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THE EYESIGHT OF THE SCHOOL CHILD AS DETERMINED BY THE SNELLEN TEST.

A STATISTICAL STUDY OF THE RESULTS OF VISION TESTS OF 9,245 NATIVE WHITE CHILDREN IN NEW YORK STATE, DELAWARE, SOUTH CAROLINA, AND FREDERICK COUNTY, MD., AND OF 2,636 WHITE CHILDREN IN CECIL COUNTY, MD.[1]

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In the course of certain studies in child hygiene made by officers of the United States Public Health Service a large number of school children were tested for defective vision as a part of a general physical examination. Approximately 10,000 children were tested in four eastern localities, viz, Spartanburg, S. C., and near-by villages, Frederick County, Md., New Castle County, Del., and Nassau County, N. Y. The children were largely from rural districts and small towns, but some schools in cities of moderate size were included.

Visual acuity was tested with Snellen's test types, a chart for illiterates being used for children who could not read. The vision was recorded, in most cases, in tenths. In some instances, however, the more common practice was followed, and vision was recorded in the form of a fraction, the numerator of which represented the distance at which the test was made—that is, 20 feet—and the denominator the distance a normal eye could read the smallest type which the person being tested could read at 20 feet. In tabulating these data, the latter measurements were reduced to approximate tenths. The children were then classified according to visual acuity into the 10 groups shown in Table 1.

[1] From Field Investigations in Child Hygiene, United States Public Health Service, in cooperation with the Statistical Office, United States Public Health Service.

TABLE 1.—*Percentage of children of all ages with each specified vision as determined by the Snellen test—9,245 native white children of South Carolina, Maryland, Delaware, and New York State.*

Vision.	Percentage.			Number.		
	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.
All children	100.0	100.0	100.0	9,245	4,774	4,471
(1) Normal in both eyes ($\frac{10}{10}$ or better)	62.9	65.2	60.5	5,816	3,112	2,704
(2) Normal in one eye and $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in other	10.2	9.5	11.0	944	454	490
(3) $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in both eyes	16.9	15.3	18.6	1,560	729	831
(4) Normal in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	1.0	1.0	1.0	94	50	44
(5) $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	2.4	2.5	2.3	222	118	104
(6) $\frac{4}{10}$ or $\frac{5}{10}$ in both eyes	2.7	2.5	2.8	245	120	125
(7) Normal in one eye and $\frac{3}{10}$ or less in other	.8	1.0	.6	78	49	29
(8) $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in one eye and $\frac{3}{10}$ or less in other	.7	.9	.6	67	41	26
(9) $\frac{4}{10}$ or $\frac{5}{10}$ in one eye and $\frac{3}{10}$ or less in other	.8	.7	.9	72	32	40
(10) $\frac{3}{10}$ or less in both eyes	1.6	1.4	1.7	147	69	78

In arranging the classification, due consideration was given to the fact that visual acuity is not always the same in both eyes of an individual. The few children recorded as blind in one eye or in both eyes were not included in the analysis. The number and proportion of children in each of the 10 classes are shown in Table 1.

It will be observed that the number of children with slight visual defect is greater than that for all other degrees of defect combined, 27 per cent having $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in both eyes or normal in one eye and $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in the other, as compared with only 10 per cent, who have more serious defects.

GOOD AND POOR VISION ACCORDING TO AGE.

It is of interest to know the age incidence of defective vision; that is, whether the percentage of children with diminished acuity of vision increases or decreases with age. For the purpose of answering this question, the children studied were divided into the following four classes,[2] according to visual acuity:

(1) Normal in both eyes ($\frac{10}{10}$ or better).
(2) $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in one eye and $\frac{6}{10}$ or better in the other.
(3) $\frac{4}{10}$ or $\frac{5}{10}$ in one eye and $\frac{4}{10}$ or better in the other.
(4) $\frac{3}{10}$ or less in one or both eyes.

Table 2 and Figure 1 show the percentage of children of each age in each of these classes.

[2] In the "twenty" system the following classes correspond approximately to those listed in tenths:
(1) Normal in both eyes ($\frac{20}{20}$ or better).
(2) $\frac{12}{20}$ or $\frac{14}{20}$ in one eye and $\frac{12}{20}$ or better in the other.
(3) $\frac{8}{20}$ or $\frac{10}{20}$ in one eye and $\frac{8}{20}$ or better in the other.
(4) $\frac{6}{20}$ or less in one or both eyes.

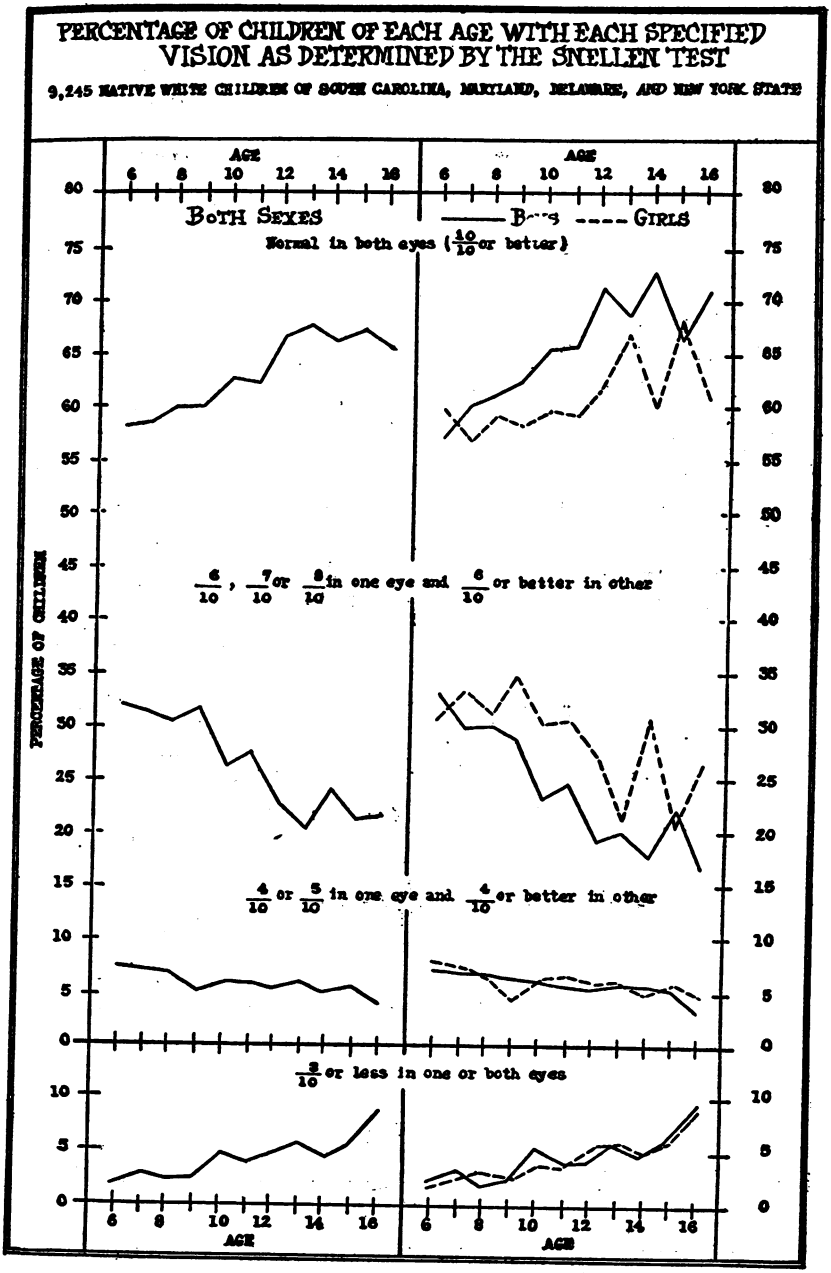
PERCENTAGE OF CHILDREN OF EACH AGE WITH EACH SPECIFIED VISION AS DETERMINED BY THE SNELLEN TEST
9,245 NATIVE WHITE CHILDREN OF SOUTH CAROLINA, MARYLAND, DELAWARE, AND NEW YORK STATE
AGE
BOTH SEXES
BOYS
GIRLS
Normal in both eyes (10/10 or better)
6/10, 7/10 or 8/10 in one eye and 6/10 or better in other
4/10 or 5/10 in one eye and 4/10 or better in other
3/10 or less in one or both eyes
PERCENTAGE OF CHILDREN

FIG. 1.

TABLE 2.—*Percentage of children of each age with each specified vision as determined by the Snellen test—9,245 native white children of South Carolina, Maryland, Delaware, and New York State.*

Vision.	All ages.	Age nearest birthday.										
		6	7	8	9	10	11	12	13	14	15	16
PERCENTAGE.												
Both sexes, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Normal in both eyes	62.9	58.3	58.6	60.2	60.3	62.8	62.4	66.7	67.7	66.2	67.2	65.5
6/6, 5/6, or 4/6 in one eye and 6/6 or better in other	27.1	32.1	31.4	30.6	31.8	26.3	27.7	23.0	20.5	24.3	21.3	21.7
4/6 or 5/6 in one eye and 4/6 or better in other	6.1	7.6	7.2	6.8	5.5	6.2	6.1	5.6	6.0	5.0	5.6	3.9
5/6 or less in one or both eyes	3.9	2.0	2.8	2.4	2.4	4.6	3.8	4.7	5.8	4.5	5.9	8.9
Boys, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Normal in both eyes	65.2	57.1	60.2	61.2	62.4	65.3	65.5	71.3	68.5	72.6	66.3	70.8
6/6, 5/6, or 4/6 in one eye and 6/6 or better in other	24.8	33.2	29.7	30.0	28.8	23.3	24.8	19.1	20.0	17.7	22.3	16.7
4/6 or 5/6 in one eye and 4/6 or better in other	6.0	7.3	6.9	6.9	6.3	6.1	5.6	5.3	5.6	5.3	5.2	3.1
5/6 or less in one or both eyes	4.0	2.4	3.3	1.9	2.4	5.3	4.0	4.3	5.9	4.4	6.2	9.4
Girls, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Normal in both eyes	60.5	59.6	56.9	59.1	58.1	59.8	59.1	61.9	66.9	59.9	68.0	60.7
6/6, 5/6, or 4/6 in one eye and 5/6 or better in other	29.5	30.9	33.3	31.3	34.8	30.2	30.7	27.1	21.0	30.8	20.3	26.2
4/6 or 5/6 in one eye and 4/6 or better in other	6.1	8.0	7.5	6.6	4.5	6.2	6.7	6.0	6.3	4.6	6.1	4.7
5/6 or less in one or both eyes	3.9	1.6	2.3	3.0	2.5	3.8	3.5	5.0	5.8	4.6	5.6	8.4
NUMBER.												
Both sexes, total	9,245	393	933	1,121	1,225	1,230	1,108	1,050	906	686	390	203
Normal in both eyes	5,816	229	547	675	739	773	691	700	613	454	262	133
6/6, 5/6, or 4/6 in one eye and 6/6 or better in other	2,504	126	293	343	389	324	307	242	186	167	83	44
4/6 or 5/6 in one eye and 4/6 or better in other	561	30	67	76	67	76	68	59	54	34	22	8
5/6 or less in one or both eyes	364	8	26	27	30	57	42	49	53	31	23	18
Boys, total	4,774	205	492	590	631	683	568	533	444	339	193	96
Normal in both eyes	3,112	117	296	361	394	446	372	380	304	246	128	68
6/6, 5/6, or 4/6 in one eye and 6/6 or better in other	1,183	68	146	177	182	159	141	102	89	60	43	16
4/6 or 5/6 in one eye and 4/6 or better in other	288	15	34	41	40	42	32	28	25	18	10	3
5/6 or less in one or both eyes	191	5	16	11	15	36	23	23	26	15	12	9
Girls, total	4,471	188	441	531	594	547	540	517	462	347	197	107
Normal in both eyes	2,704	112	251	314	345	327	319	320	309	208	134	65
6/6, 5/6, or 4/6 in one eye and 6/6 or better in other	1,321	58	147	166	207	165	166	149	97	107	40	28
4/6 or 5/6 in one eye and 4/6 or better in other	273	15	33	35	27	34	36	31	29	16	12	5
5/6 or less in one or both eyes	173	3	10	16	15	21	19	26	27	16	11	9

In referring to Figure 1, it may be somewhat surprising to find that the percentage of children who have normal vision increases with age, in spite of the increased use of the eyes as children advance in school. This result, however, is in agreement with the fact that the anatomical development (deepening of the vitreous chamber) in the eye of man is not completed until nearly 20 years of age.[3] The percentage of children with slight visual defect ($\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in one eye and $\frac{6}{10}$ or better in the other) and with defects as serious as $\frac{4}{10}$ or $\frac{5}{10}$ in one eye and $\frac{4}{10}$ or better in the declines considerably with age. On the other hand, the percentage of children with vision of $\frac{3}{10}$ or less in one or both eyes increases markedly with age, the percentage of 15 and 16 year old children with these defects being more than three times that of the 6-year-old children.[4]

Age incidence for each sex.—The right half of Figure 1 shows the rates for boys and girls separately. The tendencies already described for both sexes hold true for either sex. It might be noted, however, that boys show a consistently higher percentage with no defects (normal in both eyes) and girls show a rather consistently higher percentage with slight defects ($\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in one eye and $\frac{6}{10}$ or better in the other); but as far as the two classes with more serious defect are concerned, there seems to be no difference between the sexes.

Visual acuity greater than normal.—The group of children with normal vision ($\frac{10}{10}$ or better) is large and may include many children with Snellen readings *better* than $\frac{10}{10}$ as well as those with *just* $\frac{10}{10}$. The records of the 9,245 children included in this study were not in such form that the normal group could be further subdivided. However, in another study, over 2,500 children were examined by an officer of the United States Public Health Service in the rural and small-town schools of Cecil County, Md., and in testing the eyes with the Snellen chart the children with vision better than $\frac{10}{10}$ were separated from those with vision just $\frac{10}{10}$. Moreover, those with vision better than $\frac{10}{10}$ were classified according to how much better than $\frac{10}{10}$ they could read. Table 3 shows the results of this study.

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[3] Arboreal Life and the Evolution of the Human Eye, by E. Treacher Collins, Lea and Febiger, Philadelphia and New York, 1922, p. 80. See also article, On the Degree of Association between Reaction Times in the case of Different Senses, by Y. Koga and G. M. Morant, Biometrika, Vol. XV, Pts. 3 and 4, December, 1923, particularly the tables and chart, pp. 351-357, on acuity of vision by age. The results are in agreement with the findings in the present study.

[4] It may be stated that an increase also is apparent in each of the four groups shown in Table 1, which were combined into this class of $\frac{7}{10}$ or less in one or both eyes. That is, those with $\frac{7}{10}$ or less in both eyes, $\frac{7}{10}$ or less in one eye and $\frac{8}{10}$ or $\frac{9}{10}$ in the other, $\frac{8}{10}$ or less in one eye and, $\frac{8}{10}$, $\frac{9}{10}$, or $\frac{10}{10}$ in the other, and with $\frac{8}{10}$ or less in one eye and normal in the other are all included in this group, but each of the separate groups shows the same tendency for the percentages to increase with age. Table 8, in Appendix, shows, by age, the actual number of children in each of these classes.

TABLE 3.—*Percentage of children of each age with each specified vision as determined by the Snellen test—2,636 white children in Cecil County, Md.*

Vision.	All ages.	Age nearest birthday.										
		6 and under.	7	8	9	10	11	12	13	14	15	16 and over.
PERCENTAGE.												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
$\frac{15}{10}$ or better in one eye and $\frac{10}{10}$ or better in other	0.8					0.3	0.7	0.4	2.0	1.3	1.7	2.3
$\frac{12}{10}$ in both eyes or $\frac{12}{10}$ in one eye and $\frac{10}{10}$ in other	13.0	1.4	1.0	1.6	1.0	5.9	11.0	16.1	15.2	25.1	26.7	42.5
$\frac{10}{10}$ in both eyes	40.2	45.0	45.7	43.5	42.8	40.6	43.7	41.8	42.0	36.8	34.3	23.3
$\frac{9}{10}$, $\frac{7}{10}$, or $\frac{5}{10}$ in one eye, and $\frac{10}{10}$ or better in other	39.5	52.9	50.5	50.2	51.0	42.7	38.0	35.4	34.4	26.8	27.9	24.2
$\frac{5}{10}$ or less in one or both eyes	6.6	.7	2.9	4.7	5.2	10.5	6.7	6.3	6.4	10.0	9.3	7.8
NUMBER.												
Total	2,636	140	208	255	290	286	300	285	250	231	172	219
$\frac{15}{10}$ or better in one eye and $\frac{10}{10}$ or better in other	20					1	2	1	5	3	3	5
$\frac{12}{10}$ in both eyes or $\frac{12}{10}$ in one eye and $\frac{10}{10}$ in other	342	2	2	4	3	17	33	46	38	58	46	93
$\frac{10}{10}$ in both eyes	1,059	63	95	111	124	116	131	119	105	85	59	51
$\frac{9}{10}$, $\frac{7}{10}$, or $\frac{5}{10}$ in one eye, and $\frac{10}{10}$ or better in other	1,041	74	105	128	148	122	114	101	86	62	48	53
$\frac{5}{10}$ or less in one or both eyes	174	1	6	12	15	30	20	18	16	23	16	17

It will be observed, by considering the first three groups as a whole, that the percentage of children with a vision of $\frac{10}{10}$ *or better* in both eyes increases with ages, in agreement with the data already presented. However, the percentage with *just* $\frac{10}{10}$ in both eyes decreases with age; all the increase comes in the class with vision *better* than $\frac{10}{10}$. However, of the 362 children with vision better than $\frac{10}{10}$ in one eye and not less than $\frac{10}{10}$ in the other, only 20 had vision as high as $\frac{15}{10}$ in either eye, the other 342 having only $\frac{12}{10}$ in the eye of best vision. It should be noted that both the classes with vision better than $\frac{10}{10}$ increase with age.

The percentages and the rates of increase or decrease in the vision classes below normal in the Cecil County study are not always the same as those shown by the larger group, but they show the same *general* tendencies. That is, the percentage with slight defects decreases with age and the percentage with more serious defects increases with age.

VISION IN THE RIGHT AND IN THE LEFT EYE.

In Table 4 the children have been classified according to vision in the right and in the left eye separately, classes similar to those in Table 2 being used. It will be noted from this table that vision in each eye shows the same general tendencies as already described for the two eyes combined.

TABLE 4.—*Percentage of children of each age with each specified vision in each eye—9,245 native white children of South Carolina, Maryland, Delaware, and New York State.*

Vision.	All ages.	Age nearest birthday. 6	7	8	9	10	11	12	13	14	15	16
BOTH SEXES.												
Right eye, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Normal	68.9	64.4	63.8	65.6	67.7	69.0	67.3	73.0	74.1	72.3	72.1	72.9
6/10, 7/10, or 8/10	23.6	29.3	28.3	28.3	26.7	22.2	25.6	19.0	17.7	19.7	18.7	17.7
4/10 or 5/10	4.7	4.6	6.2	4.6	3.8	5.5	4.8	4.3	4.7	4.2	4.6	3.0
1/10, 2/10, or 3/10	2.8	1.8	1.8	1.5	1.8	3.3	2.3	3.7	3.5	3.8	4.6	6.4
Left eye, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Normal	69.0	65.9	65.5	66.6	66.8	68.5	68.4	72.3	71.3	72.0	74.6	74.9
6/10, 7/10, or 8/10	23.5	26.5	27.9	25.8	26.9	23.3	24.1	20.7	18.8	21.1	17.4	16.7
4/10 or 5/10	4.8	6.1	5.0	5.9	4.6	4.6	4.3	3.9	5.1	4.7	3.8	4.4
1/10, 2/10, or 3/10	2.8	1.5	1.6	1.7	1.7	3.5	3.2	3.1	4.9	2.2	4.1	3.9
BOYS.												
Right eye, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100 0.	100.0
Normal	71.0	63.9	65.9	66.4	68.1	72.0	70.1	73.2	75.7	78.2	72 0	79.2
6/10, 7/10, or 8/10	21.8	29.8	26.6	28.3	25.4	19.0	22.5	17.4	16.9	13.9	18.7	12.5
4/10 or 5/10	4.5	3.9	5.9	4.1	4.6	5.6	4.8	3.2	4.3	4.4	4.1	2.1
1/10, 2/10, or 3/10	2.7	2.4	1.6	1.2	1.9	3.4	2.6	3.2	3.2	3.5	5.2	6.3
Left eye, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Normal	71.0	64.9	66.7	67.5	68.6	70.7	70.2	77.3	71.8	77.9	73.6	80.2
6/10, 7/10, or 8/10	21.6	27.8	26.4	25.1	24.6	20.4	23.1	16.5	18.5	15.6	18.1	13.5
4/10 or 5/10	4.7	5.9	4.9	6.1	5.4	5.0	3.2	3.8	4.7	4.4	3.6	3.1
1/10, 2/10, or 3/10	2.7	1.5	2.0	1.4	1.4	4.0	3.5	2.4	5.0	2.1	4.7	3.1
GIRLS.												
Right eye, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1000.0
Normal	66.7	64.9	61.5	64.6	67.2	65.3	64.4	69.8	72.5	66.6	72.1	67.3
6/10, 7/10, or 8/10	25.5	28.7	29.9	28.2	28.1	26.1	28.9	20.5	18.4	25.4	18.8	22.4
4/10 or 5/10	4.9	5.3	6.6	5.3	3.0	5.5	4.8	5.4	5.2	4.0	5.1	3.7
1/10, 2/10, or 3/10	2.8	1.1	2.0	1.9	1.7	3.1	1.9	4.3	3.9	4.0	4.1	6.5
Left eye, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Normal	66.9	67.0	64.2	65.7	64.8	65.8	66.5	67.1	70.8	66.3	75.6	70.1
6/10, 7/10, or 8/10	25.5	25.0	29.5	26.6	29.5	27.1	25.2	25.0	19.0	26.5	16.8	19.6
4/10 or 5/10	4.9	6.4	5.2	5.6	3.7	4.2	5.6	4.1	5.4	4.9	4.1	5.6
1/10, 2/10, or 3/10	2.8	1.6	1.1	2.1	2.0	2.9	2.8	3.9	4.8	2.3	3.6	4.7

Attention might be called to the fact that the percentage of children who have normal vision in the right eye is almost identical with the percentage who have normal vision in the left eye. Although no data are available for these children as to right and left handedness, it would appear safe to assume that a much larger percentage were right-handed than left-handed. If the vision varied in any similar way we might therefore expect a larger percentage of the right than of the left eyes to be normal. But the percentage of right and of left eyes that were normal was 69 in each case. Similarly the percentage of right and of left eyes in each of the three defect classes was

almost identical in every case. The above percentages refer to children of both sexes and all ages combined, but reference to Table 4 will show that also the percentages for the various sex and age groups do not show any consistent difference between the right and the left eyes.

Correlation between vision in right and left eye.—In Table 5 is given the correlation in vision between the two eyes. There is a strong tendency for the vision to be approximately the same in both eyes, but, in many cases, good vision in one eye is combined with very poor vision in the other.

TABLE 5.—*Correlation between vision in the right and in the left eye—9,245 native white children in South Carolina, Maryland, Delaware, and New York State.*

Vision in right eye.	Vision in left eye.									
	Number.					Percentage.				
	Total.	1/10 to 1/10	2/10 to 5/10	6/10 to 9/10	Normal	Total.	1/10 to 1/10	2/10 to 5/10	6/10 to 9/10	Normal
BOTH SEXES.										
Total	9,245	255	441	2,171	6,378	100.0	2.8	4.8	23.5	69.0
1/10 to 1/10	256	147	41	32	36	100.0	57.4	16.0	12.5	14.1
2/10 to 5/10	437	31	245	114	47	100.0	7.1	56.0	26.1	10.8
6/10 to 9/10	2,182	35	108	1,560	479	100.0	1.6	4.9	71.5	22.0
Normal	6,370	42	47	465	5,816	100.0	.7	.7	7.3	91.3
BOYS.										
Total	4,774	131	224	1,031	3,388	100.0	2.7	4.7	21.6	71.0
1/10 to 1/10	129	69	21	17	22	100.0	53.5	16.3	13.2	17.1
2/10 to 5/10	216	11	120	60	25	100.0	5.1	55.6	27.8	11.6
6/10 to 9/10	1,049	24	58	729	229	100.0	2.3	5.6	70.1	22.0
Normal	3,380	27	25	225	3,112	100.0	.8	.7	6.6	91.8
GIRLS.										
Total	4,471	124	217	1,140	2,990	100.0	2.8	4.9	25.5	66.9
1/10 to 1/10	127	78	20	15	14	100.0	61.4	15.7	11.8	11.0
2/10 to 5/10	221	20	125	54	22	100.0	9.0	56.6	24.4	10.0
6/10 to 9/10	1,142	11	59	831	250	100.0	1.0	4.4	72.8	21.9
Normal	2,981	15	22	240	2,704	100.0	.5	.7	8.1	90.7

In the section on the right in Table 5 a percentage distribution according to the vision in the left eye is shown for the children in each class of vision in the right eye. Of the children who are normal in the right eye, 91 per cent are normal in the left eye also. Likewise it will be noted that for each of the other groups the percentage of those who have the same vision in the left eye as in the right is much larger than the percentages of those who have other degrees of defect. Figure 2 shows these percentages graphically.

There seems to be a greater tendency for vision to be the same in both eyes among children with better vision than among those with poorer vision. Seventy-one per cent of the children with vision $\frac{6}{10}$ to $\frac{8}{10}$ in the right eye and 91 per cent of children with vision normal in the right eye have the same vision in the left eye, but for vision $\frac{1}{10}$ to $\frac{3}{10}$ and $\frac{4}{10}$ to $\frac{5}{10}$ in the right eye, only 57 and 56 per cent, respectively, have the same vision in the left eye. The size of the class interval would, of course, have some effect on this relationship, but it is believed that these class intervals are sufficiently similar to warrant the comparison.

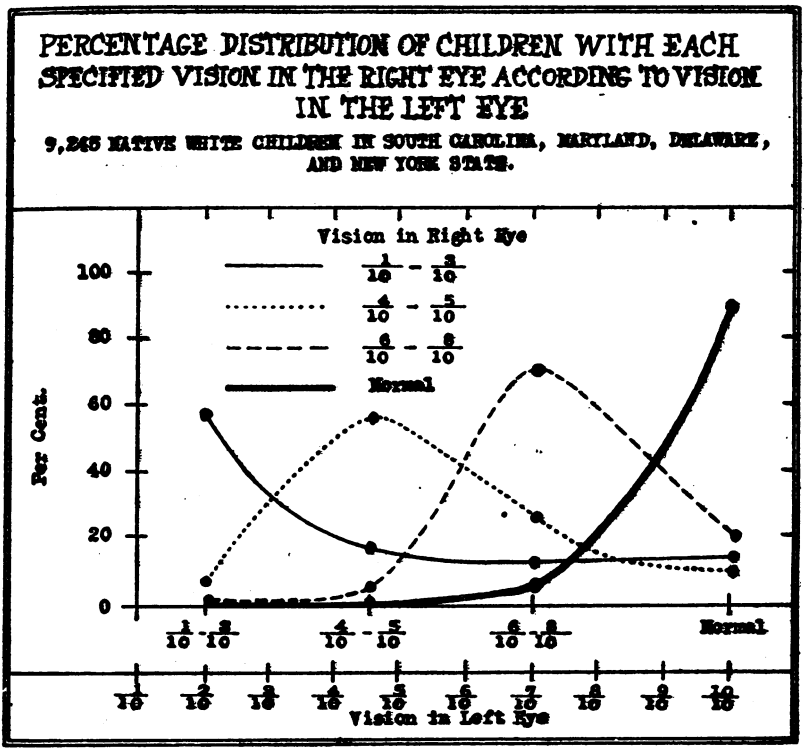

FIG. 2.

It should be noted that the same is true of the vision of the right eye in relation to the left.

A close examination of Table 5 will show that the percentage of girls with vision the same in both eyes is slightly greater than the corresponding percentage of boys, except for normal vision. In other words, among girls with vision $\frac{1}{10}$ to $\frac{3}{10}$ in the right eye, 61 per cent have the same vision in the left eye; but the corresponding figure for boys is only 53 per cent. Similarly for the group with vision $\frac{4}{10}$ to $\frac{5}{10}$ in the right eye, 57 per cent of the girls have the same vision in the left eye, as against 56 per cent of boys; and for $\frac{6}{10}$ to $\frac{8}{10}$ the percentages are 73 for girls and 70 for boys. But of those girls

who have normal vision in the right eye, 91 per cent have normal vision in the left, whereas 92 per cent of the boys who have normal vision in the right eye also have normal vision in the left. However, none of the differences between these percentages for boys and for girls is significant when tested by its probable error.

Probably a better way to show the relationship between vision in the two eyes is the method of correlation. The coefficient of correlation between vision in the right and in the left eye is $+0.73 \pm 0.003$, a rather high correlation and distinctly significant as tested by its

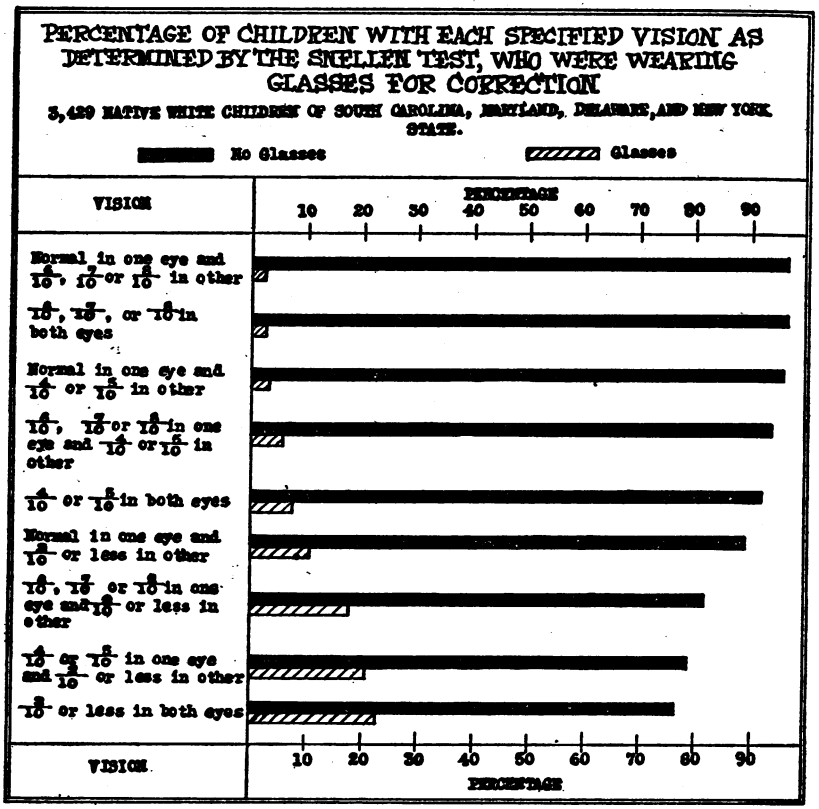

FIG. 3.

probable error. The coefficient for boys is $+0.71 \pm 0.005$ and for girls $+0.75 \pm 0.004$. The difference between the coefficient for boys and for girls, 0.04 ± 0.006 is small, but is significant as tested by its probable error, since it is more than six times the error.

Of the 9,245 children of both sexes on which the coefficient is based, 5,816, or 63 per cent, had normal vision in both eyes. This would of itself cause considerable correlation. It was therefore decided to eliminate the children who had normal vision in both eyes and find the correlation among the 3,429 who were defective in one or both eyes. The coefficient in this group is $+0.34 \pm 0.010$,

considerably less than that for the entire number of children, but a significant correlation as tested by its probable error. The coefficient for boys is $+0.28 \pm 0.015$, and for girls $+0.40 \pm 0.013$. The samples are not so large as when all children were considered, but the difference, 0.12 ± 0.020, is significant as tested by its probable error.

Just why the correlation between vision in the two eyes should be greater among girls than among boys is not clear.

CORRECTION OF VISUAL DEFECT.

In Table 6 and Figure 3 are shown the percentages of children with visual defect of various degrees of severity who were wearing glasses for correction. These rates are computed for two purposes—(1) to determine the extent of the use of glasses, and (2) to estimate the relative seriousness of the various defects by the percentage of children in a given class who were wearing glasses. The most striking fact shown by Figure 3 is the large percentage of these children with seriously defective vision who were not wearing glasses.

TABLE 6.—*Percentage of children of all ages with the specified vision as determined by the Snellen test, who were wearing glasses for correction.*

Correction.	Percentage.			Number.		
	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.
NORMAL IN ONE EYE AND $\frac{6}{10}$, $\frac{7}{10}$, OR $\frac{8}{10}$ IN OTHER.						
Total	100.0	100.0	100.0	944	454	490
Not corrected	97.1	97.1	97.1	917	441	476
Corrected (glasses)	2.9	2.9	2.9	27	13	14
Perfectly	1.6			15	7	8
Imperfectly	1.3			12	6	6
$\frac{6}{10}$, $\frac{7}{10}$, OR $\frac{8}{10}$ IN BOTH EYES.						
Total	100.0	100.0	100.0	1,560	729	831
Not corrected	97.1	97.5	96.8	1,515	711	804
Corrected (glasses)	2.9	2.5	3.2	45	18	27
Perfectly	.8			13	5	8
Imperfectly	2.1			32	13	19
NORMAL IN ONE EYE AND $\frac{4}{10}$ OR $\frac{5}{10}$ IN OTHER.						
Total	100.0	100.0	100.0	94	50	44
Not corrected	96.8	98.0	95.5	91	49	42
Corrected (glasses)	3.2	2.0	4.5	3	1	2
Perfectly	1.1			1	1	
Imperfectly	2.1			2		2
$\frac{6}{10}$, $\frac{7}{10}$, OR $\frac{8}{10}$ IN ONE EYE AND $\frac{4}{10}$ OR $\frac{5}{10}$ IN OTHER.						
Total	100.0	100.0	100.0	222	118	104
Not corrected	94.6	95.8	93.3	210	113	97
Corrected (glasses)	5.4	4.2	6.7	12	5	7
Perfectly	.9			2		2
Imperfectly	4.5			10	5	5

TABLE 6.—*Percentage of children of all ages with the specified vision as determined by the Snellen test, who were wearing glasses for correction*—Continued.

Correction.	Percentage.			Number.		
	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.
$\frac{3}{10}$ OR $\frac{4}{10}$ IN BOTH EYES.						
Total	100.0	100.0	100.0	245	120	125
Not corrected	92.7	95.8	89.6	227	115	112
Corrected (glasses)	7.3	4.2	10.4	18	5	13
Perfectly						
Imperfectly	7.3			18	5	13
NORMAL IN ONE EYE AND $\frac{3}{10}$ OR LESS IN OTHER.						
Total	100.0	100.0	100.0	78	49	29
Not corrected	89.7	91.8	86.2	70	45	25
Corrected (glasses)	10.3	8.2	13.8	8	4	4
Perfectly						
Imperfectly	10.3			8	4	4
$\frac{6}{10}$, $\frac{7}{10}$, OR $\frac{8}{10}$ IN ONE EYE AND $\frac{3}{10}$ OR LESS IN OTHER.						
Total	100.0	100.0	100.0	67	41	26
Not corrected	82.1	87.8	73.1	55	36	19
Corrected (glasses)	17.9	12.2	26.9	12	5	7
Perfectly	3.0			2		2
Imperfectly	14.9			10	5	5
$\frac{4}{10}$ OR $\frac{5}{10}$ IN ONE EYE AND $\frac{3}{10}$ OR LESS IN OTHER.						
Total	100.0	100.0	100.0	72	32	40
Not corrected	79.2	75.0	82.5	57	24	33
Corrected (glasses)	20.8	25.0	17.5	15	8	7
Perfectly						
Imperfectly	20.8			15	8	7
$\frac{3}{10}$ OR LESS IN BOTH EYES.						
Total	100.0	100.0	100.0	147	69	78
Not corrected	77.6	78.3	76.9	114	54	60
Corrected (glasses)	22.4	21.7	23.1	33	15	18
Perfectly	1.4			2		2
Imperfectly	21.1			31	15	16

It will be observed on consulting the table that the percentage of the children included in this study who were wearing glasses is small. Only 22 per cent of the children with $\frac{3}{10}$ or less in both eyes were wearing glasses. Of the children with vision of $\frac{3}{10}$ or less in one eye and normal in the other, 10 per cent were wearing glasses; but of those with $\frac{3}{10}$ or less in one eye and $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in the other eye, 18 per cent were wearing glasses. These figures suggest that one good eye combined with one poor eye is considerably less of a handicap than one slightly defective eye combined with one poor eye.

TABLE 7.—*Percentage of children with poor vision who were wearing glasses to correct the defect—925 children with vision $\frac{5}{10}$ or less, as determined by the Snellen test.*

Sex and correction.	All ages.	Age group.		
		6 to 9 years.	10 to 13 years.	14 to 16 years.
PERCENTAGE.				
Both sexes, total	100.0	100.0	100.0	100.0
Not corrected	89.1	94.0	89.1	77.2
Corrected (glasses)	10.9	6.0	10.9	22.8
Boys, total	100.0	100.0	100.0	100.0
Not corrected	91.0	95.5	89.4	85.1
Corrected (glasses)	9.0	4.5	10.6	14.9
Girls, total	100.0	100.0	100.0	100.0
Not corrected	87.0	92.2	88.8	69.6
Corrected (glasses)	13.0	7.8	11.2	30.4
NUMBER.				
Both sexes, total	925	331	458	136
Not corrected	824	311	408	105
Corrected (glasses)	101	20	50	31
Boys, total	479	177	235	67
Not corrected	436	169	210	57
Corrected (glasses)	43	8	25	10
Girls, total	446	154	223	69
Not corrected	388	142	198	48
Corrected (glasses)	58	12	25	21

Table 7 shows by age groups the percentage of children with vision $\frac{5}{10}$ or less in either eye who were wearing glasses for correction. It will be noted that the percentage who wear glasses increases with age, but even among children 14 to 16 years of age only 23 per cent have glasses.

SUMMARY.

Snellen's eye tests were made of 9,245 children from 6 to 16 years of age in South Carolina, Maryland, Delaware, and New York State.

Of the children of all ages, 63 per cent were found to be normal ($\frac{10}{10}$ or better) in both eyes, 27 per cent moderately defective ($\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in one eye and $\frac{6}{10}$ or better in the other), and 10 per cent had rather poor vision ($\frac{5}{10}$ or less) in one or both eyes.

The percentage of boys with normal vision in both eyes was slightly greater than the percentage of girls. Conversely, the percentage of girls with moderately defective vision was higher than that of boys, but the percentage with poor vision was about the same for the two sexes.

The percentage of children with normal vision ($\frac{10}{10}$ or better) in both eyes increased with age. The increase, however, was all in the class with vision better than $\frac{7}{10}$. The percentage of children with moderately defective vision decreased with age, but the percentage with markedly defective vision ($\frac{3}{10}$ or less in one or both eyes) increased markedly with age.

About 89 per cent of the children with vision as poor as $\frac{5}{10}$ or less in one or both eyes did not have glasses. The percentage of children who were wearing glasses increased with age.

Appendix.

TABLE 8.—*Number of children examined and the number with each specified vision (Snellen test) by sex and age.*

Vision.	Age nearest birthday.											
	All ages.	6	7	8	9	10	11	12	13	14	15	16
BOTH SEXES.												
Number examined	9,245	393	933	1,121	1,225	1,230	1,108	1,050	906	686	390	203
Normal in both eyes	5,816	229	547	675	739	773	691	700	613	454	262	133
Normal in one eye and $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in other	944	47	93	118	152	123	103	103	69	70	39	27
$\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in both eyes	1,560	79	200	225	237	201	204	139	117	97	44	17
Normal in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	94	5	14	10	10	11	13	12	9	6	3	1
$\frac{4}{10}$, $\frac{5}{10}$, or $\frac{6}{10}$ in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	222	14	22	29	26	28	31	28	21	9	10	4
$\frac{4}{10}$ or $\frac{5}{10}$ in both eyes	245	11	31	37	31	37	24	19	24	19	9	3
Normal in one eye and $\frac{3}{10}$ or less in other	78	2	5	4	7	12	6	11	13	6	6	6
$\frac{4}{10}$, $\frac{5}{10}$, or $\frac{6}{10}$ in one eye and $\frac{3}{10}$ or less in other	67	------	8	9	5	7	9	7	6	7	4	5
$\frac{3}{10}$ or $\frac{4}{10}$ in one eye and $\frac{3}{10}$ or less in other	72	1	7	5	5	12	9	8	11	8	2	4
$\frac{3}{10}$ or less in both eyes	147	5	6	9	13	26	18	23	23	10	11	3
BOYS.												
Number examined	4,774	205	492	590	631	683	568	533	444	339	193	96
Normal in both eyes	3,112	117	296	361	394	446	372	380	304	246	128	68
Normal in one eye and $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in other	454	26	51	62	65	69	45	43	32	30	20	11
$\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in both eyes	729	42	95	115	117	90	96	59	57	30	23	5
Normal in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	50	2	6	5	5	7	4	6	7	5	2	1
$\frac{4}{10}$, $\frac{5}{10}$, or $\frac{6}{10}$ in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	118	8	13	19	14	15	17	16	7	4	4	1
$\frac{4}{10}$ or $\frac{5}{10}$ in both eyes	120	5	15	17	21	20	11	6	11	9	4	1
Normal in one eye and $\frac{3}{10}$ or less in other	49	2	3	1	5	7	4	9	8	2	3	5
$\frac{4}{10}$, $\frac{5}{10}$, or $\frac{6}{10}$ in one eye and $\frac{3}{10}$ or less in other	41	------	7	4	2	5	5	4	4	6	1	3
$\frac{3}{10}$ or $\frac{4}{10}$ in one eye and $\frac{3}{10}$ or less in other	32	------	4	2	2	10	2	3	4	3	1	1
$\frac{3}{10}$ or less in both eyes	69	3	2	4	6	14	12	7	10	4	7	------
GIRLS.												
Number examined	4,471	188	441	531	594	547	540	517	462	347	197	107
Normal in both eyes	2,704	112	251	314	345	327	319	320	309	208	134	65
Normal in one eye and $\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in other	490	21	42	56	87	54	58	60	37	40	19	16
$\frac{6}{10}$, $\frac{7}{10}$, or $\frac{8}{10}$ in both eyes	831	37	105	110	120	111	108	80	60	67	21	12
Normal in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	44	3	8	5	5	4	9	6	2	1	1	------
$\frac{4}{10}$, $\frac{5}{10}$, or $\frac{6}{10}$ in one eye and $\frac{4}{10}$ or $\frac{5}{10}$ in other	104	6	9	10	12	13	14	12	14	5	6	3
$\frac{4}{10}$ or $\frac{5}{10}$ in both eyes	125	6	16	20	10	17	13	13	13	10	5	2
Normal in one eye and $\frac{3}{10}$ or less in other	29	------	2	3	2	5	2	2	5	4	3	1
$\frac{4}{10}$, $\frac{5}{10}$, or $\frac{6}{10}$ in one eye and $\frac{3}{10}$ or less in other	26	------	1	5	3	2	4	3	2	1	3	2
$\frac{3}{10}$ or $\frac{4}{10}$ in one eye and $\frac{3}{10}$ or less in other	40	1	3	3	3	2	7	5	7	5	1	3
$\frac{3}{10}$ or less in both eyes	78	2	4	5	7	12	6	16	13	6	4	3

TABLE 9.—*Number of children of each age with each specified vision in each eye—9,245 native white children of South Carolina, Maryland, Delaware, and New York State.*

Vision.	All ages.	Age nearest birthday.										
		6	7	8	9	10	11	12	13	14	15	16
BOTH SEXES.												
Right eye, total	9,245	393	933	1,121	1,225	1,230	1,108	1,050	906	686	390	203
Normal	6,370	253	595	735	829	849	746	767	671	496	281	148
6/6, 7/6, or 8/6	2,182	115	263	317	327	273	284	199	160	135	73	36
4/6 or 5/6	437	18	52	52	47	68	53	45	43	29	18	6
1/6, 2/6, or 3/6	256	7	17	17	22	40	25	39	32	26	18	13
Left eye, total	9,245	393	933	1,121	1,225	1,230	1,108	1,050	906	686	390	203
Normal	6,378	259	611	747	818	843	758	759	646	494	291	152
6/6, 7/6, or 8/6	2,171	104	260	289	330	287	267	217	170	145	68	34
4/6 or 5/6	441	24	47	66	56	57	48	41	46	32	15	9
1/6, 2/6, or 3/6	255	6	15	19	21	43	35	33	44	15	16	8
BOYS.												
Right eye, total	4,774	205	492	590	631	683	568	533	444	339	193	96
Normal	3,389	131	324	392	430	492	398	406	336	265	139	76
6/6, 7/6, or 8/6	1,040	61	131	167	160	130	128	93	75	47	36	12
4/6 or 5/6	216	8	29	24	29	38	27	17	19	15	8	2
1/6, 2/6, or 3/6	129	5	8	7	12	23	15	17	14	12	10	6
Left eye, total	4,774	205	492	590	631	683	568	533	444	339	193	96
Normal	3,388	133	328	398	433	483	399	412	319	264	142	77
6/6, 7/6, or 8/6	1,081	57	130	148	155	139	131	88	82	53	35	13
4/6 or 5/6	224	12	24	36	34	34	18	20	21	15	7	3
1/6, 2/6, or 3/6	131	3	10	8	9	27	20	13	22	7	9	3
GIRLS.												
Right eye, total	4,471	188	441	531	594	547	540	517	462	347	197	107
Normal	2,981	122	271	343	399	357	348	361	335	231	142	72
6/6, 7/6, or 8/6	1,142	54	132	150	167	143	156	106	85	88	37	24
4/6 or 5/6	221	10	29	28	18	30	26	28	24	14	10	4
1/6, 2/6, or 3/6	127	2	9	10	10	17	10	22	18	14	8	7
Left eye, total	4,471	188	441	531	594	547	540	517	462	347	197	107
Normal	2,990	126	283	349	385	360	359	347	327	230	149	75
6/6, 7/6, or 8/6	1,140	47	130	141	175	148	136	129	88	92	33	21
4/6 or 5/6	217	12	23	30	22	23	30	21	25	17	8	6
1/6, 2/6, or 3/6	124	3	5	11	12	16	15	20	22	8	7	5

ROCKY MOUNTAIN SPOTTED FEVER: EXPERIMENTAL STUDIES ON TICK VIRUS.

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The virus of Rocky Mountain spotted fever may be studied as it occurs in the tissues of susceptible mammals (tissue virus) or in the intermediate hosts, *Dermacentor andersoni* Stiles and *Haemaphysalis leporis-palustris* Packard[1] (tick virus). Observations during the

[1] Parker, R. R.: Transmission of Rocky Mountain Spotted Fever by the Rabbit Tick, Haemaphysalis leporis-palustris Packard. Am. Jour. Trop. Med., Vol. III, No. 1, January, 1923.

past two years have indicated that tick virus possesses interesting and perhaps significant phases in its development not observed in tissue virus. In a previous paper [2] we described a nonvirulent immunity-producing phase of the tick virus in unfed infected ticks, and a reactivation of such virus to a virulent infectious stage following the ingestion of fresh blood by the ticks. These preliminary studies were made on infected ticks collected in nature. For further and more detailed observations, ticks have been infected under controlled conditions. To this end, the progeny of single noninfected females have been used as units designated by lot numbers and have been infected by permitting them to engorge during either the larval or nymphal stage upon a rodent inoculated with spotted fever virus. In this way many infected ticks of identical history have been secured. Furthermore, this method of infecting ticks is comparable in large measure to that taking place in nature, since the immature stages [3] feed on wild rodents susceptible to spotted fever.

On the other hand, infection is seldom acquired by adult ticks, the majority of which feed on nonsusceptible large mammals, wild and domestic.

In previous experimental work the importance of infecting ticks during one of the immature stages has not been emphasized. While adult ticks are more readily obtained and more easily handled and controlled than the smaller nymphs and larvæ, nevertheless, infected at the adult stage, they often fail to transmit the fever when permitted to feed again upon a healthy animal, although the injection of their viscera soon after feeding is usually successful.[4] However, adult females receiving the infection and permitted to come to full engorge-

[2] Spencer, R. R., and Parker, R. R.: Rocky Mountain Spotted Fever: Infectivity of Fasting and Recently Fed Ticks. Pub. Health Rep., Vol. 38, No. 8, Feb. 23, 1923, pp. 333-339. (Reprint No. 894.)

[3] *D. andersoni*, like many other external parasites, undergoes an interesting and complicated life cycle. The adult female, after engorging to many times its normal size, drops from its host and crawls to a sheltered place. Before leaving the host the female is impregnated by the male, which feeds only a short time before seeking its mate. The female remains quiescent a week or more, depending on the temperature, and then begins the deposition of eggs—from 2,000 to 7,000 in number. This sometimes takes a month or even longer. These hatch to seed ticks or larvæ, which are not more than one thirty-second part of an inch in their longest diameter. These six-legged larvæ feed on rodents, such as ground squirrels, chipmunks, field mice, rabbits, etc.; 50 or more may be found on one small host. After feeding from two to four days and attaining the size of a millet seed, they drop to the ground, pass through a dormant stage, and shed the outer skin, emerging as eight-legged nymphs which are sexually undifferentiated. They do not become active, however, until the following spring. Like the larvæ, they feed on rodents and engorge in from 3 to 10 days, finally reaching a size slightly smaller than buckshot. The engorged nymphs then molt to the adult ticks—males and females—which pass the winter in a dormant condition. The adults attach themselves only to large animals, including man, and are seldom found on animals smaller than a jack rabbit. The larval and nymphal ticks, on the other hand, have never been found on any but small animals, though occasionally nymphs have been removed from children. Although under normal conditions the cycle from egg to adult is completed in two years, it frequently happens that the ticks do not secure a host during the season in which they become active. This causes a high mortality among the larvæ and nymphs. The adults are able to survive for two, three, and occasionally four years without feeding. In this way the life cycle may be considerably lengthened. In the laboratory, however, they are often forced by artificial means to complete the cycle in three months.

The life cycle of *Haemaphysalis leporis-palustris* (rabbit tick) has not been completely worked out for this locality (Hamilton, Mont.).

[4] Spencer, R. R., and Parker, R. R.: Loc. cit.

ment may transmit it through the eggs to the next generation. The infection may then be recovered in animals by (*a*) injection of deposited eggs—a single egg (0.0006 gm.) has been found infective—(*b*) feeding the resultant larvæ or nymphs, (*c*) injection of the larval or nymphal contents. The last test should preferably be made soon after molting and before hibernation of the larvæ or nymphs.

On the other hand, adults which have been infected during one of the immature stages of the life cycle, if tested after passing through the winter, readily infect animals by feeding, whereas injection of tick contents does not infect unless the ticks are first incubated or fed. Further, the virus in fed adults infected in either of the early stages has been found to be more highly fatal and more concentrated than either tissue virus or tick virus at other stages. Recent tests, not included in this paper, indicate considerable concentration of virus in engorged nymphs which have been infected as larvæ, and in engorged larvæ which have been infected in the previous generation. In addition, the killed virus of such adult ticks possesses an immunizing quality never encountered in blood virus.

Before giving our data in support of these statements certain general considerations relative to the underlying conditions in nature and upon which the maintenance of Rocky Mountain spotted fever rests should be briefly reviewed. Chief among such considerations are—

1. The disease is maintained in rodents and ticks; human cases are secondary and accidental.

2. The disease exists in definite foci, and the virulence of the infection may vary decidedly even in adjacent areas.

3. A large number of rodent species are susceptible, but there is no evidence that the infection is highly fatal among them.

4. The complete life cycle of the tick includes four stages, and the infection may pass from stage to stage and from one generation to the next.

5. A disintegration of tissue (histolysis) takes place during the premolting period of larvæ and nymphs.

6. The tick ingests mammalian blood three times during the cycle—twice from small rodents (most of them susceptible to spotted fever) as larvæ and nymphs and once from large animals (all immune as far as known except that some adults feed on jack rabbit, snowshoe rabbits, and porcupines, of which animals at least the first two are susceptible to spotted fever) as adults.

7. The virus passes through the egg and larval stages of the tick in one summer, but in the unfed nymphs and adults it has been compelled to adapt itself to the hibernation (also æstivation in the adult) which these stages undergo.

8. The infective agent experiences a sudden change in environment when it passes from mammalian blood to that of the insect host, and vice versa.

9. The mammalian host provides a far more regular and unchanging environment as regards temperature for the virus than the cold-blooded tick.

1. DEVELOPMENTAL PHASES OF TICK VIRUS.

In Table 1 it may be seen that infected adult ticks, infected as larvæ, lot 2351–B [5] recently molted and not subjected to cold, produced spotted fever when injected intraperitoneally into guinea pigs. Ticks from the same lot after 39 days, and again after 112 days, in the ice box did not produce fever upon injection. However, 4 out of 8 ticks so tested immunized the guinea pigs against 1 c. c. of blood virus given 10 days after the injection. Yet simultaneous tests with ticks from the same lot incubated at 37° C. for 24 hours after removal from the ice box produced spotted fever in 6 out of 8 guinea pigs.

TABLE 1.—*Studies of tick virus in adults of lot No. 2351–B–(2A)—Intraperitoneal injection of tick viscera into guinea pigs, contents of 1 tick into each pig. All pigs surviving tick inoculation 10 days or more were given 1 c. c. of blood virus.*

Test No.	Date.	Condition or preparation of tick.	Result of guinea pig inoculation.
1	Sept. 12, 1923	Recently molted, kept at room temperature	Typical spotted fever.
2	do	do	Do.
3	do	do	Do.
4	Oct. 31, 1923	Ice box 39 days, Sept. 12 to Oct. 31	No fever.
5	do	do	Do.
6	do	do	Do.
7	do	do	No fever; later immune.
8	Nov. 1, 1923	Ice box 39 days; 37° C. for 24 hours	Typical spotted fever.
9	do	do	Do.
10	do	do	Do.
11	do	do	No fever; later immune.
12	Jan. 2, 1924	Ice box 112 days, Sept. 12, 1923, to Jan. 2, 1924	No fever.
13	do	do	No fever; later immune.
14	do	do	Do.
15	do	do	Do.
16	Jan. 3, 1924	Ice box 112 days; 37° C. for 24 hours	No fever.
17	do	do	Typical spotted fever.
18	do	do	Do.
19	do	do	Do.

[5] History of lot 2351–B—

Apr. 11, 1923: One fully engorged female tick secured from a horse west of Hamilton, Mont.

May 5, 1923: Eggs deposited by female hatched to larvæ.

July 1, 1923: Larvæ placed on a Belgian rabbit which had previously been inoculated with 1 c. c. of *guinea pig virus*.

July 9, 1923: Twenty-five fully engorged larvæ injected into guinea pig No. 3986. Typical spotted fever developed.

Aug. 8, 1923: Engorged larvæ had now molted to flat nymphs, and the latter were placed on a normal Belgian rabbit.

Aug. 15, 1923: Five engorged nymphs injected into guinea pig No. 4637. Animal developed typical spotted fever.

Sept. 8, 1923: Engorged nymphs had all molted to adults, some of which were forwarded to the Hygienic Laboratory at Washington and placed in the ice box (0° C.), while the others were placed outdoors in glass cylinders at Hamilton, Mont.

TABLE 2.—*Studies of tick virus in unfed nymphs of lots 969c and 788—Intraperitoneal injection of tick viscera into guinea pigs, contents of one tick into each pig—All pigs surviving tick inoculation 10 days or more were given 1 c. c. of blood virus.*

Lot data.	Not incubated.		Incubated.	
	Taken from ice box Dec. 17, 1922, and inoculated immediately.		Taken from ice box Dec. 19, 1922, incubated 24 hours at 37° C., and then inoculated.	
	Tick No.	Result of inoculation.	Tick No.	Result of inoculation.
Lot 969c. Larvae infected Aug. 31, 1922. Began molting to nymphs Sept. 18, 1922. Unfed nymphs kept in ice box.	1	Spotted fever, fatal.	19	Spotted fever, fatal.
	2	Spotted fever, recovered.	20	Do.
	3	Do.	21	Do.
	4	Do.	22	Do.
	5	Immunity.	23	Do.
	6	Negative.	24	Do.
	7	Do.	25	Do.
	8	Do.	26	Negative.
	9	Do.		
	10	Do.		
	Taken from ice box Dec. 19, 1922, and inoculated immediately.		Taken from ice box Dec. 20, 1922, incubated 24 hours at 37° C., and then inoculated.	
Lot 788. Larvae infected Aug. 2, 1922. Began molting to nymphs Aug. 18, 1922. Unfed nymphs kept in ice box.	11	Immunity.	27	Spotted fever, fatal.
	12	Do.	28	Do.
	13	Do.	29	Do.
	14	Do.	30	Do.
	15	Negative.	31	Do.
	16	Do.	32	Do.
	17	Do.	33	Spotted fever, recovered.
	18	Do.	34	Do.
			35	Do.
			36	Do.
			37	Negative.

Table 2 also demonstrates the increased virulence of tick virus following incubation, in this case in unfed infected nymphs. It will be noted that some of the nonincubated nymphs of lot 969–C produced mild spotted fever, whereas when infection occurred due to inoculation with the incubated nymphs it was always fatal. Although mild infection followed injection of several of the nonincubated nymphs of the above lot, the nonincubated nymphs of lot 788 produced immunity only, closely paralleling results with nonincubated infected adults.

Charts 1, 2, and 3 have been prepared to compare the virulence of spotted-fever virus in unfed, unfed and incubated, and incubated and fed adult ticks.

Chart 1 gives the temperature curves of guinea pigs injected with one infected tick each, taken directly from the ice box. The first four tests were carried out on October 31, 1923, the last three on January 2, 1924. In five pigs no fever followed the injection. Two showed an elevation of 39.8° C. and 40° C., respectively, for one day

each.[6] The subsequent injection of blood virus was negative in two pigs, indicating complete immunity. The others developed mild fevers. The results here are similar to those obtained when unfed, hibernated adults from nature are tested by injection into guinea pigs.[7]

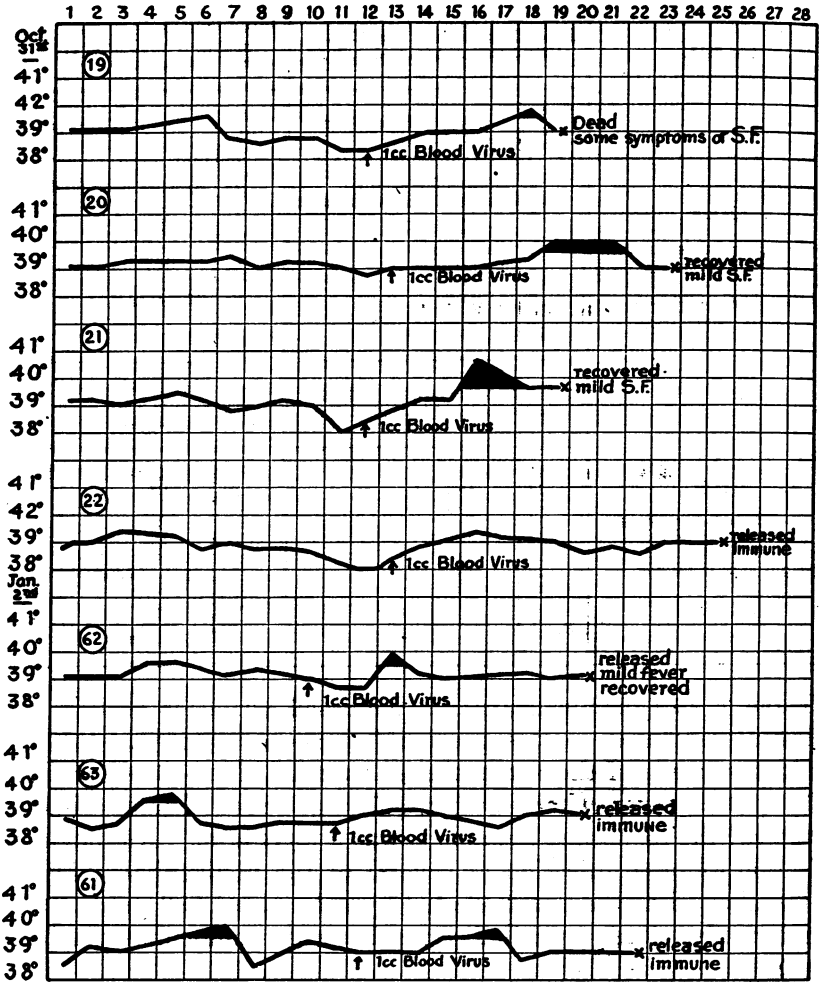

CHART 1.—Lot 2351-B-(2A). Unincubated and unfed ticks injected immediately upon removal from ice box.

The tests of Chart 2 were identical with those of Chart 1, except that in the former the ticks were incubated 24 hours at 37° C. All the guinea pigs developed spotted fever with typical external lesions and survived 10 days or more.

[6] We have considered any temperature in guinea pigs above 39.6° C. to be a definite fever, and areas in the chart lying between this line and the temperature curve are shaded in black. While some investigators consider 39.2° C. to be the upper limit of a normal guinea pig's temperature, it is believed the temperature varies considerably with that of the surrounding air and the age of the animal. Young pigs run a consistently higher temperature than those which have matured.

[7] Spencer, R. R., and Parker, R. R.; Loc. cit.

Chart 3 shows temperature curves of guinea pigs Nos. 87, 88, 90, and 94, upon each of which two ticks fed for three days (the arrows indicate the day on which the ticks were removed), and those of guinea pigs 87–A and 87–B, 88–A and 88–B, 90–A and 90–B, 94–A and 94–B, which were injected with the viscera of the ticks after

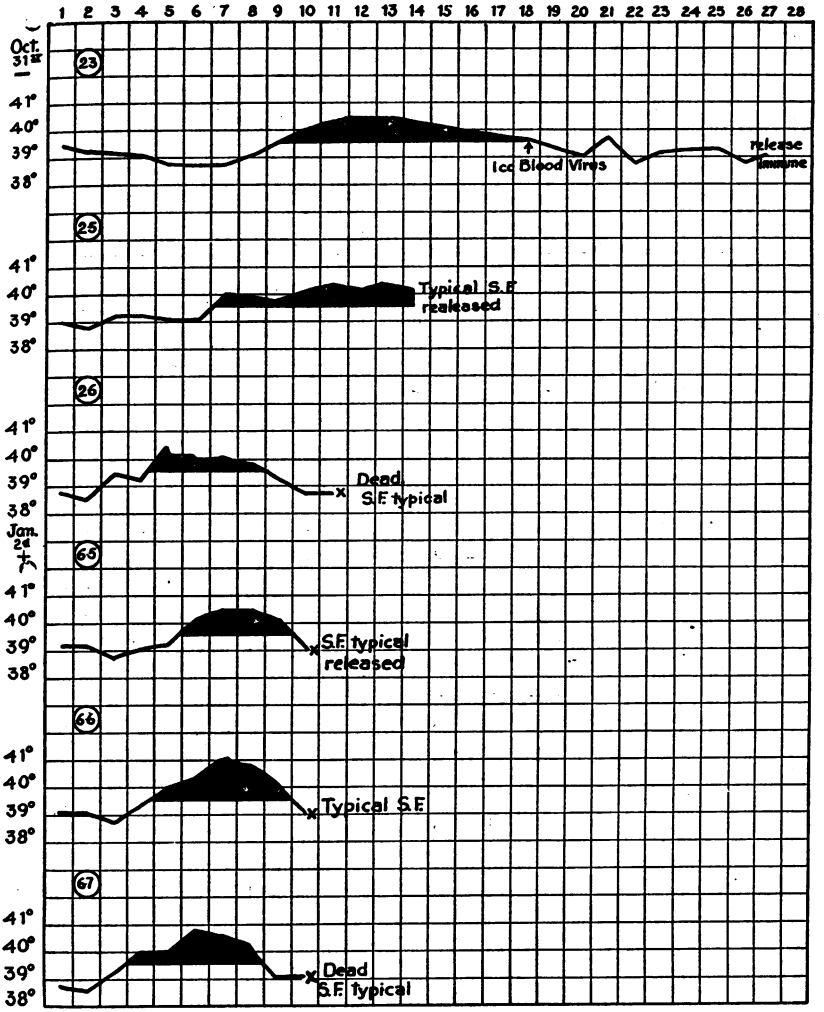

CHART 2.—Lot 2351–B–(2A). Unfed ticks removed from ice box, incubated 24 hours at 37° C., and injected peritoneally

removal. All 12 guinea pigs died, none surviving the tenth day, the majority dying within eight days, and one as early as four days. Post-mortem examination revealed the lesions of spotted fever in all cases, although five of the pigs ran practically an afebrile course, the temperature never exceeding 39.6° C. In the case of pig A–87, which died on the fourth day without elevation of temperature, two fresh pigs were inoculated intraperitoneally with an emulsion

of the spleen. Both animals ran a fever and showed scrotal lesions of spotted fever.

Chart 4 presents the temperature curves of three guinea pigs upon which there fed, respectively, 10, 13, and 9 ticks from the uninfected control lot 1988–E. After three days' feeding they were removed and their emulsified viscera injected intraperitoneally into their respective hosts. No elevation of temperature followed. After

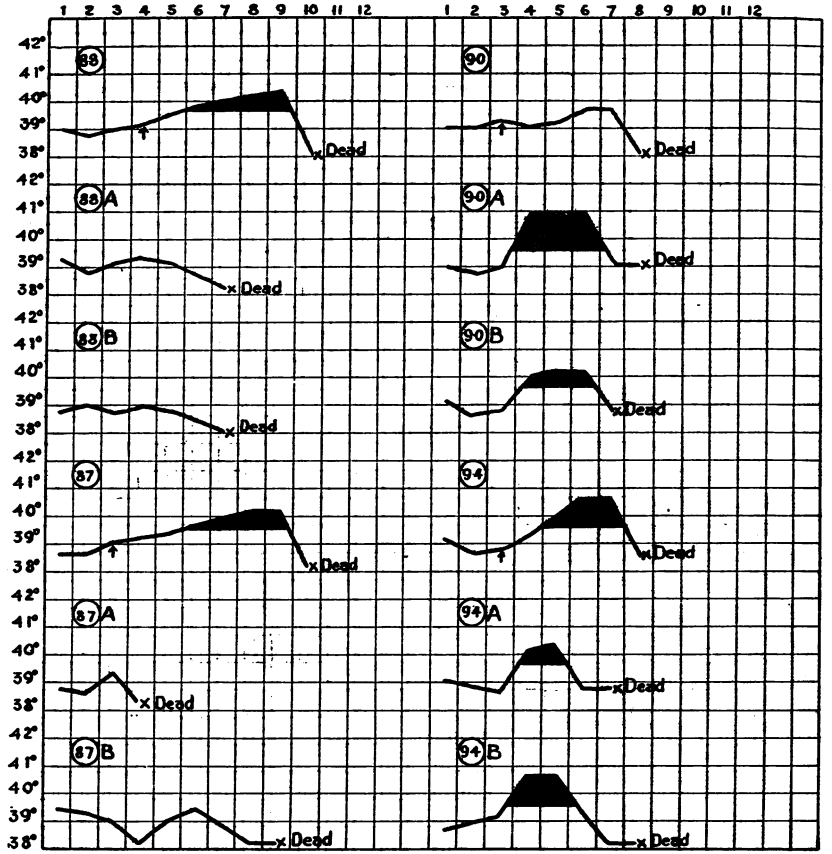

CHART 3.—Lot 2351-B-(2A). Ticks removed from ice box, incubated 24 hours at 37° C., then fed 3 days and injected intraperitoneally.

12 days 1 c. c. of blood virus was given and was followed by typical spotted fever. This chart shows that a large number of uninfected fed ticks will not kill guinea pigs either by feeding or intraperitoneal injection of their viscera after feeding, nor will such injections immunize.

Comparative studies of Charts 1, 2, and 3 reveal remarkable differences. Of 7 guinea pigs inoculated with *unfed, unincubated infected* ticks (Chart 1), not one developed typical spotted fever, although the presence of the virus was indicated by the results of

subsequent immunity tests, some guinea pigs being entirely and some partly immune. Of 6 guinea pigs injected with *incubated infected* ticks (Chart 2), all developed spotted fever, but survived 10 days or longer. Of 4 guinea pigs on which 2 *incubated infected* ticks each were allowed to feed (chart 3), all died of spotted fever in 10 days or less, and of 8 guinea pigs into which these identical *fed* ticks were inoculated, all died in 4 to 9 days. These differences are observed in a lot of ticks, the progeny of a single female. They were infected on the same host at the same time and subsequently kept in the same environment until the beginning of the test. Virulence of low grade is manifested in *unfed, unincubated* ticks taken directly from the ice box; virulence sufficient to produce definite spotted fever

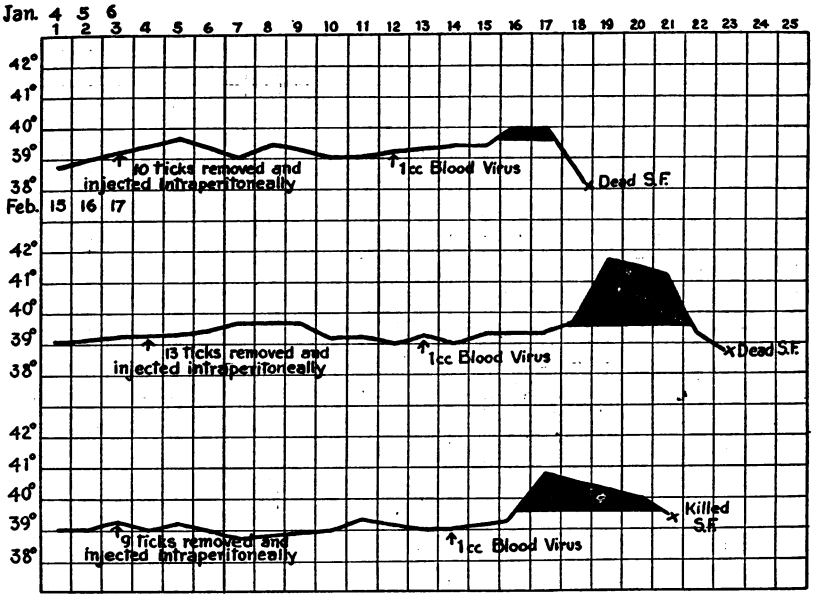

CHART 4.—Lot 1988-E. Noninfected control ticks.

but no early deaths is seen in the *unfed, incubated* ticks, and a virulence of high degree in ticks *incubated* 24 hours at 37° C. and then *fed* for three days on a guinea pig. In brief, a progressive development of the virulence has taken place. Nothing comparable to this is seen in a strain of tissue virus, the virulence of which remains fairly constant for months.

Many more tests aside from those given in charts 1, 2, and 3 were performed. Some ticks of this infected group (2351–B) failed to give infection, but no results were obtained inconsistent with those outlined in the charts. Chart 4, however, represents the total number (32) of uninfected ticks tested as controls.

Chart 5 represents the results of injecting guinea pigs on January 5, 1924, with various dilutions of a tick virus emulsion. The viscera

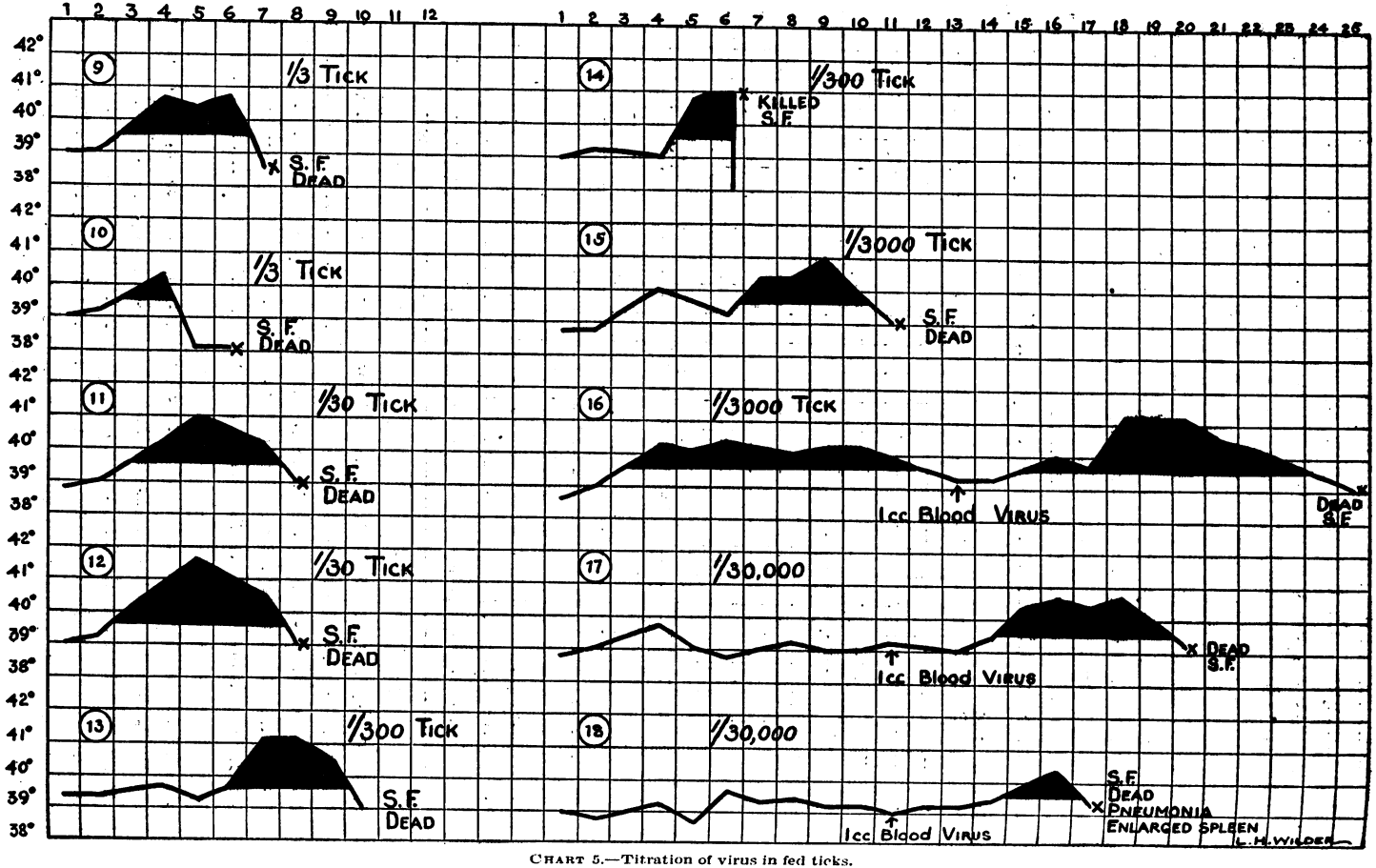

CHART 5.—Titration of virus in fed ticks.

of infected adults of lot 2351–B were ground in a mortar with a small amount of salt solution. Dilutions were made so that 1 c. c. of each represented a definite fractional part of a tick and each such fraction was inoculated into two guinea pigs. All guinea pigs receiving from 1/3 to 1/3,000 of a tick developed spotted fever, except one animal that received the latter dilution. Although this guinea pig developed fever, it was shown not to be spotted fever by the subsequent immunity test. Both 1/30,000 dilutions were negative. Subsequent titrations of virus from the same tick lot made on March 28, 1924, gave an infectious dose as low as 1/5,000 of a tick.

The contents of one adult tick after three days' feeding (the same as used for titrations) weighs about 0.01 gram and therefore 5,000 M. I. D. (minimum infectious dose) of tick virus may be concentrated in this amount of recently fed tick tissue. The tick has served, therefore, as a more efficient culture media than the guinea pig, the blood of which is infectious in minimal doses of from 1/100 to 1/1000 c. c. On this basis, tick virus of adult ticks when reactivated by freshly ingested blood may contain, volume for volume, 500 to 5,000 times as many M. I. D. as guinea pig serum virus.

Titration of tick virus from 15 lots of engorged larvæ and 11 lots of engorged nymphs indicates that they do not contain as potent a virus as that found in the recently fed adults. The difficulties experienced in rearing rabbit ticks (*Haemaphysalis leporis-palustris* Packard) have thus far prevented titration of the virus of this species, which is, perhaps, an equally important factor in the maintenance of spotted fever in nature as *Dermacentor andersoni*.

On the same date (March 28, 1924) that titrations of lot 2351–B tick virus gave 1/5000 of a *fed* adult tick as the M. I. D., control tests with *unfed* adults of the same lot were made in order to exclude a spontaneous increase in virulence and infectiousness in the unfed ticks during their long exposure to a cold environment without the stimulus of heat or blood (subsequent to the tests made on October 31 and January 2, see Chart 1). Eight *unfed* and *unincubated* ticks of this lot kept outdoors at Hamilton, Mont., all winter were injected into eight guinea pigs on March 28, 1924. None of these died or developed a typical spotted fever, but three were immune to a subsequent injection of blood virus. This result was similar to that secured by a similar test on four of these ticks on October 31 of the previous year (Chart 1), and, therefore, indicate that the results of the titration as made on January 5 (Chart 5) and March 28, 1924, were due to a reactivation of the tick virus by *incubation* and *feeding* (titration of January 5, Chart 5) and feeding alone (March 28) in the respective instances. It should be stated that on January 5 the ticks would not feed without incubation, whereas on March 28 incubation was not necessary. Feeding alone is apparently sufficient

to bring the virus to its highest virulence and concentration, and it is necessary to resort to previous incubation only during the winter months, when ticks usually refuse to feed.

2. INJECTION OF PHENOLIZED TICK VIRUS.

Chart 6 gives the temperature records of 10 guinea pigs inoculated subcutaneously with 1 c. c. of infected, fed, adult tick viscera emul-

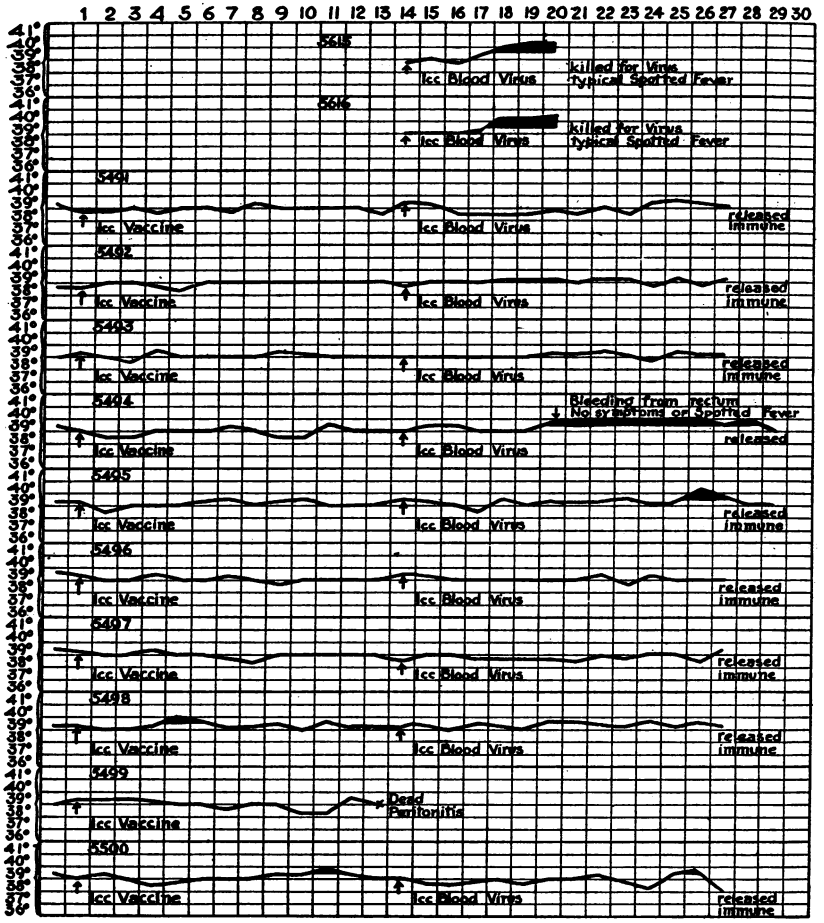

CHART 6.—Injection of phenolized tick virus.

sified in salt solution, the virus having been killed by the addition of 0.5 per cent phenol. The "vaccine" was prepared so that each cubic centimeter contained the equivalent of one tick. Before being used, it had remained in the ice box over 20 days. Titration of the virus before the addition of phenol gave a M. I. D. of 1/5000 tick. Therefore each animal received 5,000 infectious doses of killed virus. Guinea pigs Nos. 5615 and 5616 were control animals which demonstrated the infectiousness of the blood virus given on the fourteenth

day after inoculation. Guinea pig No. 5495 gave a fever of short duration on the eleventh day following the immunity test, but there was no evidence of spotted fever. Only two guinea pigs, Nos. 5498 and 5500, had elevation of temperature following vaccination. Their temperatures each reached 40° C. for one day and were probably not due to the vaccine.

The table indicates that the killed virus in the contents of one fed, infected tick is sufficient to protect guinea pigs. Vaccine preparations from other infected tick lots have never failed to protect when the same amounts are used, and therefore further concentration of the material has not thus far been attempted. The duration of this immunity, the minimal immunizing dose, and the period following vaccination before immunity is established are not yet known. The feasibility of human vaccination also naturally arises. In this connection, the relative harmlessness of tick material is suggested by the absence of secondary infection following the intraperitoneal injection into guinea pigs of the macerated viscera of 32 uninfected ticks after feeding (Chart 4) and in the one instance in which the vaccine has been administered subcutaneously to man (9,500 M. I. D. of killed virus), slight local and no constitutional reaction followed.

3. COMPARISON OF TICK AND TISSUE VIRUS.

Breinl,[8] in recent studies on the virus of typhus fever in lice, has emphasized the characteristics of louse virus as distinguished from animal-tissue virus. He observed in animals inoculated intraperitoneally with louse virus a shorter period of latency, a more irregular fever, and a higher death rate than among animals inoculated with tissue virus, and concluded that the irregular fever was due to the effect of large quantities of dead virus in the presence of live virus. Further, he concluded that the louse tissue contained far in excess of 100,000 doses of dead virus because of the inability to produce immunity with an amount of dead guinea-pig virus which contained this number of M. I. D. The observed differences between tissue virus and louse virus in typhus are seen to be somewhat analogous to those found by us between tick virus and guinea pig virus in Rocky Mountain spotted fever. However, in interpreting our results we do not believe that the atypical infection following the use of tick virus is due to the combined action of dead and living organisms. We are rather inclined to the view that a decided change of the virus in quality or quantity or both has taken place. The afebrile and fatal infection following tick feeding *as well as injection of tick contents* (Chart 3) can not be readily accounted for on the ground of an interaction between live and dead virus, for it is highly improbable that

[8] Breinl, F.: Studies of Typhus Virus in the Louse. Jour. Inf. Dis., Vol. 34, No. 1, Jan., 1924.

large quantities of dead virus can be injected into an animal by means of tick feeding. We have recently observed in rabbits also a highly fatal infection following the feeding of infected ticks upon them. Yet, as every one working with Rocky Mountain spotted fever knows, it is extremely rare to observe a fatal outcome in rabbits following the inoculation of the usual laboratory strain preserved by passage through guinea pigs.

In contrast with the mammalian host, the stages in the life cycle of the tick must influence the life of the contained virus, which strongly suggests the existence of a cycle in the life of the virus also. Phases of this cycle are herein indicated by the variations in virulence and infectivity (Charts 1, 2, and 3) of tick virus and the variation implied in the fact that killed-tick virus possesses strong immunizing power never exhibited by killed-tissue virus.

SUMMARY.

1. In confirmation of earlier observations of previous workers, ticks of the species *D. andersoni* which have received the infection of Rocky Mountain spotted fever in the larval or nymphal stage retain it in the adult stage.

2. A 24-hour incubation at 37° C. of unfed hibernating nymphs and adults infected as larvæ and subsequent injection of emulsions of such ticks into guinea pigs give a higher percentage of positive infection than the injection of similar ticks not incubated.

3. Infection of Rocky Mountain spotted fever in adult ticks subjected to winter temperatures (32° F. or below) may be demonstrated by the production of immunity in guinea pigs following the injection of tick viscera immediately upon removal from cold temperatures, by a moderate but typical spotted fever following the injection of ticks after 24 hours incubation at 37° C., and by virulent spotted fever following tick feeding or the injection of ticks after feeding.

4. Control adult ticks free from all infection do not produce death or illness in guinea pigs by feeding nor by injection of such ticks after feeding.

5. One infected adult tick may contain after feeding, from 3,000 to 5,000 M. I. D. for a guinea pig.

6. Emulsion of infected fed adult ticks treated with 0.5 per cent phenol will protect guinea pigs against 1 c. c. of blood virus.

7. Nothing in the behavior of blood or tissue virus is comparable to the changes observed in tick virus.

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISION.

Piggery held not to be public nuisance. (Supreme Court of Michigan.)—When a business is not detrimental to the public health, a board of health is no longer interested in litigation concerning same.

Evidence in a suit to restrain the operation of a piggery where garbage was cooked and fed to pigs was held to show that the piggery was not a public nuisance, although disagreeable odors emanated from the piggery and the enjoyment and comfort of some persons in the neighborhood were interfered with. (Kalamazoo Township et al. *v.* Lee, 199 N. W. 609.)

Examination for Entrance into the Regular Corps of the United States Public Health Service.

Examinations of candidates for entrance into the Regular Corps of the United States Public Health Service will be held at the following-named places on the dates specified:

Washington, D. C., January 5, 1925.
Chicago, Ill., January 5, 1925.
New Orleans, La., January 5, 1925.
San Francisco, Calif., January 5, 1925.

Candidates must be not less than 23 nor more than 32 years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily, oral, written, and clinical tests before a board of medical officers and must undergo a physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, United States Public Health Service, Washington, D. C.

DEATHS DURING WEEK ENDED NOVEMBER 15, 1924.

Summary of information received by telegraph from industrial insurance companies for week ended November 15, 1924, and corresponding week of 1923. (From the Weekly Health Index, November 18, 1924, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Nov. 15, 1924.	Corresponding week, 1923.
Policies in force	57, 698, 430	53, 999, 841
Number of death claims	10, 057	9, 277
Death claims per 1,000 policies in force, annual rate	9. 1	9. 0

Deaths from all causes in certain large cities of the United States during the week ended November 15, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, November 18, 1924, issued by the Bureau of the Census, Department of Commerce.)

City.	Week ended Nov. 15, 1924.		Annual death rate per 1,000 corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended Nov. 15, 1924.[2]
	Total deaths.	Death rate.[1]		Week ended Nov. 15, 1924.	Corresponding week, 1923.	
Total (65 cities)	6,212	11.9	[3] 12.3	733	[3] 727	
Akron	27			3	3	32
Albany [4]	34	15.0	15.1	2	1	46
Atlanta	63	14.4	16.1	2	11	
Baltimore [4]	226	15.0	13.9	34	23	101
Birmingham	72	18.7	16.0	7	7	
Boston	236	15.8	14.8	23	37	64
Bridgeport	26			3	5	48
Buffalo	129	12.3	12.2	20	12	84
Cambridge	25	11.6	14.5	1	1	17
Camden	38	15.7	9.7	7	3	115
Chicago [4]	662	10.7	10.4	58	90	54
Cincinnati	107	13.7	13.9	19	17	119
Cleveland	159	9.1	10.0	16	26	41
Columbus	63	12.3	12.4	5	3	47
Dallas	41	11.4	10.6	8	5	
Dayton	34	10.5	13.5	7	7	117
Denver	83			11	9	
Des Moines	35	12.6	11.5	0	0	
Detroit	237			45	40	84
Duluth	10	4.8	11.3	0	2	0
Erie	23			1	2	21
Fall River [4]	22	9.5	8.6	8	5	113
Flint	17			2	4	35
Fort Worth	17	6.0	5.4	1	3	
Grand Rapids	30	10.5	8.2	0	2	0
Houston	48			2	3	
Indianapolis	98	14.6	14.0	11	11	81
Jacksonville, Fla	31	15.8	18.8	1	3	
Jersey City	64	10.7	13.2	13	13	93
Kansas City, Kans	25	11.1	14.0	1	3	19
Kansas City, Mo	103	14.9	13.9	11	12	
Los Angeles	221			21	28	66
Louisville	84	16.9	15.4	11	8	103
Lowell	25	11.3	14.0	4	4	71
Lynn	20	10.1	10.2	3	5	76
Memphis	78	23.6	18.4	8	5	
Milwaukee	83	8.8	11.0	14	13	66
Minneapolis	103	12.9	11.6	11	7	59
Nashville [4]	42	17.7	17.4	5	3	
New Bedford	21	8.3	6.4	4	2	62
New Haven	33	9.8	11.5	5	7	66
New Orleans	126	16.0	19.1	13	15	
New York	1,295	11.2	11.0	163	143	66
Bronx Borough	149	8.9	8.4	10	11	35
Brooklyn Borough	448	10.6	10.1	75	45	80
Manhattan Borough	553	12.7	13.4	71	78	72
Queens Borough	106	10.0	8.4	5	6	25
Richmond Borough	39	15.6	11.0	2	3	37
Newark, N. J	96	11.2	10.5	20	9	94
Norfolk	31	9.8	9.8	5	1	89
Oakland	52	11.0	11.1	3	2	38
Oklahoma City	19	9.5		6		
Omaha	46	11.5	12.5	2	1	21
Paterson	26	9.6	15.7	2	5	34
Philadelphia	475	12.7	12.9	66	45	84
Pittsburgh	144	12.0	15.0	27	21	92
Portland, Oreg	60	11.3	13.3	9	7	93
Providence	55	11.8	13.6	6	6	49
Richmond	57	16.2	15.3	3	6	36
Rochester	74	11.9		9		71
St. Louis	200	12.8	16.0	11	20	
St. Paul	41	8.8	12.1	2	5	17
Salt Lake City [4]	29	11.8	11.6	2	2	40

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, November 14, 1924.

Deaths from all causes in certain large cities of the United States during the week ended November 15, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (*From the Weekly Health Index, November 18, 1924, issued by the Bureau of the Census, Department of Commerce*)—Contd.

City.	Week ended Nov. 15, 1924.		Annual death rate per 1,000 corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended Nov. 15, 1924.
	Total deaths.	Death rate.		Week ended Nov. 15, 1924.	Corresponding week, 1923.	
San Antonio	42	11.4	20.3	9	17	----------
San Francisco	132	12.6	13.3	9	10	54
Schenectady	8	4.2	11.6	1	3	30
Seattle	54	----------	----------	5	6	49
Somerville	20	10.4	10.6	4	0	109
Spokane	21	----------	----------	2	1	44
Springfield, Mass	32	11.2	8.3	7	2	118
Syracuse	41	11.4	11.0	2	7	25
Tacoma	19	9.6	10.3	2	1	48
Toledo	48	9.1	13.6	3	9	28
Trenton	28	11.3	14.3	2	4	33
Utica	28	13.9	19.2	4	5	87
Washington, D. C	111	11.9	13.9	7	13	41
Waterbury	17	----------	----------	2	3	46
Wilmington, Del	17	7.4	12.4	2	5	45
Worcester	55	14.7	11.4	7	4	84
Yonkers	26	12.4	9.7	2	5	44
Youngstown	26	8.7	10.1	3	3	41

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 November 22, 1924.

ALABAMA.

	Cases.
Chicken pox	52
Diphtheria	35
Dysentery	7
Influenza	91
Malaria	51
Measles	14
Mumps	22
Pellagra	6
Pneumonia	111
Scarlet fever	27
Smallpox	42
Tuberculosis	33
Typhoid fever	20
Whooping cough	16

ARIZONA.

Chicken pox	4
Measles	31
Mumps	26
Ophthalmia neonatorum	1
Scarlet fever	9
Smallpox	2
Trachoma	1
Tuberculosis	35
Typhoid fever	7
Whooping cough	7

ARKANSAS.

Chicken pox	11
Diphtheria	15
Hookworm disease	2
Influenza	66
Malaria	45
Measles	7
Mumps	5
Paratyphoid fever	2
Pellagra	4
Scarlet fever	5
Smallpox	66
Tuberculosis	10
Typhoid fever	27
Whooping cough	15

CALIFORNIA.

	Cases.
Anthrax—Kern County	1
Cerebrospinal meningitis:	
Los Angeles	1
San Diego County	1
Diphtheria	163
Influenza	29
Lethargic encephalitis:	
Berkeley	1
Orland	1
San Diego	1
San Francisco	1
Measles	35
Plague (bubonic)—Los Angeles County	1
Poliomyelitis:	
Contra Costa County	1
Los Angeles	1
Oakland	3
San Francisco	1
Santa Monica	1
Scarlet fever	131
Smallpox:	
Los Angeles	41
Los Angeles County	19
Scattering	35
Typhoid fever:	
Stockton	55
Scattering	26
Typhus fever:	
Los Angeles	2
Manhattan Beach	1

COLORADO.

(Exclusive of Denver.)

Chicken pox	51
Diphtheria	5
Measles	1
Mumps	4
Pneumonia	4
Scarlet fever	14
Tuberculosis	14

CONNECTICUT.

	Cases.
Cerebrospinal meningitis	1
Chicken pox	95
Conjunctivitis (infectious)	5
Diphtheria	48
German measles	5
Influenza	5
Lethargic encephalitis	1
Malaria	2
Measles	3
Mumps	22
Pneumonia (lobar)	25
Scarlet fever	120
Septic sore throat	3
Tetanus	2
Tuberculosis (all forms)	33
Typhoid fever	2
Whooping cough	50

DELAWARE.

Diphtheria	8
Mumps	1
Scarlet fever	2
Tuberculosis	1

FLORIDA.

Diphtheria	23
Influenza	68
Pneumonia	3
Malaria	7
Scarlet fever	5
Typhoid fever	6

GEORGIA.

Chicken pox	20
Diphtheria	18
Hookworm disease	12
Influenza	12
Malaria	5
Mumps	20
Pneumonia	19
Scarlet fever	6
Septic sore throat	1
Tuberculosis	11
Typhoid fever	11
Whooping cough	6

ILLINOIS.

Cerebrospinal meningitis:	
Cook County	1
Sangamon County	1
Diphtheria:	
Cook County	90
Kane County	8
Rock Island County	9
Sangamon County	15
Scattering	50
Influenza	23
Measles	78
Pneumonia	172
Poliomyelitis:	
Cook County	1
Livingston County	1
Madison County	1
Morgan County	1
Scarlet fever:	
Cook County	116
Kankakee County	9

ILLINOIS—continued.

	Cases.
Scarlet fever—Continued.	
La Salle County	15
McLean County	13
Madison County	10
Scattering	92
Smallpox:	
Clark County	8
Scattering	11
Tuberculosis	212
Typhoid fever	32
Whooping cough	180

INDIANA.

Cerebrospinal meningitis	1
Chicken pox	147
Diphtheria	82
Influenza	48
Measles	33
Mumps	7
Pneumonia	13
Poliomyelitis	1
Scarlet fever	83
Smallpox	33
Tuberculosis	23
Typhoid fever	7
Whooping cough	5

IOWA.

Diphtheria	11
Poliomyelitis	1
Scarlet fever	53
Smallpox	24
Typhoid fever	1

KANSAS.

Cerebrospinal meningitis	2
Chicken pox	182
Diphtheria	47
German measles	5
Influenza	7
Malaria	2
Measles	4
Mumps	96
Pneumonia	23
Scarlet fever	106
Tuberculosis	39
Typhoid fever	17
Whooping cough	29

LOUISIANA.

Diphtheria	29
Dysentery	1
Influenza	12
Leprosy	1
Malaria	11
Pneumonia	30
Poliomyelitis	1
Scarlet fever	12
Smallpox	3
Tuberculosis	24
Typhoid fever	22

MAINE.

Chicken pox	82
Conjunctivitis (infectious)	1
Diphtheria	36
German measles	1

MAINE—continued.	Cases.
Influenza	9
Measles	15
Mumps	50
Pneumonia	12
Poliomyelitis	2
Scarlet fever	29
Septic sore throat	1
Tuberculosis	6
Typhoid fever	7
Vincent's angina	2
Whooping cough	10

MARYLAND.[1]

Cerebrospinal meningitis	1
Chicken pox	74
Diphtheria	72
German measles	1
Influenza	39
Lethargic encephalitis	1
Measles	29
Mumps	7
Ophthalmia neonatorum	1
Pneumonia (all forms)	57
Poliomyelitis	2
Scarlet fever	45
Septic sore throat	1
Tuberculosis	51
Typhoid fever	12
Whooping cough	67

MASSACHUSETTS.

Cerebrospinal meningitis	1
Chicken pox	142
Conjunctivitis (suppurative)	32
Diphtheria	168
German measles	4
Influenza	7
Lethargic encephalitis	1
Measles	96
Mumps	56
Ophthalmia neonatorum	18
Pneumonia (lobar)	105
Poliomyelitis	5
Scarlet fever	219
Septic sore throat	1
Tetanus	2
Tuberculosis (all forms)	127
Typhoid fever	11
Whooping cough	68

MICHIGAN.

Diphtheria	146
Measles	86
Pneumonia	74
Scarlet fever	269
Smallpox	11
Tuberculosis	52
Typhoid fever	18
Whooping cough	96

MINNESOTA.

Chicken pox	207
Diphtheria	107
Influenza	1
Measles	19
Pneumonia	3
Poliomyelitis	4

[1] Week ended Friday.

MINNESOTA—continued.	Cases.
Scarlet fever	230
Smallpox	95
Trachoma	1
Tuberculosis	128
Typhoid fever	3
Whooping cough	27

MISSISSIPPI.

Diphtheria	22
Scarlet fever	2
Smallpox	14
Typhoid fever	11

MISSOURI.

Chicken pox	68
Diphtheria	115
Influenza	5
Measles	12
Mumps	20
Pneumonia	12
Scarlet fever	198
Smallpox	4
Trachoma	11
Tuberculosis	38
Typhoid fever	7
Whooping cough	4

MONTANA.

Diphtheria	17
Poliomyelitis:	
Bozeman	1
Stevensville	1
Scarlet fever	16
Smallpox	13
Typhoid fever	1

NEW JERSEY.

Anthrax	1
Cerebrospinal meningitis	3
Chicken pox	189
Diphtheria	97
Influenza	18
Measles	29
Pneumonia	112
Poliomyelitis	3
Scarlet fever	126
Trachoma	2
Typhoid fever	17
Whooping cough	187

NEW MEXICO.

Chicken pox	7
Diphtheria	4
Measles	39
Mumps	4
Pneumonia	9
Scarlet fever	8
Tuberculosis	16
Typhoid fever	20
Whooping cough	3

NEW YORK.

(Exclusive of New York City.)

Cerebrospinal meningitis	1
Diphtheria	127
Influenza	12
Lethargic encephalitis	5
Measles	100

NEW YORK—continued.	Cases.
Pneumonia	197
Poliomyelitis	12
Scarlet fever	195
Smallpox	19
Typhoid fever	37
Whooping cough	242

NORTH CAROLINA.

Chicken pox	144
Diphtheria	124
Measles	36
Scarlet fever	77
Septic sore throat	1
Smallpox	22
Whooping cough	88

OKLAHOMA.

(Exclusive of Oklahoma City and Tulsa.)

Diphtheria	15
Smallpox	2
Typhoid fever	18

OREGON.

Chicken pox	33
Diphtheria:	
Portland	9
Scattering	19
Influenza	3
Lethargic encephalitis	3
Measles	1
Ophthalmia neonatorum	1
Pneumonia	[1] 4
Poliomyelitis	2
Scarlet fever:	
Portland	9
Scattering	14
Smallpox	11
Tuberculosis	15
Typhoid fever	2

SOUTH DAKOTA.

Chicken pox	23
Diphtheria	5
Measles	1
Mumps	2
Pneumonia	2
Poliomyelitis	1
Scarlet fever	23
Smallpox	8

TEXAS.

Anthrax	1
Cerebrospinal meningitis	2
Chicken pox	51
Dengue	50
Diphtheria	62
Dysentery (epidemic)	43
Influenza	366
Lethargic encephalitis	1
Malta fever	3
Measles	17
Mumps	25
Paratyphoid fever	6
Pellagra	35
Pneumonia	50
Rabies (human)	2

[1] Deaths.

TEXAS—continued.	Cases.
Scarlet fever	90
Smallpox	60
Tetanus	3
Trachoma	7
Tuberculosis	63
Typhoid fever	94
Typhus fever	1
Whooping cough	49

VERMONT.

Chicken pox	40
Diphtheria	9
Measles	5
Mumps	17
Scarlet fever	16
Whooping cough	3

WASHINGTON.

Chicken pox	149
Diphtheria	67
Measles	14
Mumps	41
Poliomyelitis:	
Chelan County	1
Cowlitz County	1
Garfield County	1
King County	5
Kitsap County	1
Kittitas County	1
Lincoln County	1
Snohomish County	1
Yakima County	1
Everett	1
Seattle	1
Spokane	2
Tacoma	3
Yakima	1
Scarlet fever	42
Smallpox	24
Tuberculosis	26
Typhoid fever	5
Whooping cough	7

WEST VIRGINIA.

Cerebrospinal meningitis:	
Charleston	1
Huntington	1
Diphtheria	16
Scarlet fever	28
Typhoid fever	6

WISCONSIN.

Milwaukee:	
Chicken pox	103
Diphtheria	18
German measles	51
Influenza	2
Measles	47
Mumps	35
Ophthalmia neonatorum	1
Pneumonia	5
Scarlet fever	13
Smallpox	2
Tuberculosis	13
Whooping cough	12

WISCONSIN—continued.

Scattering:	Cases.
Chicken pox	179
Diphtheria	36
Influenza	2
Measles	65
Mumps	61
Pneumonia	12
Poliomyelitis	4
Scarlet fever	89
Smallpox	13

WISCONSIN—continued.

Scattering—Continued.	Cases.
Tuberculosis	16
Typhoid fever	1
Whooping cough	125

WYOMING.

Chicken pox	7
Influenza	1
Mumps	6
Scarlet fever	5

Reports for Week Ended November 15, 1924.

DISTRICT OF COLUMBIA.

	Cases.
Chicken pox	12
Diphtheria	15
Influenza	1
Scarlet fever	13
Smallpox	1
Tuberculosis	26
Whooping cough	13

NORTH DAKOTA.

	Cases.
Cerebrospinal meningitis	1
Chicken pox	24
Diphtheria	5
Measles	11
Pneumonia	1
Poliomyelitis	8
Scarlet fever	44
Smallpox	11
Tuberculosis	3
Whooping cough	11

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.
October, 1924										
Alabama	5	284	206	593	20	31	2	117	103	207
Arizona		7			1			30	4	5
Florida	1	86	10	139	4	18	3	9	0	52
Idaho		9	8				6	17		32
Illinois	9	557	49	3	181		51	891	187	176
Louisiana	2	85	17	77	14	12	4	25	19	98
Maryland	2	197	41	9	16	0	38	148	3	138
Massachusetts	14	583	25	3	250	3	57	742		64
Missouri	4	386	10	1	16	1	9	733	12	107
New York	15	981	97	28	495		214	850	34	288
North Carolina	5	1,110			133		2	276		122
Pennsylvania	5	1,109		3	617		29	1,396	28	311
Rhode Island	1	76	0			0	3	45		10
West Virginia	1	159	59		22		1	188	9	152
Wisconsin	2	282	27		200		9	462	54	28

RECIPROCAL NOTIFICATION, OCTOBER, 1924.

Communicable diseases referred during October, 1924, to other State health departments by departments of health of certain States.

Referred by—	Diphtheria.	Poliomyelitis.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.
Illinois					17	7
Massachusetts						3
Minnesota	1	1			61	2
New York			4	1		7
Ohio	1					
Washington				1		

PLAGUE IN LOS ANGELES, CALIF.

During the two weeks ended November 22, 1924, 4 new cases of plague with 4 deaths were reported at Los Angeles, Calif., making a total from October 19 to November 22, 1924, of 40 cases and 34 deaths. To November 22, 1924, 14 plague-infected rats had been found.

Suppressive measures are at present being carried on under the direction of the State health officer.

Reports of the outbreak were published in the PUBLIC HEALTH REPORTS November 7, 1924, page 2791, and November 21, 1924, page 2885.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES.

Diphtheria.—For the week ended November 8, 1924, 35 States reported 2,301 cases of diphtheria. For the week ended November 10, 1923, the same States reported 3,382 cases of this disease. One hundred and four cities, situated in all parts of the country, and having an aggregate population of nearly 28,900,000, reported 1,128 cases of diphtheria for the week ended November 8, 1924. Last year, for the corresponding week, they reported 1,572 cases. The estimated expectancy for these cities was 1,538 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-one States reported 703 cases of measles for the week ended November 8, 1924, and 4,511 cases of this disease for the week ended November 10, 1923. One hundred and four cities reported 310 cases of measles for the week this year, and 953 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 3,141 cases; last year, 2,825 cases. One hundred and four cities—this year, 1,151; last year, 1,158 cases; estimated expectancy, 825 cases.

Smallpox.—For the week ended November 8, 1924, 35 States reported 551 cases of smallpox. Last year, for the corresponding week, they reported 455 cases. One hundred and four cities reported smallpox for the week as follows: 1924, 138 cases; 1923, 105 cases; estimated expectancy, 56 cases. These cities reported 10 deaths from smallpox for the week this year, 7 of which occurred at Minneapolis.

Typhoid fever.—Five hundred and seven cases of typhoid fever were reported for the week ended November 8, 1924, by 34 States. For the corresponding week of 1923 the same States reported 515 cases. One hundred and four cities reported 124 cases of typhoid fever for the week this year, and 130 cases for the week last year. The estimated expectancy for these cities was 115 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1924, 674 deaths; 1923, 661 deaths.

City reports for week ended November 8, 1924.

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 1915 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.	Chicken pox, cases reported.	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths, reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
NEW ENGLAND.										
Maine:										
Lewiston	4	1	1	0	0	3	0	0	1	1
Portland	23	2	7	0	0	0	21	1	1	0
New Hampshire:										
Concord	0	0	0	0	0	0	0	1	1	0
Vermont:										
Barre	0	0	0	0	0	0	2	0	0	2
Burlington	4	1	0	0	0	0	1	0	1	1
Massachusetts:										
Boston	26	66	42	5	3	29	2	14	30	47
Fall River	2	5	1	0	1	2	1	1	1	1
Springfield	4	7	2	0	0	1	15	1	5	16
Worcester	6	7	10	0	0	0	0	5	7	6
Rhode Island:										
Pawtucket	0	3	0	0	0	0	0	0	1	5
Providence	0	14	8	0	0	0	0	4	6	6
Connecticut:										
Bridgeport	0	11	5	1	1	0	0	1	5	9
Hartford	0	10	3	0	0	0	0	2	5	6
New Haven	3	6	0	0	0	4	2	3	4	16
MIDDLE ATLANTIC.										
New York:										
Buffalo	40	30	14	0	0	19	15	5	16	14
New York	111	174	163	38	14	22	17	192	88	129
Rochester	12	15	1	0	0	2	12	1	6	47
Syracuse	6	17	14	0	1	4	1	3	11	4
New Jersey:										
Camden	2	5	4	0	0	0	0	4	1	9
Newark	25	21	14	5	0	20	4	10	11	17
Trenton	1	6	4	0	0	1	0	6	1	0
Pennsylvania:										
Philadelphia	101	78	69	-------	2	35	33	42	42	76
Pittsburgh	99	42	18	-------	6	40	27	42	24	58
Reading	18	6	3	0	0	1	8	0	2	0
Scranton	1	6	4	0	0	1	2	3	2	1
EAST NORTH CENTRAL.										
Ohio:										
Cincinnati	22	26	21	-------	1	0	0	8	13	25
Cleveland	72	54	37	-------	2	1	2	17	25	23
Columbus	4	14	6	-------	1	0	3	3	8	10
Toledo	37	20	12	-------	1	2	0	3	13	22
Indiana:										
Fort Wayne	3	3	20	0	0	0	0	1	1	5
Indianapolis	24	29	4	0	0	1	6	11	11	1
South Bend	6	4	2	0	0	1	0	0	2	5
Terre Haute	3	4	1	0	0	0	0	3	2	4
Illinois:										
Chicago	111	196	100	9	0	53	11	37	115	102
Cicero	2	4	3	0	0	0	0	0	3	5
Peoria	3	7	1	0	0	1	0	4	9	5
Springfield	2	3	8	0	0	0	1	1	2	2
Michigan—										
Detroit	74	88	43	0	0	8	5	25	62	53
Flint	9	16	3	0	0	1	0	2	10	7
Grand Rapids	2	9	2	0	0	4	0	1	8	12

City reports for week ended November 8, 1924—Continued.

Division, State, and city.	Chicken pox, cases reported.	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths, reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
EAST NORTH CENTRAL—continued										
Wisconsin:										
Madison	5	2	2	0	0	0	37	0	1	2
Milwaukee	60	31	23	1	1	21	22	0	28	10
Racine	0	3	3	0	0	1	0	0	6	3
Superior	0	1	1	0	0	0	0	0	1	1
WEST NORTH CENTRAL.										
Minnesota:										
Duluth	21	7	0	0	0	0	0	1	4	29
Minneapolis	62	26	32	0	0	1	0	5	22	46
St. Paul	----	22	12	0	0	2	----	8	9	11
Iowa—										
Davenport	5	2	3	0	----	1	0	----	1	1
Sioux City	2	2	3	0	----	1	3	----	4	2
Waterloo	0	1	0	0	----	0	0	----	3	0
Missouri:										
Kansas City	9	18	10	0	0	0	2	4	10	13
St. Joseph	3	5	3	0	0	1	1	4	4	3
St. Louis	36	82	47	0	0	1	3	----	27	110
North Dakota:										
Fargo	10	0	0	0	0	0	0	0	2	0
Grand Forks	1	2	0	0	----	0	0	----	2	1
South Dakota:										
Aberdeen	4	----	1	0	----	1	2	----	----	0
Sioux Falls	0	1	1	0	0	0	0	0	2	0
Nebraska:										
Lincoln	5	3	10	0	0	0	0	2	2	4
Omaha	12	10	12	0	0	1	0	4	4	2
Kansas:										
Topeka	20	4	3	0	0	0	7	1	3	6
Wichita	9	8	5	0	0	0	0	2	5	2
SOUTH ATLANTIC.										
Delaware:										
Wilmington	----	3	5	0	0	2	----	1	4	0
Maryland:										
Baltimore	39	35	32	17	2	0	1	19	16	18
Cumberland	----	1	1	0	0	0	----	1	1	0
Frederick	----	1	1	0	0	0	----	0	0	0
District of Col.:										
Washington	14	27	8	2	0	2	----	15	15	17
Virginia:										
Lynchburg	4	2	13	0	0	0	13	0	1	0
Norfolk	0	6	3	0	0	1	7	1	1	1
Richmond	4	14	46	0	0	5	0	7	8	10
Roanoke	0	3	5	0	0	0	0	0	2	4
West Virginia:										
Charleston	16	5	5	0	0	0	0	0	2	2
Huntington	4	6	2	0	----	0	0	----	1	5
Wheeling	6	4	1	0	0	0	0	4	2	7
North Carolina:										
Raleigh	7	3	2	0	0	0	0	1	2	0
Wilmington	3	1	0	0	0	0	4	0	1	0
Winston-Salem	1	2	11	0	0	0	0	2	2	0
South Carolina:										
Charleston	0	4	2	0	0	0	0	3	0	1
Columbia	0	3	1	0	0	0	7	0	1	1
Greenville	0	1	2	0	0	0	0	0	1	0
Georgia:										
Atlanta	1	11	6	4	1	1	0	18	7	3
Brunswick	1	0	0	0	0	0	0	0	1	0
Savannah	0	4	4	0	0	2	1	2	1	0
Florida:										
St. Petersburg	0	0	0	0	0	0	0	0	0	0
Tampa	0	4	0	0	0	0	0	1	1	3

City reports for week ended November 8, 1924—Continued.

Division, State, and city.	Chickenpox, cases reported.	Diphtheria. Cases, estimated expectancy.	Diphtheria. Cases reported.	Influenza. Cases reported.	Influenza. Deaths reported.	Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths reported.	Scarlet fever. Cases, estimated expectancy.	Scarlet fever. Cases reported.
EAST SOUTH CENTRAL.										
Kentucky:										
Covington	1	4	3	0	0	0	0	2	2	4
Lexington	0	4	0	0	0	0	0	1	1	0
Louisville	7	16	9	4	0	1	0	9	4	8
Tennessee:										
Memphis	3	12	13	0	0	1	0	2	5	6
Nashville	0	8	2	0	0	0	1	1	4	3
Alabama:										
Birmingham	3	8	5	3	0	0	0	10	5	5
Mobile	1	2	0	0	1	0	0	0	1	1
Montgomery	0	2	3	1	0	0	0	0	0	2
WEST SOUTH CENTRAL.										
Arkansas:										
Fort Smith	1	3	1	0	----	0	8	----	2	4
Little Rock	0	3	5	0	0	0	0	2	2	2
Louisiana:										
New Orleans	0	13	21	4	1	0	0	8	5	10
Shreveport	0	----	1	0	0	0	0	1	----	1
Oklahoma:										
Oklahoma	0	6	4	0	0	0	0	2	4	1
Texas:										
Dallas	3	15	11	0	0	1	0	1	3	1
Galveston	1	1	1	0	0	0	0	0	1	0
Houston	0	5	6	0	0	0	0	8	1	5
San Antonio	----	5	0	0	0	0	----	2	0	2
MOUNTAIN.										
Montana:										
Billings	5	1	0	0	0	0	0	0	1	1
Great Falls	12	2	6	0	0	0	1	0	1	2
Helena	----	0	0	0	0	0	0	1	0	0
Missoula	----	0	4	0	0	1	0	0	1	1
Idaho:										
Boise	8	0	0	0	0	0	0	0	0	1
Colorado:										
Denver	45	16	21	0	0	0	21	5	7	10
Pueblo	5	5	1	0	0	0	0	2	2	2
New Mexico:										
Albuquerque	----	1	2	0	0	0	----	0	1	1
Utah:										
Salt Lake City	26	3	6	0	0	1	11	0	3	0
Nevada:										
Reno	0	0	0	0	0	0	0	0	1	2
PACIFIC.										
Washington:										
Seattle	27	6	7	0	----	3	2	----	7	7
Spokane	17	6	4	----	----	0	0	----	7	10
Tacoma	1	3	3	0	----	0	1	----	1	0
Oregon:										
Portland	19	6	26	0	0	0	1	6	7	8
California:										
Los Angeles	32	40	28	8	0	5	8	19	13	23
Sacramento	0	3	9	0	0	0	0	2	2	1
San Francisco	18	22	21	0	0	6	19	10	8	9

City reports for week ended November 8, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
NEW ENGLAND.										
Maine:										
Lewiston	33,790	0	0	0	0	0	0	0	0	12
Portland	73,129	0	0	0	0	0	4	0	0	10
New Hampshire:										
Concord	22,408	0	0	0	1	0	0	0	0	8
Vermont:										0
Barre	[1] 10,008	0	0	0	0	0	0	0	0	
Burlington	23,613	1	0	0	0	0	0	0	4	5
Massachusetts:										
Boston	770,400	0	0	0	11	3	1	1	13	217
Fall River	120,912	0	0	0	1	1	1	0	1	30
Springfield	144,227	0	0	0	2	1	0	0	9	27
Worcester	191,927	0	0	0	1	1	0	0	6	38
Rhode Island:										
Pawtucket	68,799	0	0	0	0	1	0	1	0	14
Providence	242,378	0	0	0	3	0	1	0	4	53
Connecticut:										
Bridgeport	[1] 143,555	0	0	0	0	0	0	0	0	26
Hartford	[1] 138,036	0	0	0	1	0	0	0	4	47
New Haven	172,967	0	0	0	1	1	0	0	5	35
MIDDLE ATLANTIC.										
New York:										
Buffalo	536,718	0	0	0	11	1	1	0	25	123
New York	5,927,625	0	0	0	[2] 102	21	10	1	156	1,347
Rochester	317,867	0	1	0	4	1	1	0	1	48
Syracuse	184,511	0	0	0	0	1	0	0	1	38
New Jersey:										
Camden	124,157	0	2	0	4	1	2	0	2	40
Newark	438,699	0	0	0	5	2	0	0	41	85
Trenton	127,390	0	0	0	2	1	1	0	3	43
Pennsylvania:										
Philadelphia	1,922,788	0	0	0	33	6	8	3	89	425
Pittsburgh	613,442	0	1	1	8	2	0	2	10	200
Reading	110,917	0	0	0	0	0	0	0	14	14
Scranton	140,636	0	0	0	0	0	1	0	4	------
EAST NORTH CENTRAL.										
Ohio:										
Cincinnati	406,312	1	1	0	8	1	2	0	0	12
Cleveland	888,519	1	0	0	22	4	2	0	13	176
Columbus	261,082	0	0	0	------	1	1	1	8	61
Toledo	268,338	0	0	0	4	2	3	0	16	68
Indiana:										
Fort Wayne	93,573	0	0	0	0	1	1	0	0	18
Indianapolis	342,718	1	1	0	1	1	0	0	2	85
South Bend	76,709	1	0	0	1	1	0	0	1	14
Terre Haute	68,939	1	0	0	0	0	0	0	0	16
Illinois:										
Chicago	2,886,121	1	0	0	36	7	5	1	91	579
Cicero	55,968	0	0	0	0	0	1	0	3	9
Peoria	79,675	0	0	0	0	0	0	0	0	25
Springfield	61,833	0	0	0	0	0	0	0	------	17
Michigan:										
Detroit	995,668	2	2	0	17	5	2	0	47	225
Flint	117,968	1	2	0	0	1	0	0	0	18
Grand Rapids	145,947	1	0	0	0	1	0	0	0	31
Wisconsin:										
Madison	42,519	0	0	0	1	0	0	0	4	11
Milwaukee	484,595	3	0	0	4	0	0	0	19	95
Racine	64,393	0	0	0	0	0	0	0	1	11
Superior	[1] 39,671	1	0	0	0	0	0	0	0	3

[1] Population Jan. 1, 1920.
[2] Pulmonary only.

City reports for week ended November 8, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
WEST NORTH CENTRAL.										
Minnesota:										
Duluth	106,289	1	0	0	1	1	0	0	0	15
Minneapolis	409,125	2	58	7	1	1	0	0	0	74
St. Paul	241,891	7	14	0	3	1	0	1	------	52
Iowa:										
Davenport	61,262	1	0	------	------	0	0	------	0	------
Sioux City	79,662	1	0	------	------	0	0	------	0	------
Waterloo	39,667	0	1	------	------	0	0	------	0	------
Missouri:										
Kansas City	351,819	2	0	0	5	1	2	0	1	78
St. Joseph	78,232	1	0	0	0	1	0	0	0	22
St. Louis	803,853	0	0	0	6	3	3	0	5	197
North Dakota:										
Fargo	24,841	0	0	0	0	0	0	0	0	3
Grand Forks	14,547	0	0	------	------	0	0	------	0	------
South Dakota:										
Aberdeen	15,829	------	0	------	------	------	0	------	------	------
Sioux Falls	29,206	0	0	0	0	0	0	0	0	5
Nebraska:										
Lincoln	58,761	1	0	0	0	0	0	0	0	11
Omaha	204,382	2	9	0	4	0	1	0	0	52
Kansas:										
Topeka	52,555	0	0	0	0	0	0	0	1	21
Wichita	79,261	0	0	0	0	1	3	0	6	24
SOUTH ATLANTIC.										
Delaware:										
Wilmington	117,728	0	0	0	0	1	0	0	------	22
Maryland:										
Baltimore	773,580	0	0	0	21	5	4	0	71	212
Cumberland	32,361	0	0	0	0	1	0	0	------	10
Frederick	11,301	0	0	0	0	0	0	0	------	1
District of Columbia:										
Washington	[1] 437,571	1	0	0	4	2	1	0	8	148
Virginia:										
Lynchburg	30,277	0	0	0	0	0	0	0	0	6
Norfolk	159,089	0	0	0	1	0	0	0	0	------
Richmond	181,044	0	0	0	0	1	7	0	0	41
Roanoke	55,502	0	0	0	1	0	0	0	0	15
West Virginia:										
Charleston	45,597	0	0	0	3	0	0	0	0	12
Huntington	57,918	0	16	------	------	0	0	------	0	------
Wheeling	[1] 56,208	0	0	0	1	0	1	0	0	15
North Carolina:										
Raleigh	29,171	0	0	0	0	0	1	0	5	13
Wilmington	35,719	0	1	0	0	0	0	0	0	13
Winston-Salem	56,230	1	0	0	0	0	0	0	7	11
South Carolina:										
Charleston	71,245	0	0	0	0	1	1	0	0	19
Columbia	39,688	0	0	0	1	1	0	0	0	23
Greenville	25,789	0	1	0	0	0	0	0	0	7
Georgia:										
Atlanta	222,963	1	1	0	6	1	3	0	1	70
Brunswick	15,937	0	0	0	0	0	0	0	0	2
Savannah	89,448	0	0	0	7	0	0	0	0	33
Florida:										
St. Petersburg	24,403	0	0	0	0	0	3	0	0	7
Tampa	56,050	0	0	0	1	0	0	0	0	13
EAST SOUTH CENTRAL.										
Kentucky:										
Covington	57,877	0	0	0	0	0	0	0	0	13
Lexington	43,673	0	0	0	1	0	0	0	0	14
Louisville	257,671	0	0	0	0	2	1	0	1	81
Tennessee:										
Memphis	170,067	0	0	0	4	1	9	1	1	43
Nashville	121,128	0	0	0	2	2	2	2	0	44

[1] Population Jan. 1, 1920.

City reports for week ended November 8, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
EAST SOUTH CENTRAL—continued.										
Alabama:										
Birmingham	195,901	1	8	0	4	1	0	0	0	62
Mobile	63,858	0	0	0	2	1	1	0	0	20
Montgomery	45,383	0	0	0	0	0	1	0	0	10
WEST SOUTH CENTRAL.										
Arkansas:										
Fort Smith	30,635	0	0	------	------	1	0	------	2	------
Little Rock	70,916	0	0	0	1	1	7	1	0	------
Louisiana:										
New Orleans	404,575	1	0	0	12	3	3	0	2	126
Shreveport	54,590	------	0	0	0	------	1	1	0	23
Oklahoma:										
Oklahoma	101,150	1	0	0	0	0	5	1	0	31
Texas:										
Dallas	177,274	0	0	0	3	2	0	0	0	43
Galveston	46,877	0	0	0	0	0	7	0	0	13
Houston	154,970	0	2	0	1	0	0	0	0	42
San Antonio	184,727	1	0	0	7	0	0	0	------	42
MOUNTAIN.										
Montana:										
Billings	16,927	1	0	0	0	0	0	0	2	7
Great Falls	27,787	1	1	0	0	0	0	0	0	11
Helena	[1]12,037	0	0	0	0	0	0	0	0	5
Missoula	[1]12,668	1	0	0	0	0	0	0	------	1
Idaho:										
Boise	22,806	1	0	0	0	0	0	0	0	6
Colorado:										
Denver	272,031	4	0	0	7	1	0	1	5	71
Pueblo	43,519	0	0	0	0	1	1	0	0	9
New Mexico:										
Albuquerque	16,648	0	0	0	1	1	1	0	------	5
Utah:										
Salt Lake City	126,241	2	0	0	1	1	8	2	0	26
Nevada:										
Reno	12,429	0	0	0	0	1	0	0	0	3
PACIFIC.										
Washington:										
Seattle	[1]315,685	1	6	------	------	2	1	------	0	------
Spokane	104,573	6	0	------	------	1	1	------	4	------
Tacoma	101,731	1	0	------	------	0	0	------	0	------
Oregon:										
Portland	273,621	4	2	0	2	1	1	1	0	------
California:										
Los Angeles	666,853	1	18	2	15	3	2	2	10	212
Sacramento	69,950	0	8	0	3	0	2	0	5	24
San Francisco	539,038	1	0	0	4	2	3	0	0	134

[1] Population Jan. 1, 1920.

City reports for week ended November 8, 1924—Continued.

Division, State, and city.	Cerebro-spinal meningitis.		Lethargic encephalitis.		Pellagra.		Poliomyelitis (infantile paralysis).			Typhus fever.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases, est. expectancy.	Cases.	Deaths.	Cases.	Deaths.
NEW ENGLAND.											
New Hampshire:											
Concord	0	0	0	0	0	1	0	0	0	0	0
Massachusetts:											
Boston	0	0	0	0	1	0	1	1	0	0	0
Rhode Island:											
Pawtucket	0	0	0	0	0	0	0	0	1	0	0
Providence	0	0	0	0	0	0	0	2	0	0	0
MIDDLE ATLANTIC.											
New York:											
New York	4	4	6	3	0	0	5	21	4	0	0
New Jersey:											
Newark	0	1	1	0	0	0	1	0	0	0	0
Pennsylvania:											
Philadelphia	0	0	2	0	0	0	0	1	0	0	0
EAST NORTH CENTRAL.											
Ohio:											
Cincinnati	0	1	0	1	0	0	0	0	0	0	0
Cleveland	0	0	0	0	0	0	0	2	0	0	0
Columbus	0	0	0	2	0	0	0	0	0	0	0
Illinois:											
Chicago	0	2	3	0	0	0	2	2	0	0	0
Michigan:											
Detroit	1	0	0	0	0	0	0	12	3	0	0
Flint	0	0	0	0	0	0	0	1	0	0	0
Grand Rapids	0	0	0	0	0	0	0	1	0	0	0
WEST NORTH CENTRAL.											
Minnesota:											
St. Paul	0	0	0	0	0	0	0	2	0	0	0
Missouri:											
St. Louis	0	0	0	0	0	0	1	2	0	0	0
North Dakota:											
Fargo	0	0	0	0	0	0	0	1	0	0	0
SOUTH ATLANTIC.											
Maryland:											
Baltimore	0	0	0	0	0	0	1	2	0	0	0
Frederick	0	0	0	0	0	0	0	1	0	0	0
District of Columbia:											
Washington	0	0	0	0	0	0	0	1	0	0	0
North Carolina:											
Raleigh	0	0	0	0	0	1	0	0	0	0	0
Winston-Salem	0	0	0	0	0	1	0	0	0	0	0
South Carolina:											
Charleston	0	0	0	0	0	1	0	0	0	0	0
Columbia	0	0	0	0	0	4	0	0	0	0	0
EAST SOUTH CENTRAL.											
Kentucky:											
Lexington	0	0	0	0	0	0	0	0	1	0	0
Louisville	1	0	0	0	0	0	0	0	0	0	0
WEST SOUTH CENTRAL.											
Arkansas:											
Little Rock	0	0	0	0	0	1	0	0	0	0	0
Louisiana:											
New Orleans	0	0	0	0	1	1	0	0	0	0	0

City reports for week ended November 8, 1924—Continued.

Division, State, and city.	Cerebro-spinal meningitis.		Lethargic encephalitis.		Pellagra.		Poliomyelitis (infantile paralysis).			Typhus fever.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases, est. expectancy.	Cases.	Deaths.	Cases.	Deaths.
MOUNTAIN.											
Montana:											
Helena	0	0	0	0	0	0	0	1	0	0	0
Colorado:											
Denver	0	0	0	0	0	0	0	0	1	0	0
PACIFIC.											
Washington:											
Seattle	0	------	0	------	0	------	0	2	------	0	------
Spokane	0	------	0	------	0	------	0	2	------	0	------
Tacoma	0	------	0	------	0	------	0	2	------	0	------
Oregon:											
Portland	0	0	0	0	0	0	0	1	0	0	0
California:											
Los Angeles	0	0	1	1	0	0	0	4	0	2	0
San Francisco	1	1	0	0	0	0	0	0	0	0	0

The following table gives a summary of the reports from 105 cities for the 10-week period ended November 8, 1924. The cities included in this table are those whose reports have been published for all 10 weeks in the Public Health Reports. Eight of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had more than 28,000,000 population on that date. The number of cities included in each group and the aggregate population are shown in a separate table below.

Summary of weekly reports from cities, August 31 to November 8, 1924.

DIPHTHERIA CASES.

	1924, week ended—									
	Sept. 6	Sept. 13	Sept. 20	Sept. 27	Oct. 4	Oct. 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8
Total	455	521	643	779	757	883	936	988	965	1,128
New England	49	[1] 35	56	55	56	77	82	89	88	78
Middle Atlantic	139	139	177	255	198	209	259	228	235	304
East North Central	85	88	[2] 125	151	134	174	176	176	211	279
West North Central	47	91	90	92	116	126	135	149	127	128
South Atlantic	70	[3] 73	94	89	97	142	121	172	131	148
East South Central	7	7	13	22	20	28	42	41	27	35
West South Central	10	18	13	24	23	26	28	36	40	46
Mountain	19	12	15	18	24	14	18	23	28	38
Pacific	29	58	60	73	89	87	74	74	78	72

[1] Figures for Barre, Vt., estimated. Report not received at time of going to press.
[2] Figures for Superior, Wis., estimated.
[3] Figures for Wilmington, Del., and Tampa, Fla., estimated.

Summary of weekly reports from cities, August 31 to November 8, 1924—Continued.

MEASLES CASES.

	1924 week ended—									
	Sept. 6	Sept. 13	Sept. 20	Sept. 27	Oct. 4	Oct. 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8
Total	109	102	94	104	134	130	193	197	241	310
New England	11	[1] 14	9	15	15	21	25	28	32	36
Middle Atlantic	56	40	36	38	65	56	97	92	112	144
East North Central	18	25	[2] 28	29	29	22	42	55	70	91
West North Central	3	4	2	7	9	5	7	3	7	7
South Atlantic	11	[3] 11	8	3	2	10	4	2	6	13
East South Central	1	1	0	2	1	2	1	0	0	2
West South Central	1	0	1	1	2	2	2	1	0	1
Mountain	2	4	0	3	2	0	5	2	3	2
Pacific	6	3	10	6	9	12	10	14	11	14

SCARLET FEVER CASES.

Total	253	359	455	586	570	774	795	938	1,021	1,153
New England	35	[1] 33	38	46	55	89	99	121	96	114
Middle Atlantic	50	48	97	128	129	154	168	213	298	354
East North Central	68	97	[2] 99	123	128	178	176	214	256	270
West North Central	48	104	142	172	148	218	227	253	216	225
South Atlantic	22	[3] 24	32	36	29	46	48	57	57	67
East South Central	2	6	14	17	13	21	11	14	24	29
West South Central	5	10	10	8	13	17	16	17	15	25
Mountain	3	10	9	16	18	15	19	13	19	19
Pacific	20	27	14	40	37	36	31	36	40	50

SMALLPOX CASES.

Total	66	64	86	84	86	72	99	134	134	138
New England	0	[1] 0	0	0	0	0	0	0	0	0
Middle Atlantic	4	2	3	6	8	3	0	5	2	4
East North Central	9	16	[2] 14	27	23	21	30	19	16	6
West North Central	9	11	23	19	15	21	27	64	70	82
South Atlantic	5	[3] 2	1	3	6	2	0	3	1	3
East South Central	16	3	8	5	6	2	15	11	9	8
West South Central	1	4	3	1	0	0	3	2	2	2
Mountain	0	0	2	1	1	0	2	3	0	1
Pacific	22	26	32	22	27	23	22	27	34	32

TYPHOID FEVER CASES.

Total	199	229	195	281	217	214	159	136	106	124
New England	6	[1] 9	12	11	9	16	8	6	5	7
Middle Atlantic	50	59	54	59	67	45	47	40	35	23
East North Central	27	31	[2] 25	39	25	15	17	14	11	14
West North Central	11	19	21	17	15	16	11	5	9	9
South Atlantic	36	[3] 47	32	50	35	23	20	22	13	21
East South Central	32	25	15	51	29	17	12	21	12	14
West South Central	10	15	15	17	7	15	12	12	6	18
Mountain	13	9	8	18	18	58	23	10	5	9
Pacific	14	15	13	19	12	9	9	6	10	9

[1] Figures for Barre, Vt., estimated. Report not received at time of going to press.
[2] Figures for Superior, Wis., estimated.
[3] Figures for Wilmington, Del., and Tampa, Fla., estimated.

Summary of weekly reports from cities, August 31 to November 8, 1924—Continued.

INFLUENZA DEATHS.

	1924, week ended—									
	Sept. 6	Sept. 13	Sept. 20	Sept. 27	Oct. 4	Oct. 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8
Total	4	6	7	18	20	21	20	18	35	38
New England	0	[1] 0	1	1	0	1	1	1	1	5
Middle Atlantic	3	2	1	5	10	13	11	9	21	23
East North Central	0	3	[2] 0	2	4	4	3	5	5	5
West North Central	0	0	1	1	1	0	2	0	0	0
South Atlantic	1	[3] 1	1	3	1	1	1	2	3	3
East South Central	0	0	0	3	1	0	1	0	1	1
West South Central	0	0	3	1	1	1	1	0	3	1
Mountain	0	0	0	1	1	1	0	0	0	0
Pacific	0	0	0	1	1	0	0	1	1	0

PNEUMONIA DEATHS.

Total	313	306	308	372	438	494	497	479	593	636
New England	14	[1] 16	12	20	29	39	28	27	42	33
Middle Atlantic	152	120	125	152	178	217	221	227	270	305
East North Central	53	53	[2] 67	82	94	84	90	77	95	109
West North Central	9	23	22	18	16	25	23	20	28	29
South Atlantic	32	[3] 37	37	42	52	50	50	65	87	75
East South Central	17	15	9	14	22	15	19	13	21	24
West South Central	8	10	13	13	11	31	16	17	21	22
Mountain	11	10	[4] 8	11	11	15	22	16	6	8
Pacific	17	22	15	20	25	18	28	17	23	31

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923.

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.
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

[1] Figures for Barre, Vt., estimated. Report not received at time of going to press.
[2] Figures for Superior, Wis., estimated.
[3] Figures for Wilmington, Del., and Tampa, Fla., estimated.

FOREIGN AND INSULAR.

AZORES.

Plague—St. Michaels.

Four cases of plague were reported at St. Michaels, Azores, during the two weeks ended October 4, 1924. The occurrence was in two suburbs of the city—Arrifes and Faja de Cima.

BRAZIL.

Control of Yellow Fever—Bahia.

The last case of yellow fever reported in the city of Bahia occurred on September 8, 1923, and, according to a report from the American consul dated October 17, 1924, there has been no known case in the rural districts of the State of Bahia for seven months. The International Health Board, which, in cooperation with the Federal Government of Brazil, has been conducting an anti-yellow-fever campaign during the past year, is to continue its operations for two years longer.

The report states that without doubt the existence of yellow fever has been the greatest single hindrance to the progress of the district, frequent epidemics of the disease in the past having attacked the foreign population with great mortality. The black population, on the other hand, appeared to have a degree of natural immunity. An early writer, in describing an epidemic, stated that "the houses were filled with the dying, the churches with the dead, and the streets with funerals." In 1849 the American consul died of yellow fever and the American colony was practically wiped out; and even as late as 1923 there were several cases and deaths among newly arrived foreigners.

ESTHONIA.

Communicable Diseases—September, 1924.

During the month of September, 1924, 29 cases of diphtheria, 24 of scarlet fever, 136 of typhoid fever, 13 of paratyphoid fever, and one case of typhus fever, were reported in the Republic of Esthonia. (Population, 1,107,069.)

GREECE.

Plague—Island of Symi, Ægean Sea.[1]

An additional case of plague has been reported on the island of Symi, Ægean Sea, occurring August 26, 1924. The last previously reported number of cases occurring in August, 1924, was 10, with two deaths.

ITALY.

Plague—Naples.

Information received under date of October 16, 1924, shows the finding of a plague-infected rat at Naples, September 12, and of three cases of bubonic plague, one with fatal termination, September 15, 1924. The rat was found in the vicinity of the silos in the port of Naples, and of the three cases, one was found at Portici, a suburban town of Naples, and two cases were found at Naples. The source of infection has not been determined. It was stated that cereals which had arrived on the steamships *Capo Corso*, *Piedmonte*, and *Ansaldo S. Giorgio I* from Buenos Aires, Argentina, were discharged into the silos.

JAMAICA.

Smallpox (Reported as Alastrim).

During the four-week period ended October 25, 1924, 52 cases of smallpox (reported as alastrim) were notified in the island of Jamaica. Of these, seven cases were notified for Kingston.

Chicken Pox.

Chicken pox was reported in the island as follows: Week ended October 11, 1924, one case; week ended October 25, 1924, two cases, of which one case was reported for Kingston.

JAPAN.

Typhoid Fever—Tokyo.

During the period August 31 to October 11, 1924, 918 cases of typhoid fever with 259 deaths were reported at Tokyo, Japan. Population, 1,650,000.

JAVA.

Epidemic Smallpox—September, 1924.

Epidemic smallpox was reported in native villages in the Residencies of Pasoeroean and Rembang, Java, under official declaration of September 2, 13, and 20, 1924.

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[1] Public Health Reports, Oct. 24, 1924, p. 2708.

MADAGASCAR.

Plague—Diego Suarez—Fort Dauphin.

During the period August 29 to September 23, 1924, seven cases of plague with five deaths were reported at Diego Suarez, Island of Madagascar, with a total from June 22 to date of 50 cases with 42 deaths.

On September 11, 1924, the town of Fort Dauphin, on the southeast coast of the island, was declared plague infected. The first case was reported September 3. To September 24 a total of six cases with four deaths had been reported. Precautions against spread and against contamination of shipping have been taken as follows: Natives not to leave the town until the expiration of 10 days' period of observation; work on shipboard to be done by natives who have been inoculated and disinfected before going on board; shipment of loose grain and all other susceptible merchandise prohibited.

MEXICO.

Malaria Prevalence—Puerto Mexico.

Increased malaria prevalence, with a more than usually severe type of the infection, was reported during September and October, 1924, at Puerto Mexico, State of Vera Cruz, Mexico.

UNION OF SOUTH AFRICA.

Plague-Infected Rodent—Cape Province.

During the week ended October 4, 1924, a plague-infected rodent was reported found in the Uitenhage District, Cape Province, Union of South Africa. The rodent (multimmate mouse) was found dead on the farm Haarhoff's Kraal during a rodent survey of the area. Plague in man and rodents was reported on this farm in October, 1923.[1] The report received for the week ended October 4, 1924, shows that plague was reported present at Haarhof's Kraal farm in September, 1923.

YUGOSLAVIA.

Communicable Diseases—Month of July, 1924.

During the month of July, 1924, communicable diseases were reported in the Kingdom of the Serbs, Croats, and Slovenes (Yugoslavia) as follows:

Disease.	Cases.	Deaths.	Disease.	Cases.	Deaths.
Malaria	7,990	14	Smallpox	9	3
Paratyphoid fever	35		Typhoid fever	256	23
Relapsing fever	1		Typhus fever	21	1

Population, 19,017,323.

[1] Public Health Reports, Dec. 7, 1923, p. 2915.

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 November 28, 1924.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India				Sept. 7-27, 1924: Cases, 17,921; deaths, 10,774.[2]
Philippine Islands:				
Province—				
Pangasinan—				
Lingayen	Oct. 3	1	1	
Siam:				
Bangkok	Sept. 28-Oct. 4	1	1	

PLAGUE.

Azores:				
St. Michael's	Sept. 21-Oct. 4	4		Suburbs of city: Arrifes, one case; Faja de Cima, three cases.
China:				
Chungking	Oct. 5-11			Present.
Greece:				
Symi, Island	Aug. 26	1		Total to Aug. 26, 1924: Cases, 11; deaths, 2.
India				Sept. 7-27, 1924: Cases, 2,666; deaths, 1,785.
Madras	Oct. 12-18	68	47	
Rangoon	Sept. 28-Oct. 4	5	4	
Italy:				
Naples	Sept. 15	3	1	Including suburb of Portici, one case. On Sept. 12 a plague-infected rat was found in port of Naples.
Java:				
West Java—				
Batavia Residency—				
Cheribon	Sept. 9-15	2		
Pekalongan Residency—				
Pekalongan	do	4		
Madagascar:				
Diego Suarez	Aug. 29-Sept. 23	7	5	Total June 22-Sept. 23, 1924: Cases, 50; deaths, 42.
Fort Dauphin	Sept. 3-24	6	4	
Union of South Africa:				
Cape Province—				
Uitenhage District				Sept. 28-Oct. 4, 1924: Plague-infected mouse found on Haarhof's Kraal farm. Plague reported on this farm in September and October 1924.

SMALLPOX.

Canada:				
British Columbia—				
Fernie	Nov. 2-8	1		
Vancouver	Oct. 26-Nov. 1	11		
China:				
Chungking	Oct. 5-11			Present.
Egypt:				
Cairo	Aug. 6-19	5	3	
Great Britain:				
Hull	Oct. 26-Nov. 1	2		
India				Sept. 7-27, 1924: Cases, 2,116; deaths, 436.
Madras Presidency	Oct. 12-18	10	4	
Rangoon	Sept. 28-Oct. 4	4	1	
Jamaica				Sept. 28-Oct. 25, 1924: Cases, 52. Reported as alastrim.
Kingston	Sept. 28-Oct. 25	7		Reported as alastrim.
Java:				
East Java—				
Soerabaya	Sept. 14-20	200	50	
West Java—				
Brebes	Sept. 9-15	1	1	
Pekalongan	Sept. 9-15	2	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

[2] Statement of cholera in India appearing in Public Health Reports of Nov. 14, 1924, page 2874, was erroneous. See statement appearing in issue of Nov. 21, 1924, p. 3002.

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

Reports Received During Week Ended November 28, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Mexico City	Oct. 12-18	1		Including municipalities in Federal District.
Saltillo	Nov. 2-8		2	
Tampico	Oct. 11-31	7	2	
Vera Cruz	Nov. 3-9		4	
Portugal:				
Lisbon	Oct. 13-19		3	
Syria:				
Damascus	Oct. 16-22	1		
Tunis:				
Tunis	Oct. 14-20	8	3	
Yugoslavia				July, 1924: Cases, 9; deaths, 3.

TYPHUS FEVER.

Chile:				
Concepcion	Sept. 23-Oct. 13		3	
Iquique	Oct. 19-25		2	
Valparaiso	Oct. 12-25		4	
Egypt:				
Cairo	Aug. 6-18	7	3	
Esthonia				Sept. 1-30, 1924: One case.
Mexico:				
Mexico City	Oct. 12-18	16		Including municipalities in Federal District.
Torreon	Oct. 1-31		2	
Union of South Africa:				
Orange Free State—				
Harrismith District	Sept. 28-Oct. 4			Outbreak. On farm.
Yugoslavia				July 1-31, 1924: Cases, 9; deaths, 3

Reports Received from June 28 to November 21, 1924.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Manchuria—				
Dairen	August, 1924	3		
Shanghai	Aug. 2-Sept. 6	1		
India				Apr. 20-June 28, 1924: Cases, 81,035; deaths, 56,740.
Do				June 29-Sept. 6, 1924: Cases, 80,484; deaths, 47,781.
Bombay	May 4-10	1		
Do	June 29-Sept. 20	46	23	
Calcutta	May 11-June 28	293	259	
Do	June 29-Sept. 17	182	150	
Madras	June 1-21	7	6	
Do	June 29-Oct. 11	47	26	
Rangoon	May 11-June 28	98	76	
Do	June 29-Aug. 23	24	22	
Indo-China				Jan. 1-June 30, 1924: Cases, 107; deaths, 52. July 1-31, 1924: Cases, 20; deaths, 10. Corresponding period 1923: Cases, 42; deaths, 30.
Province—				
Anam	June 1-30	4	1	June, 1923: 1 case.
Do	July 1-31	3	1	
Cambodia	June 1-30	7	4	June, 1923: Cases, 13; deaths, 4.
Do	July 1-31	7	4	
Cochin-China	June 1-30	9	6	June, 1923: Cases, 40; deaths, 28.
Do	July 1-31	7	5	
Saigon	Apr. 27-June 28	6	4	Including 100 square kilometers of surrounding country.
Do	June 29-Sept. 13	8	5	Do.
Tonkin	June 1-30	9	4	
Do	July 1-31	3	1	

[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 June 28 to November 21, 1924—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Persia:				
Bushire	June 1-30	1	1	
Philippine Islands				June 15-28, 1924: 32 cases, 22 deaths, including suspects. June 29-July 5, 1924: 5 cases, 4 deaths.
Manila	June 22-28	1		Suspect. Occurring in a non-resident.
Do	July 6-12	1	1	
Provinces—				
Batangas	July 1-12	4	3	
Bulacan	June 21	1	1	
Do	June 28-July 26	4	2	
Angat	July 20-26	1	1	
Malolos and Paombong.	July 13-19	2	1	
Cagayan	Mar. 30-Apr. 5	1	1	
Laguna	May 18-24	1	1	
San Pablo	July 13-19	1	1	
Rizal	July 3	1	1	
Santo Tomas	July 6-12	1	1	
Russia				Summer of 1924. Cases, 9.
Don Province				7 cases at Rostov and Nakhichevan.
Kuban				1 case, Black Sea district.
Moscow Province				1 case in Kolomensky Uyezd.
Rostov-on-Don	Aug. 5-7	3		
Siam:				
Bangkok	May 4-June 28	21	18	
Do	June 29-Sept. 20	11	5	
Straits Settlements:				
Penang	June 1-7	1	1	
Singapore	June 15-28	9	6	
Do	June 29-July 5	2	1	
On vessel:				
S. S. Argalia		1		At Bassein, Lower Burma, India. Case in European member of crew. Case removed to hospital. Vessel left May 16, 1924, arrived June 8 at Durban, South Africa; left Durban June 10 for Trinidad and Cuba.

PLAGUE.

Algeria:				
Mostaganem	July 21-28	4		Seaport.
Argentina:				
Chaco Territory				April, 1924: Cases reported.
Brazil:				
Porto Alegre	July 6-12		1	
British East Africa:				
Kenya—				
Kisumu	July 13-Aug. 16	2	1	
Tanganyika Territory	Feb. 24-June 7	1	2	
Do	June 26-July 3	3	2	
Uganda				May 1-31, 1924: Cases, 28; deaths, 23. June 1-30, 1924: Cases, 97; deaths, 84.
Entebbe	Feb. 1-Apr. 30	59	54	
Canary Islands:				
Las Palmas	Sept. 8	1		
Teneriffe—				
La Laguna	June 20	1		
Celebes:				
Macassar and Menando	July 27-Aug. 2			1 plague rat.
Ceylon:				
Colombo	May 11-June 28	11	7	10 plague rodents.
Do	June 29-Sept. 13	19	18	Plague-infected rodents, 17.
Chile:				
Antofagasta	June 1-16	4		
China:				
Amoy	June 15-28		4	
Do	June 29-Aug. 9		13	
Foochow	May 4-June 21		25	Cases not reported.
Nanking	July 20-Oct. 12			Present.

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

Reports Received from June 28 to November 21, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ecuador:				
Eloy Alfaro	May 16-31	1		
Do	Sept. 16-30	1		
Guayaquil	May 16-June 30	5	1	Rats taken, 23,717; found fected, 107.
Do	July 1-Sept. 30	2		Rats taken, 44,489; found plague-infected, 188.
Posorja	July 1-15	1		
Puna	July 16-31	1		
Egypt				July 2-Sept. 5, 1924: Cases, 19. Total Jan. 1-Sept. 5, 1924—cases, 354; deaths, 177; corresponding period, preceding year—cases, 1,337.
City—				
Alexandria		1	1	First case, Apr. 2; last, Apr. 2.
Ismailia		1	1	First case, July 6; last July 6.
Port Said		5	2	First case, Apr. 24; last, Aug. 26.
Suez		16	8	First case, Jan. 2; last, Sept. 23.
Province—				
Assiout		44	35	First case, Apr. 1; last, Aug. 27.
Behera		1	1	First case, Aug. 9; last, Aug. 9.
Beni-Suef		3	3	First case, June 21; last, June 21.
Charkieh		1	1	First case, Jan. 31; last, Jan. 31.
Fayoum		106	33	First case, Feb. 18; last, July 18.
Gharbia		3	2	First case, Apr. 21; last, Aug. 22.
Ghirga		10	3	First case, Jan. 17; last, May 13.
Kalioubiah		10	1	First case, Jan. 6; last, May 22.
Kena		44	26	First case, Apr. 9; last, May 17.
Menoufieh		49	32	First case, Jan. 2; last, June 28.
Minia		58	28	First case, Feb. 5; last, Aug. 1.
France				Aug. 1-31, 1924: Cases, 3.
Paris	Oct. 1-31	2		Bubonic, occurring in suburbs, St. Medard and St. Ouen.
Gold Coast				January-June, 1924: Cases, 173; deaths, 104; July-August 1924; Cases, 142; deaths, 104.
Greece:				
Kalamata				Reported July 15, 1924: Cases, 29; deaths, 6.
Patras	July 7	36		
Saloniki	July 3-4	2		
Symi, Island of				Reported present in August, 1924 Cases, 10; deaths, 2.
Hawaii				July 15, 1924: Near Kukuihaele, Island of Hawaii, 1 plague rat.
Honokaa				Aug. 19-Sept. 10, 1924: 5 plague-infected rodents found in vicinity. In vicinity, at Paauhau sugar plantation, Oct. 11, 1924, 1 plague rat (trapped).
India				Apr. 20-June 28, 1924: Cases, 102,874; deaths, 84,656.
Do				June 29-Sept. 6, 1924: Cases, 5581; deaths, 4,431.
Bombay	May 4-June 21	50	44	
Do	June 29-Aug. 30	20	16	
Calcutta	May 11-June 14	10	10	
Karachi	May 18-June 21	16	13	
Do	Aug. 17-Sept. 20	7	7	
Madras Presidency	May 18-31	7	2	
Do	Aug. 3-Oct. 11	231	146	
Rangoon	May 11-June 28	77	72	
Do	June 29-Sept. 27	214	183	
Indo-China				Jan. 1-June 30, 1924: Cases, 734; deaths, 486. July 1-31, 1924: Cases, 26; deaths, 22. Corresponding period, 1923: Cases, 34; deaths, 30.
Province—				
Anam	June 1-30	6	5	June, 1923: Cases, 11; deaths, 10.
Do	July 1-31	4	4	
Cambodia	June 1-30	18	18	June, 1923: Cases, 140; deaths, 121.
Do	July 1-31	9	9	
Cochin-China	June 1-30	4		June, 1923: Cases, 14; deaths, 10.
Do	July 1-31	13	9	
Saigon	May 4-June 28	10	2	Including 100 square kilometers of surrounding country.
Do	July 20-Aug. 9	3	1	Do.

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

Reports Received from June 28 to November 21, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Iraq:				
Bagdad	Apr. 20–June 28	125	62	
Do	June 29–Aug. 9	7	4	
Japan				July 1–31, 1924: 1 case, 1 death. Jan.–July, 1924: Cases, 4; deaths, 3.
Shizuoka Prefecture—				
Higashi				To June 20, 1924: Cases, 2; death, 1.
Java:				
East Java—				
Soerabaya	June 8–21	14	14	
Do	Aug. 31–Sept. 6	1	1	
West Java—				
Cheribon	Aug. 19–25		2	
Pekalongan	do		8	
Madagascar:				
Diego Suarez	June 22–Aug. 28	43	37	Seaport.
Moramanga	June 1–30	1	1	Interior.
Tamatave	June 6–30	5	4	Bubonic.
Tananarive Province				Apr. 1–June 30, 1924: Cases, 138; deaths, 128; bubonic, pneumonic, septicemic. July 1–Aug. 31, 1924: Cases, 91, deaths, 88.
Tananarive Town	Apr. 1–June 30	12	12	
Do	July 1–Aug. 31	6	6	Bubonic, pneumonic, and septicemic.
Other localities	Apr. 1–June 30	105	97	Do.
Do	July 1–Aug. 31	64	63	Do.
Mauritius Island				Dec. 30, 1923–June 28, 1924: Cases, 35; deaths, 29. June 29–Sept. 6, 1924: Cases, 9; deaths, 8.
Morocco				Jan.–June, 1924: Cases, 53; deaths, 3.
Nigeria				July, 1924: Cases, 1; deaths, 1.
Palestine:				
Jaffa	Oct. 16	1		Bubonic.
Jerusalem	Oct. 14–20	1		
Persia:				
Abadan	May 1–31	20	12	
Bander Abbas	do	11	6	
Bushire	do	1	1	Landed at quarantine.
Mohammerah	do	111	78	
Peru				May 1–June 30, 1924: Cases, 9; deaths, 6.
Do				July 1–31, 1924: Cases, 6; deaths, 3.
Callao	June 1–30	1		
Do	July 1–31	2		
Huaral	June 1–30	1		
Do	July 1–31	1		
Lima (city)	May 1–June 30	5	5	
Do	July 1–31	3	2	
Lima (country)	May 1–June 30	1		
Do	July 1–31		1	
Mollendo	May 1–31	1	1	
Russia				Jan.–June, 1924: Cases, 252.
Don Cossack Territory—				
Salsky District				Aug. 8, 1924: Reported present in marmots in 6 localities.
Siam:				
Bangkok	May 4–June 14	3	3	
Do	July 13–Sept. 27	5	4	
Siberia:				
Transbaikalia—				
Dauria	Aug. 9	2	2	At Substation 83, vicinity of Dauria.
Harenor	Sept. 18			Bubonic and pneumonic. On line of Chinese and Trans-Siberian Railway. In workers in tarabagan (marmot, skins.
South Nigeria (West Africa):				
Lagos	Sept. 8			Present.
Syria:				
Beirut	July 10–Aug. 20	7		
Tunis:				
Tunis	Sept. 23–29	1	1	

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

Reports Received from June 28 to November 21, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Union of South Africa				Apr. 27-June 7, 1924: Cases, 28; deaths, 14. Dec. 16, 1923, to May 31, 1924: Cases, 347; deaths, 208 (white, 51 cases, 26 deaths; native, 269 cases, 182 deaths). July 1-Aug. 31, 1924: Cases, 5; deaths, 2.
Orange Free State				May 11-June 14, 1924: Cases, 21; deaths, 9. June 22-28, 1924: Plague-infested mouse found in Kroonstad District.
Philippolis District	Aug. 24-30	1	1	
Smithfield District	July 13-19	2		In natives on two farms.
On vessel:				
S. S. Amboise	July 10	1		At Marseille, France; removed to quarantine station. Case occurred in an Arab fireman embarked at Aden. Vessel left Yokohama May 30 and Colombo, Ceylon, June 22, 1924.

SMALLPOX.

Arabia:				
Aden	July 20-26		1	
Bolivia:				
La Paz	May 1-June 30	10	9	
Do	July 1-Sept. 30	28	21	
Brazil:				
Bahia	May 18-24	1		
Porto Alegre	May 18-June 28	1	2	
Do	July 6-Aug. 2		3	
Rio de Janeiro	May 18-24	2		
Do	July 20-Aug. 30	5		
British East Africa:				
Kenya—				
Mombasa	May 4-31	3		
Tanganyika Territory	June 15-21	1		
Do	Aug. 17-23	1		
Uganda—				
Entebbe	Feb. 1-29	2		
British South Africa:				
Northern Rhodesia	May 6-June 30	74	1	Natives.
Do	July 1-Sept. 22	56		
Canada:				
British Columbia	Sept. 12-Oct. 18	29		
Vancouver	June 15-28	11		
Do	June 29-Oct. 25	48		Not including suburbs.
Victoria	Aug. 3-9	4		
Manitoba—				
Winnipeg	July 13-Aug. 1	3		
New Brunswick—				
Restigouche County	June 1-30	7		
Do	July 6-Sept. 6	21		Year ended Oct. 31, 1924: Cases, 36; deaths, 1.
Westmoreland County	Aug. 17-23	1		
Ontario				June 1-30, 1924: Cases, 24; July 1-Oct. 25, 1924: Cases, 93. Corresponding period, 1923: Cases, 23.
Chatham Township	Sept. 28-Oct. 25	31		
Chatham	do	3		
Harwich Township	do	2		
Howard Township	do	14		
Macauley Township	do	1		
Sarnia	July 20-26	1		
Toronto	Sept. 28-Oct. 25	1		
Whitnet	do	21		Unorganized.
Windsor	June 22-28	1		
Quebec—				
Montreal	June 8-14	1		
Do	Sept. 14-20	1		
Ceylon:				
Colombo	July 6-12	1		

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

Reports Received from June 28 to November 21, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Chile:				
Antofagasta	June 11			Under treatment at lazaretto, 2 cases.
Do	Aug. 24-30	1		
Valparaiso	June 1-7		1	This report covers the two principal districts of Valparaiso.
China:				
Amoy	May 11-June 28			Present.
Do	June 29-Oct. 11		1	Do.
Antung	June 9-29	41	3	
Do	July 7-13	4		
Chungking	May 11-June 28			Do.
Do	June 29-Sept. 13			Do.
Foochow	May 18-June 28			Do.
Do	July 6-Oct. 11			Do.
Hongkong	May 4-June 28	30	24	
Do	June 29-July 12	3	3	
Manchuria—				
Darien	May 12-June 23	22	7	
Do	June 29-Aug. 3	5	1	
Harbin	May 13-June 23	2		
Nanking	May 18-June 28			Do.
Do	July 6-Oct. 11			Do.
Shanghai	May 25-31		1	
Tientsin	May 4-June 28	11	1	British municipality.
Chosen:				
Fusan	May 1-31	1		
Do	July 25-31	1		
Colombia:				
Barranquilla	Aug. 3-9		1	
Cuba:				
Matanzas	Sept. 1-30	1		
Czechoslovakia				Apr. 1-June 30, 1924: Cases, 7; deaths, 2.
State—				
Bohemia	Apr. 1-June 30	6	2	
Russinia	do	1		
Denmark:				
Copenhagen	May 18-31	3	1	
Dominican Republic:				
La Romana	Aug. 24-30	2		
Egypt:				
City—				
Alexandria	June 4-10	1		
Do	Sept. 3-Oct. 21	4		
Cairo	Feb. 19-June 24	163	45	
Do	June 25-Aug. 5	15	2	
Port Said	June 18-24	1	2	
Do	June 25-Sept. 9	4		
France:				
Limoges	Apr. 1-May 31		2	
Marseille	May 1-31		1	
Paris	May 21-31	2		
Gibraltar	July 21-Oct. 26	10		
Great Britain:				
England and Wales				May 25-June 28, 1924: Cases, 342; June 29-Oct. 4, 1924: Cases, 695.
Counties—				
Derby	May 25-June 28	159		
Do	June 29-Oct. 4	159		
London	June 29-Aug. 30	3		
Northumberland	May 25-June 28	61		
Do	June 29-Oct. 4	134		
Nottingham	May 25-June 28	29		
Do	June 19-Oct. 4	103		
Yorks (North Riding).	May 25-June 28	54		
Do	June 29-Oct. 4	118		
Yorks (West Riding).	May 25-June 28	5		
Do	June 29-Oct 4	44		
Liverpool	Aug. 28	1		Mild. Admitted to port hospital from Lower Bebington district. 2 miles from docks.
Greece:				
Athens	Sept. 21-30		2	
Saloniki	Apr. 21-June 29	7	21	
Do	June 30-Oct. 4		41	

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

Reports Received from June 28 to November 21, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Haiti:				
Port au Prince	July 6-12	2		Developed at Cape Haitien.
Hungary:				
Budapest	July 20-Aug. 2	11		
India				Apr. 20-June 28, 1924: Cases, 28,396; deaths, 6,753.
Do				June 29-Sept. 6, 1924: Cases, 10,168; deaths, 2,606.
Bombay	May 4-June 28	432	299	
Do	June 29-Sept. 27	203	130	
Calcutta	May 11-June 28	36	32	
Do	July 6-Sept. 27	78	63	
Karachi	May 18-June 28	51	18	
Do	June 29-Sept. 13	35	16	
Madras	May 18-June 28	32	10	
Do	June 29-Oct. 11	182	60	
Rangoon	May 11-June 28	53	21	
Do	June 29-Sept. 27	33	12	
Indo-China				Jan. 1-June 30, 1924: Cases, 4,934; deaths, 1,413. July 1-31, 1924: Cases, 119; deaths, 51. Corresponding period, 1923: Cases, 268; deaths, 108.
Province—				
Anam	June 1-30	23	2	June, 1923: Cases, 2.
Do	July 1-31	11	7	
Cambodia	June 1-30	35	21	June, 1923: Cases, 156.
Do	July 1-31	28	13	
Cochin-China	June 1-30	145	55	June, 1923: Cases, 70; deaths, 35.
Do	July 1-31	73	31	
Saigon	Apr. 27-June 28	145	79	Including 100 square kilometers of surrounding country.
Do	June 29-Sept. 27	68	27	Do.
Tonkin	June 1-30	31	2	
Do	July 1-31	7		
Iraq:				
Bagdad	Apr. 20-May 24	8	1	
Do	July 27-Aug. 2	1		
Italy:				
Messina	May 26-June 1	1		
Jamaica				June 1-28, 1924: Cases, 141; June 29-Oct. 25; 1924: Cases, 269. (Reported as alastrim.)
Kingston	June 1-28	6		Reported as alastrim.
Do	June 29-Oct. 25	27		Do.
Japan				July 1-31, 1924: Cases, 51; deaths, 9; Jan. 1-July 31, 1924: Cases, 1,693; deaths, 264.
Kobe	May 26-June 21	3		
Nagoya	June 8-14	2		
Tokyo	do	1		
Java:				
East Java—				
Madoera Residency—				
Sampang	May 22			Epidemic.
Malang	May 25-31	5	1	
Pasoeroean Residency	July 4-Sept. 2	7		Epidemic in some localities.
Rembang	Aug. 29-Sept. 2			Do.
Soerabaya	Apr. 13-June 28	501	143	
Do	June 29-Sept. 13	951	265	Epidemic Aug. 10, 1924, in 4 localities.
West Java—				
Batavia	May 31-June 27	3		
Do	July 6-Aug. 22	6		Province.
Brebes	Aug. 26-Sept. 1	3		
Cheribon	Aug. 19-25	1		
Pekalongan Province				Aug. 19-25, 1924: Cases, 12; deaths, 2.
Pekalongan	Aug. 19-Sept. 8	12	2	
Pemalang	Aug. 19-Sept. 1	5	7	
Tegal	Sept 2-8	7		
Latvia				Apr. 1-June 30, 1924: Cases, 3; July 1-31, 1924: Case, 1.
Mexico:				
Cecilia	Oct. 11-17	5	1	State of Taumaulipas.
Durango	June 1-30		2	
Do	Sept. 1-Oct. 31		2	
Guadalajara	May 1-June 30	9	4	
Do	July 8-14		1	

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

Reports Received from June 28 to November 21, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico—Continued.				
Mexico City	May 4–June 28	96		Including municipalities in Federal District.
Do	June 29–Oct. 4	75		Do.
Progreso	Oct. 19–25		1	
Salina Cruz	May 25–31	1	1	
Tampico	June 14–20	2		
Do	July 1–Aug. 20	8	7	
Tuxtepec	July 3–18	3	1	State of Oaxaca.
Vera Cruz	Sept. 21–Oct. 25		4	
Palestine				June 17–23, 1924: 20 cases in northern districts.
Samaria Province—				
Samak	May 27–June 2	1		
Paraguay:				
Asuncion	June 2			Present.
Encarnacion	do			Many cases reported.
Persia:				
Bushire	June 1–30	2		
Peru:				
Arequipa	Jan. 1–June 30		5	
Poland				Mar. 30–June 28, 1924: Cases, 299; deaths, 27.
Do				June 29–July 27, 1924: Cases, 25; deaths, 5.
Portugal:				
Lisbon	May 25–June 28	7	2	
Do	June 29–Oct. 18	34	5	
Oporto	May 11–June 28	18	16	
Do	June 29–Oct. 25	22	26	
Russia				Jan. 1–31, 1924: 2,243 cases.
Moscow	July 27–Aug. 9	37		
Siam:				
Bankok	Apr. 27–June 14	3	5	
Do	Sept. 7–13	1		
Spain:				
Barcelona				Year 1923: Cases, 160.
Do	August–September	23	2	
Cadiz	June 1–30		5	
Do	July 1–Sept. 30		114	
Madrid	Aug. 1–Sept. 30		6	July–September, 1924: Cases, 300; deaths, 30. Oct. 6, 1924: Increase in prevalence reported.
Malaga	June 29–Oct. 18	8	76	
Santander	Aug. 24–30		4	
Valencia	June 8–21	3		
Do	July 13–Oct. 25	5	1	
Vigo	Aug. 17–23		1	
Straits Settlements:				
Singapore	May 4–24	2	1	
Sumatra:				
Medan	Jan. 1–31	5		
Switzerland:				
Berne	May 25–June 28	22		
Do	June 29–Sept. 27	13		
Lucerne	Aug. 1–Sept. 30	30		
Syria:				
Damascus	May 28–June 12	12		
Do	Aug. 7–13	6		
Tunis:				
Tunis	May 27–June 30	17	4	
Do	July 1–Oct. 27	29	26	
Turkey:				
Constantinople	June 1–7	1		
Do	Aug. 17–Sept. 27	2		
Union of South Africa				Mar. 1–June 30, 1924: Cases, 167 (white, 15; native, 152). July 1–Aug. 31, 1924: 4 cases (white); 36 cases, 12 deaths (native).
Cape Province	May 4–31			Outbreaks.
Do	July 20–Sept. 20			Do.
East London	July 27–Aug. 2	1		
Orange Free State	May 4			Do.
Do	Aug. 24–Sept. 13			Do.
Transvaal	May 4–31			Do.
Do	July 20–Aug. 23			Do.
Johannesburg	July 6–12	1		
Yugoslavia				January–June, 1924. Cases, 308; deaths, 62.
Belgrade	July 28–Aug. 3	1		

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

Reports Received from June 28 to November 21, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
On vessels:				
S. S. Dront	Sept. 14–20	1		At Pernambuco, Brazil. Case removed to hospital. Vessel left Cadiz, Spain, Aug. 20, 1924.
S. S. Karoa	May 7	1		At Durban, South Africa, from Bombay, India. Vessel left Bombay Apr. 16, 1924. Patient, European.
S. S. Mount Evans	July 8	1		At Key West, Fla., from Manchester, England.

TYPHUS FEVER.

Algeria:				
Algiers	May 1–June 30	24	9	Year 1923: Cases, 1,166, of which 27 were in the military population.
Do	July 1–Sept. 30	3		
Bolivia:				
La Paz	do		2	
Brazil:				
Porto Alegre	June 1–7		1	
Bulgaria:				
Sofia	Aug. 17–23	1		
Chile:				
Antofagasta				June 16, 1924: 2 cases in Lazaretto.
Concepcion	May 20–26		3	
Do	July 8–21		3	
Iquique	June 22–28		1	
Talcahuano	May 25–31	2		
Do	June 29–Oct. 11		43	
Valparaiso	May 25–June 21		11	
Do	June 29–Sept. 27		37	
China:				
Antung	June 2–16	6		
Chungking	May 11–June 14			Present.
Manchuria—				
Harbin	Sept. 17–23	2		
Chosen:				
Chemulpo	May 1–June 30	10		
Do	July 1–31	6	2	
Seoul	May 1–June 30	43	5	
Do	July 1–Sept. 30	3		
Czechoslovakia				Apr. 1–June 30, 1924: Cases, 6.
State—				
Slovakia	Apr. 1–June 30	4		
Egypt:				
Alexandria	June 25–Aug. 26	5	1	
Cairo	Feb. 19–June 24	53	16	
Do	June 25–Aug. 5	5	4	
Port Said	July 24–Aug. 5	3		
Esthonia				Apr. 1–June 30, 1924: Cases, 37. July 1–31, 1924: Cases, 2.
Germany:				
Coblenz	July 13–19	2		
Great Britain:				
England—				
St. Helens	July 13–Sept. 20	8	3	One suspect case: July 10, 1924. Locality, vicinity of Liverpool.
Ireland—				
Dublin	June 8–14	1		
Do	July 13–19	1		
Lismore	July 19	1		
Longford	do	1		
Greece				Jan.-Apr., 1924; Cases, 178; deaths, 27.
Saloniki	Apr. 20–May 4	6		
Do	Aug. 10–Sept. 27	2	2	
Hungary				Jan.-June 1924: Cases, 221; deaths, 19.
Iraq:				
Bagdad	Apr. 27–May 10	2		
Do	Aug. 3–9	1		

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

Reports Received from June 28 to November 21, 1924—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Japan				July 1-31, 1924: Cases, 2. Jan. 1-July 31, 1924: Cases, 8; deaths, 1.
Latvia				Apr. 1-June 30, 1924: Cases, 108. July, 1924: Cases, 9. Aug. 1-31, 1924: Cases, 8.
City—				
Riga	June 1-30	1		
Lithuania				Jan.-June, 1924: Cases, 556; deaths, 48. July, 1924: Cases, 24.
Mexico:				
Durango	July 1-31		2	
Guadalajara	May 1-June 30	2	2	
Mexico City	May 24-June 28	59		Including municipalities in Federal district.
Do	June 29-Oct. 12	112		Do.
Torreon	July 1-Aug. 31		4	
Palestine:				
Acre	Aug. 19-25	1		
Jaffa	June 17-23	1		
Do	July 8-Oct. 20	6		
Jerusalem	July 1-Sept. 29	7		
Kantara	July 15-21	1		
Khulde	Aug. 17	1		
Palestine	Oct. 14-20	1		
Ramleh district	Oct. 14-20	1		
Safad	Aug. 26-Sept. —	1		
Tiberias	Aug. 19-25	1		
Peru:				
Arequipa	Jan. 1-June 30		4	
Do	July 1-Aug. 31		3	
Poland				Mar. 30-June 28, 1924: Cases, 2,947; deaths, 277.
Do				June 29-July 27, 1924; Cases, 332; deaths, 23.
Portugal:				
Oporto	June 15-21		1	
Russia				Jan. 1-31, 1924: Cases, 14,275.
Moscow	July 27-Aug. 9	4		
Spain:				
Barcelona	July 10-16		1	
Malaga	Sept. 6-Oct. 11		2	
Switzerland:				
Lucerne	Sept. 1-30	1		
Syria:				
Aleppo	July 8-14	1		
Damascus	July 14-20	1		
Tunis:				
Tunis	May 27-June 9	4		
Turkey:				
Constantinople	May 18-June 21	7	2	
Do	July 6-Oct. 18	14	13	
Union of South Africa				Mar. 1-June 30, 1924: Cases, 418; deaths, 45. July 1-Aug. 31, 1924; Cases, 212; deaths, 31. (Colored, 203 cases; white, 9 cases.)
Cape Province				Mar. 1-June 30, 1924: Cases, 249; deaths, 23.
Do				July 1-Aug. 31, 1924: Cases, 122; deaths, 16. Sept. 14-20, outbreaks.
Natal				Mar. 1-June 30, 1924: Cases, 27; deaths, 5. July 1-Aug. 31, 1924: Cases, 12; deaths, 1 (colored).
Durban	Apr. 20-June 8	2		
Orange Free State				Mar. 1-June 30, 1924: Cases, 83; deaths, 11. July 1-Aug. 31, 1924: Cases, 40; deaths, 12. Aug. 24-Sept. 20; Outbreaks in the Hoopstad district.

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

Reports Received from June 28 to November 21, 1924—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Union of South Africa—Continued				
Transvaal				Mar. 1–May 31, 1924: Cases, 39; deaths, 5. July 1–Aug. 31, 1924: Cases, 29 (colored); deaths, 2.
Johannesburg	May 11–24	2		
Do	June 29–Sept. 13	3		
Yugoslavia				January–June, 1924: Cases, 252; deaths, 14.
Zagreb	Sept. 7–13	1		

YELLOW FEVER.

Brazil:				
Pernambuco	May 11–17	2	1	
Gold Coast				May, 1924: Cases, 2; deaths, 2. July, 1924: Cases, 2; deaths, 1.
Salvador:				
San Salvador	June 10–Aug. 25			Present in San Salvador and vicinity.