6-12	1		
Do	Jan. 10-May 8	15		South Manchuria Railway.
Changchun	do	51	1	Do.
Dairen	Oct. 19-Dec. 27	73	15	Do.
Do	Dec. 28-Apr. 11	90	28	Do.
Fushun	Jan. 17-May 8	7		Do.
Harbin	Jan. 1-May 6	38		Do.
Kai-yuan	Jan. 10-May 8	8		Do.
Kungchuling	Jan. 31-May 8	4		Do.
Lio-yang	Jan. 17-May 8	7		Do.
Mukden	Oct. 24-Nov. 15	1		Do.
Do	Jan. 24-May 8	9		Do.

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
China—Continued.				
Manchuria—Continued.				
Penhsihu	May 2-8	2		South Manchuria Railway.
Suping Kai	Mar. 14-May 1	4		Do.
Tieh-ling	Oct. 26-Nov. 15	2		Do.
Do	Apr. 18-24	1		Do.
Nanking	Nov. 21-Dec. 26			Do.
Do	Dec. 27-May 8			Do.
Shanghai	Oct. 25-Jan. 2	37	36	
Do	Jan. 3-May 1	64	143	Cases, foreign only.
Swatow	Nov. 22-May 8			Prevalent.
Tientsin	Nov. 1-Dec. 19	2		
Do	Jan. 23-May 8	3		
Chosen:				
Chinampo	Apr. 1-30	1		
Seishin	Jan. 1-Apr. 30	61	34	
Seoul	Apr. 1-30	1		
Curacao	May 3-9	1		From Trinidad.
Egypt:				
Alexandria	Dec. 3-31	5	2	
Do	Jan. 8-14	2	1	
Do	Jan. 29-May 13	81	17	
Cairo	Dec. 25-31	14		
Do	Jan. 1-14	8	1	
Port Said	Feb. 26-Mar. 4	1		
Esthonia				November, 1925: Cases, 3.
France				September-December, 1925: Cases, 253.
Do	Jan. 1-Feb. 28	96		
Havre	Jan. 25-31		9	
Paris	Mar. 1-Apr. 30	11	2	
St. Etienne	Apr. 17-30	1	1	
French Settlements in India	Jan. 3-Mar. 6	167	159	
Gold Coast	September, December.	58	5	
Do	Jan. 1-Feb. 28	133	5	
Great Britain:				
England and Wales				Nov. 15-Dec. 26, 1925: Cases, 790; Dec. 27-May 22, 1926; Cases, 4,806.
Bradford	May 2-15	3		
Hull	Dec. 27-Jan. 23	29		
Do	Feb. 7-Mar. 27	9		
Leeds	Jan. 14-May 29	5		
London	Jan. 31-Feb. 6		1	
Newcastle-on-Tyne	Nov. 29-Dec. 19	6		
Do	Dec. 27-May 29	44	1	
Nottingham	Nov. 22-Dec. 26	9		
Do	Dec. 27-Apr. 24	8		
Sheffield	Nov. 22-Dec. 12	7		
Do	Dec. 20-26	3		
Do	Dec. 27-Mar. 20	18		
Do	Apr. 25-May 8	3		
South Shields	Feb. 9			Reported present in severe form.
Greece				Oct. 1-31, 1925: Cases, 16.
Athens	Nov. 1-Dec. 31	18	1	
Do	Jan. 1-Mar. 31	87	6	
Kalamata	Mar. 1-7	1		From Patras.
Saloniki	Feb. 16-Apr. 12		3	
Guadeloupe (West Indies)				Apr. 23-May 31, 1926: 1 case. Alastrim.
India				Oct. 18-Dec. 26, 1925: Cases, 19,472; deaths, 4,440. Dec. 27, 1925-Apr. 24, 1926: Cases, 114,490; deaths, 29,048.
Bombay	Nov. 8-Dec. 26	26	20	
Do	Dec. 27-May 1	415	221	
Calcutta	Nov. 8-Dec. 26	48	25	
Do	Dec. 27-Apr. 3	620	397	
Karachi	Nov. 1-21	23		
Do	Nov. 29-Dec. 5	4	2	
Do	Dec. 13-19	3		
Do	Dec. 29-May 15	176	53	
Madras	Nov. 15-Dec. 26	17	5	
Do	Dec. 27-May 15	162	29	
Rangoon	Oct. 25-Dec. 26	7	1	
Do	Dec. 27-Jan. 16	13	1	
Do	Jan. 24-Mar. 6	70	17	
Do	Mar. 21-May 8	33	10	

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				September-December, 1925: Cases, 534; deaths, 110.
Province—				
Annam	Sept. 1-Dec. 31	232	44	
Cambodia	do	84	34	
Cochin China	do	106	51	
Saigon	Dec. 21-27	2	1	
Do	Jan. 1-Mar. 28	14	2	Including 100 square kilometers of surrounding country.
Tonkin	Sept. 1-Dec. 31	153	2	
Iraq:				
Bagdad	Nov. 1-Dec. 26	19	15	Sept. 6-Oct. 17, 1925: Cases, 81; Deaths, 40.
Do	Dec. 27-May 1	27	14	
Basra	do	70	60	
Italy				Aug. 2, 1925-Jan. 2, 1926: Cases, 52. Jan. 3-Mar. 27, 1926: Cases 38.
Catania	Feb. 15-28	7	1	
Do	Apr. 27-May 2	4		
Genoa	Jan. 21-Feb. 10	4		
Rome	Oct. 12-25	1		
Do	Feb. 22-28	1		Occurring in consular district.
Jamaica				Nov. 29-Dec. 26, 1925: Cases, 95. Dec. 27, 1925-Apr. 24, 1926: Cases, 509. Reported as alastrim.
Kingston	Nov. 29-Dec. 26	43		Reported as alastrim.
Do	Dec. 27-Jan. 30	48		Do.
Do	Feb. 28-Apr. 24	36		Do.
Japan:				
Kobe	Mar. 14-May 1	4		
Nagasaki	Feb. 15-25	2		
Taiwan	Nov. 11-Dec. 10	3		
Do	Mar. 21-31	3		
Yokohama	Dec. 14-20	1		
Do	Feb. 23-Apr. 24	73	12	
Java:				
Batavia	Oct. 24-Dec. 25	8		
Do	Feb. 20-Mar. 19	6		
Buitenzorg	Nov. 29-Dec. 5	1		
Cheribon	Nov. 8-Dec. 12	2		
Do	Jan. 31-Feb. 6		1	
East Java and Madoera	Mar. 28-Apr. 10	9		
Kraksaan	Oct. 11-17	11		
Malang	Oct. 11-Dec. 26	2		
Do	Dec. 27-Jan. 16	3	2	
North Bantam	Oct. 4-17	4		
Pekalongan	Oct. 25-31	1		
Pontianak	Jan. 31-Feb. 6		1	
Probolinggo	Oct. 11-17	1		
Serang	Feb. 14-27	5		
South Bantam	Feb. 23-Mar. 27	1		
Surabaya	Oct. 11-Dec. 26	633	104	
Do	Dec. 27-Mar. 13	141	43	
Tegal	Oct. 4-10	9	1	
Latvia				December, 1925: Cases, 3.
Malta	Nov. 1-Dec. 21	21	3	
Do	Jan. 1-Feb. 28	20		
Martinique	May 10			Prevalent.
Fort de France	Apr. 11-May 1	6		Alastrim.
Mexico				July-September, 1925: Deaths, 1,157.
Aguascalientes	Dec. 13-Jan. 2	4	3	
Do	Jan. 3-30		7	
Do	Feb. 14-May 22		18	
Camargo	May 22	2		
Chihuahua	May 9-17	7		
Ciudad Juarez	May 9-24		2	
Durango	Dec. 1-31		1	
Do	Jan. 1-31		2	
Guadalajara	Dec. 27-June 7		28	
Mexico City	Nov. 28-Dec. 5	1		Including municipalities in Federal District.
Do	Jan. 3-May 22	34		Do.
Saltillo	Apr. 4-10	1		
San Luis Potosi	Jan. 17-Mar. 20		53	
Do	Mar. 28-June 5		44	
Tampico	Dec. 21-Jan. 2	1	1	
Do	Jan. 2-Mar. 10	8		
Torreon	Nov. 1-Dec. 31		51	
Do	Jan. 1-May 31		90	
Vera Cruz	Mar. 29-Apr. 4	5	1	

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Netherlands:				
The Hague	Jan. 30–Mar. 6	2	1	
Nigeria				Aug. 1–Dec. 31, 1925; Cases, 389; deaths, 6.
Do	Jan. 1–31	135	1	
Palestine:				
Hebron	Jan. 26–Feb. 28	3		
Jerusalem	Feb. 1–28	1		
Tiberias	Feb. 9–15	1		
Persia:				
Teheran	July 23–Dec. 22		775	
Do	Dec. 23–Mar. 21		105	
Peru:				
Arequipa	Oct. 1–Dec. 31		2	
Poland				Nov. 1–28, 1925: Cases, 9. Jan. 1–Mar. 27, 1926; Cases, 20.
Portugal				Mar. 1–28, 1926: Deaths, 6.
Lisbon	Oct. 4–31	124		
Do	Nov. 16–Dec. 27		60	
Do	Nov. 14–Dec. 26	187		
Do	Dec. 27–May 29	159	32	
Oporto	Nov. 22–Dec. 19	2	3	
Do	Dec. 27–May 15	5	1	
Rumania	August–October	3		
Russia				May–June, 1925: Cases, 2,333. July 1–Dec. 31, 1925: Cases, 4,019.
Senegal:				
Dakar	Apr. 19–25	1		
Siam				July 12–Sept. 5, 1925: Cases 21: deaths, 6.
Bangkok	Dec. 20–25	3	1	
Do	Dec. 26–Mar. 6	81	37	
Do	Mar. 14–Apr. 10	30	18	
Sierra Leone:				
Konno district	Dec. 16–31	5		
Spain:				
Madrid	Year 1925		18	
Do	Jan. 1–31		1	
Malaga	Nov. 29–Dec. 5		2	
Do	Dec. 27–Jan. 2		1	
Valencia	Dec. 20–26	1		
Do	Dec. 27–Jan. 2	1		
Do	Jan. 10–Feb. 6	9		
Do	Feb. 14–May 29	22	3	
Straits Settlements:				
Penang	Mar. 28–Apr. 3		1	
Singapore	Dec. 20–26	1		
Do	Jan. 10–Mar. 27	8	2	
Sumatra:				
Medan	Feb. 14–27	2		
Switzerland				June 28–Nov. 21, 1925: Cases, 62; Dec. 27, 1925–Apr. 3, 1926: Cases, 51.
Lucerne	Oct. 1–Nov. 30	8		
Do	Jan. 1–Mar. 31	6		
Zurich	Dec. 27–Jan. 2	1		
Syria:				
Damascus	Apr. 11–20	1		
Trinidad (West Indies):				
Port of Spain	Jan. 1–Apr. 3	12		
Tripolitania	July 1–Dec. 31	34		
Do	Jan. 1–Feb. 28	12		
Tunisia				Jan. 1–Mar. 31, 1926: Cases, 123.
Tunis	Nov. 21–30	2		
Do	Dec. 11–31	10	1	
Do	Jan. 1–Apr. 20	7	1	
Turkey:				
Constantinople	Mar. 9–23	2	3	
Union of South Africa:				
Cape Province	Jan. 17–23			Outbreaks.
Orange Free State	Apr. 25–May 1			Do.
Kuruman district	Jan. 10–16			Do.
Ladybrand district	Dec. 27–Jan. 2			Do.
Transvaal—				
Belfast district	do			Do.
Germiston district	Jan. 2–9			Do.
Pretoria district	Dec. 6–12			Outbreaks. In native compounds.
On vessel	Feb. 21	2		Mexican steamer Montezuma, at Port of Ensenada, Mexico.

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Nov. 1-Dec. 20	2		
Do	Jan. 1-Apr. 10	13		
Argentina:				
Rosario	Oct. 13-Dec. 31	2		
Bulgaria	Sept. 1-Dec. 31	50	3	
Do	Jan. 1-Feb. 28	112		
Sofia	Dec. 25-31	1		
Do	Jan. 8-14	2		
Canary Islands:				
Santa Cruz de Tenerife	Mar. 8-14	1		
Chile				Dec. 15-31, 1925: Cases, 46. Jan. 1-15, 1926: Cases, 23.
Achao	Dec. 15-31	1		
Do	Jan. 1-15	1		
Ancud	do	2		
Antofagasta	Apr. 11-May 15	5		
Bulnes	Dec. 15-31	1		
Chillan	do	24		
Concepcion	do	6		
Linares	do	1		
Los Angeles	do	5		
Penco	do	2		
Salamanca	do	17		
San Carlos	do	1		
Talca	do	1		
Valparaiso	Nov. 29-Jan. 2	5	2	
Do	Jan. 3-Mar. 27	4		
China:				
Antung	Nov. 29-Dec. 27	5	1	
Do	Jan. 4-May 16	38		
Hongkong	Dec. 27-Jan. 2	1		
Manchuria—				
Harbin	Dec. 17-Feb. 4	3		
Do	Apr. 2-8	1		
Shanghai	Mar. 14-20	1		
Chosen				Jan. 1-31, 1926: Cases, 70; deaths, 7.
Czechoslovakia	October-December	146	1	
Do	Jan. 1-Feb. 28	67		
Egypt:				
Alexandria	Jan. 8-Feb. 25	2		
Do	Apr. 30-May 6	1		
Cairo	Nov. 5-Dec. 16	3	2	
Port Said	Nov. 19-25	1		
Do	Mar. 12-May 16	3		
Esthonia	Jan. 1-Apr. 30	23		
Finland				October, 1925: 1 case.
France	July-October	4		
Greece				December, 1925: Cases, 12.
Athens	Nov. 1-30	11	2	
Do	Jan. 1-Mar. 31	45	9	
Saloniki	Dec. 29-Jan. 4	1		
Do	Feb. 2-Apr. 19	4		
Hungary				November-December, 1925: Cases, 16. Jan. 1-31, 1926: Cases, 6.
Ireland:				
Cork County—				
Cork	Dec. 26-Jan. 1	2		
Do	Jan. 2-8	5		
Do	May 2-8	1		
Dumanway	Nov. 14	1		
Galway County	Oct. 17	1		
Kerry County—				
Listowel	Mar. 7-13	1		Rural district.
Tipperary County—				
Cashel District	May 9-15	1		
Wexford County—				
Gorey	do	1		Do.
Italy	Feb. 21-Mar. 27	38		
Latvia	October-December	12		
Do	Feb. 1-Mar. 31	20		
Riga	Oct. 1-31	2		
Lithuania				September-December, 1925: Cases, 26; deaths, 1. Jan. 1-Feb. 28, 1926: Cases, 62; deaths, 1.

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Mexico				July-September, 1925: Deaths, 90.
Aguascalientes	Dec. 14-19	1		
Do	May 2-8		1	
Durango	Dec. 1-31		1	
Do	Jan. 1-31		1	
Guadalajara	Dec. 8-28		2	
Do	Dec. 29-Jan. 4		1	
Mexico City	Nov. 22-Dec. 26	50		Including municipalities in Federal District.
Do	Dec. 27-Mar. 20	89		Do.
Do	Mar. 28-Apr. 10	11		Do.
Do	Apr. 25-May 1	10		Do.
San Luis Potosi	Feb. 6-13		1	
Tampico	Dec. 21-Jan. 10	1	1	
Torreon	November, 1925		1	
Vera Cruz	Feb. 12		1	
Morocco	August-December	93		
Do	Jan. 1-Feb. 28	130		
Norway				November-December, 1925: Cases, 2.
Palestine:				
Ekron	Mar. 30-Apr. 5	1		
Gaza	Dec. 18	1		
Haifa	Mar. 16-May 10	3		
Jaffa	Dec. 1-7	1		
Do	Feb. 23-Mar. 1	1		
Nazareth	Nov. 3-9	1		
Ramleh	Mar. 16-22	1		
Safed	Nov. 24-30	1		
Tel-Aviv	do	1		
Do	Mar. 9-15	1		
Tiberias	do	2		
Peru:				
Arequipa	October-December		3	
Do	Feb. 1-Mar. 31		2	
Poland	Oct. 11-Jan. 2	462	44	
Do	Jan. 3-Mar. 27	1,468	114	
Rumania				July 1-Dec. 31, 1925: Cases, 348; deaths, 41. Jan. 1-Feb. 28, 1926: Cases, 324; deaths, 21.
Constantza	Feb. 1-Mar. 10	2		
Russia				May-June, 1925: Cases, 10,680.
Do				July 1-Dec. 31, 1925: Cases, 11,253. Jan. 1-Mar. 31, 1926: Cases, 180.
Tunisia:				
Tunis	Mar. 21-May 10	6		
Turkey:				
Constantinople	Jan. 24-30	3		
Do	Feb. 9-Mar. 31	6	4	
Union of South Africa				October, 1925: Cases, 88; deaths, 7 (colored). Cases, Europeans, 7. December, 1925: Cases, 78; deaths, 9. Colored: Cases, 73; deaths, 9. Jan. 1-Mar. 31, 1926: Cases, 200; deaths, 29; Apr. 4-24, 1926: Outbreaks.
Cape Province	Oct. 1-31	63	5	Colored.
Do	Nov. 8-Dec. 31	47	8	
Do	Jan. 1-Mar. 31	159	21	
Do	Apr. 30-May 1			Outbreaks in four districts, in 10 localities.
Grahamstown	Jan. 24-30	2		
Kimberley district	Apr. 11-17	1		At Beaconsfield location.
Middleburg district	Dec. 6-12	1		European. On farm.
Molteno district	do			Outbreaks.
Steynsburg district	do			Do.
Natal	Oct. 1-Dec. 5	1		
Do	Jan. 1-Mar. 31	13	1	Colored.
Durban	Jan. 3-Apr. 24	11	1	
Port Shepstone	Apr. 4-10	1		
Orange Free State	Nov. 29-Dec. 5	23	1	
Do	Dec. 1-31	8	1	
Do	Jan. 1-Feb. 28	8	3	Do.
Bethulia district	Dec. 6-12			Outbreaks.
Bothaville district	do	1		Native. On farm.

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

Reports Received from December 26, 1925, to June 25, 1926—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Natal—Continued.				
Transvaal	Oct. 1-31	1	1	
Do	Dec. 1-31	18		
Do	Feb. 1-Mar. 31	9	4	
Johannesburg district	Mar. 1-20	3		
Bloemhof district	Dec. 27-Jan. 2			Outbreak. On farm.
Yugoslavia				Jan. 1-Mar. 21, 1926: Cases, 105; deaths, 18.

YELLOW FEVER

Brazil				Mar.-May 17, 1926: Cases, 30; several deaths, in Parahyba; a smaller number in Natal.
Gold Coast	Sept. 1-Dec. 31	4	3	
Nigeria	August-October	3	2	
Senegal	November, 1925	3	2	